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Wissenschaftszentrum Berlin
für Sozialforschung



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Governance:
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Abstract

Party Cues in Elections under Multilevel Governance: Theory and Evidence from US States

Benny Geys and Jan Vermeir*

In federal countries, competence for policy matters is often shared between various levels of government. As only overall outcomes are observed, this might blur accountability by decreasing voters' ability to infer information about the performance of their leaders. In this article, we analyse how party cues (i.e., politicians' party membership acting as a cue towards their characteristics) affect voters' incomplete information about politicians in a federal setting. We first of all show that party cues allow indirect inference regarding politicians using observed policy outcomes, alleviating the accountability problem. Empirical evidence from US presidential election results across all 50 US states over the period 1972–2008 provides support for this proposition. Yet, while the availability of party cues in a federal setting increases the national incumbents' effort in some cases, it may reduce effort particularly when the regional incumbent is of a different party.

Keywords: Federalism, accountability, multilevel governance, party cues

JEL classification: D72, H30, H77

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INTRODUCTION

A central feature of many federal government structures is that authority over competences – e.g., unemployment, education, crime, or infrastructure – is shared between a national and a lower level of government. In Switzerland, for example, public expenditures for social welfare take place at both the federal (49.8% of total welfare spending in 2004), cantonal (28.9%) and municipal level (21.3%), and the same occurs for, among other policy areas, education (18.9%, 52.0% and 29.1% respectively) and transportation (59.3%, 19.9% and 20.8% respectively) (Widmer and Zweifel, 2012). In similar fashion, public expenditures in the US on, for instance, healthcare split into 61.6% federal-level and 38.4% state- and local-level spending in 2010 (NIPA Table 3.15.5, US Bureau of Economic Analysis). One reason for such incomplete division of tasks across government levels is that a country's laws fail to clearly delineate the distribution of power. The 10th Amendment to the US Constitution, for example, merely states that all powers not expressly awarded by the Constitution to the federal government are delegated to the states. A similar arrangement exists in, amongst others, Belgium, Germany and Switzerland.

The functional division of tasks and responsibilities across government levels in federal systems thus frequently resembles a 'marble cake' rather than a 'layer cake' (Grodzins, 1966; Volden, 2005). As a direct consequence, multilevel governance structures are often argued to decrease the clarity of governments' responsibility for public outcomes because only overall outcomes are observed. That is, it is hard to tell whether the national *or* local incumbent is responsible for the observed level of public performance (Anderson, 2006, 2008, 2009; Joanis, 2009a, b).

In this article, we argue that politicians' membership of political parties provides a mechanism to alleviate this accountability problem under multilevel governance structures. We thereby exploit that politicians' party membership provides important cues about their characteristics and likely behaviour once elected. This is supported by a substantial literature arguing that political parties develop reputations for holding specific policy positions through their electoral and parliamentary activities (Aldrich, 1995; Müller, 2000; Snyder and Ting, 2002, 2003), and sustain this 'brand name' through party discipline (Caillaud and Tirole, 2002; Castanheira and Crutzen, 2009). Even in the absence of party discipline, however, intra-party cohesion is supported by politicians' self-selection into parties sharing their preferences, and political parties' preference for fairly homogeneous candidates (Jones and Hudson, 1998).¹ While all parties arguably contain 'good' and 'bad' politicians from an ethical point of view, the above processes imply that parties' politicians are characterized by certain policy preferences associated with their ideology. For example, left-wing politicians are more likely to react to high unemployment with demand-side politics (e.g., increased expenditures) while right-wing politicians generally prefer supply-side policies (e.g., lower taxes). Voters facing high unemployment know that one of these will constitute the right recipe at a given point in time, but do not a priori know which policy – and party – will be more successful because the value of certain recipes might change over time depending on the context.

The key point is that when politicians of the same party share such similarities in terms of ideology, policy agenda and so on, the policy preferences of any given candidate become correlated to those of other politicians of the same party. This, we argue, provides voters with

¹ One could argue that this holds mainly for the rank-and-file of the party. At higher levels, the party may well face a trade-off between intra-party cohesion and the need for charismatic leaders able to attract (new) voters (Padro-i-Miquel and Snowberg 2011).

important information (which, in extreme cases, may be the only information available). We refer to this as *party cues*. That is, party cues are defined as the process through which party labels of candidates increase the information sources available to voters: i.e., information on the performance of one politician can be used to assess another politician of the same party. Our central argument is that such party cues can help voters in their assessment of candidates based on observed economic outcomes in elections under multilevel institutional settings.

For instance, a voter might not know a new gubernatorial candidate, but she can, in part, assess this candidate by looking at the performance of an incumbent politician of the same party in a neighboring state (i.e., horizontally) or at different levels of government (i.e., vertically). While the importance of *horizontal* comparisons was initially highlighted by Salmon (1989) and formalized by Besley and Case (1995), Geys and Vermeir (2008a) illustrate that the information obtained from such comparisons is affected by the presence/absence of partisan connections between politicians in neighboring states (i.e., on whether or not horizontal party cues can be exploited). In this paper, we instead focus on *vertical* party cues whereby voters in a multilevel governance structure can judge the national incumbent by taking into account her partisan attachment and that of the regional incumbent. Our theoretical model first of all shows that when the national and regional politician are from the same party (i.e., political power is ‘aligned’ across levels of government), regional public output remains informative to voters evaluating the national incumbent *even when* she has little or no influence on this output – provided that intra-party correlation in politicians’ policy preferences is positive. The intuition is that, although the positive policy outcome is attributed to the regional incumbent, it rubs off on the national incumbent through politicians’ partisan connection. Second, when the national and regional politician are from different parties (i.e., political power is ‘unaligned’), regional public output has a weaker positive effect – and can have a negative effect – on the national incumbent. This results from the partisan connection between the regional incumbent and the national opposition candidate, which informs voters that the candidate fielded in the federal election by the party of the regional incumbent is likely to be a better choice than the national incumbent. Both predictions indicate that the availability of party cues increases the information available in a federal setting, and suggest that regional public output will affect the national incumbent’s election result differently in aligned versus unaligned regions. These hypotheses are confirmed using state-level data from ten US presidential elections between 1972 and 2008.

Even so, party cues are not a uniquely positive force, and may carry important downsides. Indeed, while party cues make that the national incumbent generally (but not always) exerts more effort when the national and regional incumbent are aligned (compared to the case when they are unaligned), they may cause the national incumbent to exert zero effort when the incumbents are unaligned. Hence, while increasing the information content of public policy outcomes, the availability of party cues may well reduce politicians’ effort under certain conditions. We return to the policy implications of these observations below.

This article contributes to the literature on the costs and benefits of multilevel governance structures in terms of government accountability (Seabright, 1996; Myerson, 2006; Hatfield and Padro-i-Miquel, 2012). Seabright (1996) argues that accountability may be compromised in a centralised system because at least some regions’ welfare (and votes) may become irrelevant to “determine the re-election of the government” (Seabright, 1996: 61). Myerson (2006) argues that politicians can prove their qualifications at the local level in a federalist structure, which provides information to voters when these politicians subsequently compete for public office at the national level. Hatfield and Padro-i-Miquel (2012) show that a

multilevel government structure can help to solve a commitment problem at the federal level. Our analysis concentrates on the incomplete information problem discussed by Anderson (2006, 2008, 2009), Myerson (2006) and Joanis (2009a, b) rather than the ‘redundancy effect’ and commitment problems discussed, respectively, by Seabright (1996) and Hatfield and Padro-i-Miquel (2012).

In the next section, we develop a simple model detailing our theoretical argument. Then, we turn to an empirical test of the model’s main predictions using state-level data from US presidential elections. Finally, we discuss the implications of our analysis.

THEORETICAL MODEL

To present the argument most clearly and derive testable hypotheses, we set up a simple career concerns model in the spirit of Persson and Tabellini (2000) and Ashworth and Bueno de Mesquita (2006) that includes a simple federal government structure with one national government and several regional jurisdictions. For simplicity, we limit the number of political parties to two – i.e., an incumbent and an opposition party, though these roles may differ across jurisdictions and levels of government.² In each jurisdiction, public output (x) is determined by the policy preferences or policy ‘quality’ of the national *and* regional incumbents as well as their respective efforts. The policy quality is represented by the variable q , which is drawn from an unbounded normal distribution with $E(q)=0$ and $\text{Var}(q)=\sigma_q^2$ (it is crucial that q is *not* iid, see below). Effort, denoted by e , is costly, and assumed to be strictly positive $e \geq 0$ (we return to this below). The cost function $C(e)$ is increasing and strictly convex with $C(0)=0$. We also assume that the national incumbent (represented via subscript n) can exert a different effort in each region i , with her total cost of effort given by $C_n = \sum_i C(e_{ni})$. Both effort (e) and quality (q) are unobservable to voters. We can then write public output in each jurisdiction i as:

$$x_i = w_n(q_n + e_{ni}) + (1 - w_n)(q_{ri} + e_{ri}) \quad (1)$$

Here, q_n and q_{ri} represent the policy quality of the national incumbent and of the regional incumbent in region i , and e_{ni} and e_{ri} are their respective efforts.³ The weight of the national incumbent in determining public output in a particular jurisdiction is represented by w_n , with $0 \leq w_n \leq 1$ (see also Solé-Ollé and Sorribas-Navarro, 2008). This weight captures the effect of asymmetric federal designs where different levels of government bear responsibility for a

² This implicitly assumes that the party systems at the federal and sub-national level are completely analogous. While full analogy rarely occurs in reality, our results go through as long as there is sufficient overlap in the party systems at various levels of government. This holds, for instance, for the US, Germany and Belgium (within both parts of the country), though only to a lesser extent in, say, Canada or Spain.

³ Implicit in such modelling is that one set of policy preferences (and thus one party) could be better than another under given circumstances. While this appears reasonable for the unidimensional policy setting studied here, it is obviously more restrictive when thinking of multi-dimensional policy spaces. Note also that our simple representation of public output is open to various extensions. For example, one could assume the presence of cost shocks, which introduces some noise in the relation between politicians’ q , e and public output (e.g., Revelli, 2002; Geys and Vermeir, 2008a). Also, one can introduce a fixed tax burden related to public output, which allows higher public output to be interpreted as higher government efficiency (the reverse approach is taken in, for instance, Besley and Case, 1995). Finally, one might introduce multiple policy variables. We abstain from these extensions and analyse the most basic set-up possible to illustrate the effect of politicians’ intra-party similarity. However, these various extensions, while complicating the formal model, are irrelevant for our main findings.

given policy area to varying degrees (see introduction).⁴ Crucially, the variable q can, but need not, be correlated across politicians. Specifically, we model the idea that politicians *within* any given party are “to some extent interchangeable” (Geys and Vermeir, 2008a, 471) by assuming a joint probability distribution in which the q ’s of politicians of the same party have a positive correlation ($0 < \eta < 1$) and the q ’s of politicians from different parties are independent ($\eta = 0$). These correlations are common knowledge. In other words, it is the party membership of politicians – and not that of voters – that acts as a cue towards politicians’ characteristics.^{5,6}

The timing of the two-period model is as follows. At the beginning of period 1, a federal government is established, as well as a regional government in each jurisdiction i . To abstract from complications when allowing politicians to gain experience from multiple terms in office, we assume these governments have not been in office before and no historical information is available about them. Then, public output comes about as a function of politicians’ policy preferences and efforts, and output is observed by voters.⁷ At the end of period 1, the incumbents – who are assumed to be vote-maximizers – face an election in which they are either re-elected or replaced by a candidate of the opposition party. Below, we will focus on federal-level elections and the behaviour of the national incumbent. In period 2, politicians again exert their optimal efforts and, together with their policy preferences q , this again leads to public output. Then the world ends.

As there are no new elections in period 2, incumbents will exert zero effort in period 2, and voters – valuing public output – will vote for the candidate with the highest expected q in the first-period elections. They will thereby use the first period’s public output to update their beliefs about the national incumbent and, when possible, the national opposition candidate. The *ex post* conditional expectation of q given the outcomes observed in the first period (i.e., $E(q|x_i)$) is then a weighted average of the *ex ante* mean of q (assumed to be 0) and public output. Based on these updated beliefs, voters decide on their vote (see below). Hence, voters are backward-looking, using historic performance to decide about their vote because this might reliably signal information about politicians (Persson and Tabellini, 2000).

Clearly, this final step relies on specifying the voters’ decision-rule. Following Revelli (2002) and Solé-Ollé and Sorribas-Navarro (2008), we assume a stochastic voting rule under which the probability that a voter in region i casts a ballot in favour of the national incumbent (S_{ni}) can be written as:

⁴ In line with the observation that most federal systems are characterised by symmetric sub-national competences (e.g., Belgium, Germany, Spain, US), we assume that w_n is the same for all jurisdictions. Note, however, that our results remain valid if we allow for such asymmetries as long as $w_n > 0$ for all jurisdictions.

⁵ One could make η depend on voters’ partisan membership and assume that voters know more about the value of η within their own party. This, however, is not critical to the current analysis.

⁶ In a paper that is conceptually closest to ours, Solé-Ollé and Sorribas-Navarro (2008) analyse federal-level grant allocations across aligned and unaligned local-level governments. While our analysis in some sense starts where theirs ends (as we look at how policy outcomes across (un)aligned governments affect election results), the biggest theoretical difference between our respective papers lies in the fact that Solé-Ollé and Sorribas-Navarro (2008) treat parties as monolithic actors. Our theoretical model refines this assumption by introducing the concept of party cues.

⁷ We assume that voters only observe public output in their own jurisdiction. Still, it is possible to extend the model to the case where voters observe public output in neighboring jurisdictions as well as their own jurisdiction (as long as voters cannot observe output in *all* jurisdictions because then they would vote the same way in all jurisdictions).

$$S_{ni} = \Pr\{E(q_n|x_i) - E(q_o|x_i) + \alpha_i > 0\} \quad (2)$$

where subscripts o and n refer to the national opposition candidate and incumbent, respectively, and α is a zero-mean, normally distributed random term with variance $Var(\alpha_i) = \sigma_{\alpha_i}^2$, which is uncorrelated to q .⁸ To evaluate S_{ni} , we need expressions for voters' updated beliefs about the q of the national incumbent ($E(q_n|x_i)$) and opposition candidate ($E(q_o|x_i)$). This implies analysing the relation between the policy preferences of the national incumbent and opposition candidate and public output in the region. Given the assumptions above, the policy quality of the national incumbent and public output (i.e., q_n and x_i) as well as the national opposition candidate's policy quality and public output (i.e., q_o and x_i) will follow a multivariate normal distribution. Consequently, voters' updated beliefs concerning the incumbent can be written as (see DeGroot, 1970; Theil, 1971; Meyer and Vickers, 1997):

$$E(q_n|x_i) = \frac{w_n + (1-w_n)\eta_{ni}}{w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni}} [x_i - w_n e_{ni}^f - (1-w_n)e_{ri}^f] \quad (3)$$

In this expression e_{ni}^f and e_{ri}^f are the voters' forecasts of the effort exerted in period 1 by the national and regional incumbent, respectively, and η_{ni} reflects the strength of the partisan cue between the national and regional incumbents. Similarly, the updated belief regarding the opposition candidate is:

$$E(q_o|x_i) = \frac{(1-w_n)\eta_{oi}}{w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni}} [x_i - w_n e_{ni}^f - (1-w_n)e_{ri}^f] \quad (4)$$

where η_{oi} indicates the strength of the partisan cue between the national opposition candidate and the regional incumbent. Using expressions (3) and (4), we can rewrite equation (2) as

$$S_{ni} = \Pr\{\beta_i [x_i - w_n e_{ni}^f - (1-w_n)e_{ri}^f] + \alpha_i > 0\} \quad (5)$$

$$\text{where } \beta_i = \frac{w_n + (1-w_n)(\eta_{ni} - \eta_{oi})}{w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni}} \quad (6)$$

The coefficient β_i in the stochastic voting rule (5) reflects the strength of the relation between public output x_i and the national incumbent's vote share S_{ni} . As discussed, politicians choose their effort to maximise their vote share. Because the national vote share is a weighted average of the vote share in each jurisdiction, the national incumbent maximizes her vote share in each region. Hence, effort in period 1 is decided by assessing the expected vote share in equation (5). Since the left hand side of equation (5) – i.e., $\beta_i [x_i - w_n e_{ni}^f - (1-w_n)e_{ri}^f] + \alpha_i$ – follows a normal distribution with mean $\beta_i [w_n e_{ni}^f - w_n e_{ni}^f + (1-w_n)e_{ri}^f - (1-w_n)e_{ri}^f]$ and variance $[\beta_i^2 (w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni}) \sigma_q^2 + \sigma_{\alpha_i}^2]$, the incumbent's expected vote share as a function of her effort level equals:

⁸ One might also allow for a non-zero mean of α representing, for example, an incumbency advantage (Grossman and Helpman, 1996; Konrad, 2002; Mehlum and Moene, 2006). This does not affect our findings.

$$S_{ni}(e_{ni}) = 1 - \Phi \left[\frac{-\beta_i [w_n e_{ni} - w_n e_{ni}^f + (1-w_n)e_{ri} - (1-w_n)e_{ri}^f]}{\sqrt{\beta_i^2 (w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni})\sigma_q^2 + \sigma_{ai}^2}} \right] \quad (7)$$

Where $\Phi[.]$ represents the cumulative distribution function of the standard normal distribution. The incumbent will therefore choose effort e_{ni} in region i such as to maximize $S_{ni}(e_{ni}) - C(e_{ni})$. Optimal effort is given by the first-order condition:

$$\frac{w_n \beta_i}{\sqrt{\beta_i^2 (w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni})\sigma_q^2 + \sigma_{ai}^2}} \phi \left[\frac{-\beta_i [w_n e_{ni} - w_n e_{ni}^f + (1-w_n)e_{ri} - (1-w_n)e_{ri}^f]}{\beta_i^2 (w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni})\sigma_q^2 + \sigma_{ai}^2} \right] = C'(e_{ni}) \quad (8)$$

In equilibrium, the marginal gain in terms of vote share thus has to exactly compensate the marginal cost of effort. Under rational expectations, voters' forecasts of politicians' effort are correct in equilibrium, such that optimal effort is characterized by the following expression:

$$\frac{w_n \beta_i}{\sqrt{\beta_i^2 (w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni})\sigma_q^2 + \sigma_{ai}^2}} \phi(0) = C'(e_{ni})$$

or
$$\frac{w_n \beta_i}{\sqrt{2\pi(\beta_i^2 (w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni})\sigma_q^2 + \sigma_{ai}^2)}} = C'(e_{ni}) \quad (9)$$

From equation (9), it can be shown that effort of the national incumbent is higher when the weight of the federal level in regional output creation (w_n) is larger. However, effort decreases with the variance of the left-hand side of the voting rule in (5). Note also that as β_i can become negative, a corner solution in which effort becomes zero may arise (we return to this below).

Equations (5) and (9) provide the basic ingredients for analysing the effect of party cues (η) on economic voting in elections under multilevel governance. However, before turning to this central part of the analysis, it is interesting to point out that our model predicts more effort from the national incumbent in a unitary context compared to a federal context, because public output has a stronger effect on her vote share in such a setting and because she has a bigger impact on public output.

Proposition 1a *The impact of public output on the vote share of the national incumbent is larger in a unitary context than in a federal context.*

Proposition 1b *The national incumbent exerts more effort in a unitary context than in a federal context.*

Proof:

Remember from equation (5) that β_i reflects the strength of the relation between public output x_i and the national incumbent's vote share S_{ni} . To prove Proposition 1a, it then suffices to state that in a unitary context the national incumbent has full responsibility for public output ($w_n =$

1), implying that $\beta_i = 1$, whereas in a federal context, authority is shared such that $w_n < 1$ and, consequently, $\beta_i < 1$ (see equation (6)).

Using equation (9), this implies that the optimal effort exerted by the national incumbent in a unitary context (e_u) has to satisfy:

$$C'(e_u) = \frac{1}{\sqrt{2\pi(\sigma_q^2 + \sigma_{ai}^2)}} \quad (10)$$

Given strict convexity of the cost function, optimal effort of the incumbent in a unitary setting (e_u) will thus be higher than under a federal setting (e_f) as long as $C'(e_u) > C'(e_f)$, or:

$$\frac{1}{\sqrt{2\pi(\sigma_q^2 + \sigma_{ai}^2)}} > \frac{w_n \beta_i}{\sqrt{2\pi(\beta_i^2 (w_n^2 + (1 - w_n)^2) + 2w_n(1 - w_n)\eta_{ni})\sigma_q^2 + \sigma_{ai}^2}} \quad (11)$$

Equation (11) holds when $w_n < 1$ (which is, by definition, the case in a federal context) and $\beta_i < 1$ (which is true if $w_n < 1$, see above). ■

The intuition is that as an incumbent operating in a federal context exerts more effort, the impact of this on public output is lower compared to a unitary context because the effort is weighted by a factor $w_n < 1$ (whereas effort counts fully in a unitary setting since $w_n = 1$). In addition, the impact of public output on her vote share is lower than in a unitary context since $\beta_i < 1$.

Now, allowing for the role of party cues in a federal context, two cases must be distinguished. In the first case, incumbents at the national and regional level are *aligned* (such that $\eta_{ni} = \eta$), which implies, given that there are only two parties, that the regional incumbent is *unaligned* with the national opposition candidate ($\eta_{oi} = 0$). In a second case, the national and regional incumbents are *unaligned* ($\eta_{ni} = 0$), and, therefore, the regional incumbent belongs to the party of the national opposition candidate ($\eta_{oi} = \eta$). Substituting this information into equation (6), we find for the case of *aligned* incumbents that:

$$\beta = \beta_a = \frac{w_n + (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta} \quad (12)$$

Similarly, the case with *unaligned* incumbents leads to:

$$\beta = \beta_u = \frac{w_n - (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2} \quad (13)$$

In the absence of any party cues ($\eta_{ni} = \eta_{oi} = 0$), we simply have:

$$\beta = \beta_n = \frac{w_n}{w_n^2 + (1 - w_n)^2} \quad (14)$$

Equations (12) and (13) both converge to one when the weight of the national incumbent on public output (w_n) tends to one: i.e., $\lim_{w_n \rightarrow 1} \beta_a = \lim_{w_n \rightarrow 1} \frac{w_n + (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta} = 1$ and

$\lim_{w_n \rightarrow 1} \beta_u = \lim_{w_n \rightarrow 1} \frac{w_n - (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2} = 1$. They converge to different values, however, when w_n goes

to zero (and the influence of the national incumbent over policy output disappears). In effect, equation (12) converges to η while equation (13) converges to $-\eta$ when w_n goes to zero: i.e.,

$\lim_{w_n \rightarrow 0} \beta_a = \lim_{w_n \rightarrow 0} \frac{w_n + (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta} = \eta$ and $\lim_{w_n \rightarrow 0} \beta_u = \lim_{w_n \rightarrow 0} \frac{w_n - (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2} = -\eta$. These

observations have several interesting implications. Firstly, it indicates that regional public output can retain an impact on the national incumbent's election result – even when she has little influence on this output – provided that intra-party correlation in q is positive (i.e., $\eta > 0$). Intuitively, this result derives from the fact that regional public output rubs off on the national incumbent through her partisan connection to the regional incumbent (who is awarded full credit for x_i when w_n equals 0) in the aligned case, or through the partisan connection of the national opposition candidate to the regional incumbent in the unaligned case. Hence, even when there is little (or no) direct evidence upon which to evaluate the national incumbent's q , voters in a federal system can still infer something about her via the indirect information contained in party cues.

Proposition 2 *When party cues exist, i.e. intra-party correlation in policy quality is positive ($\eta > 0$), even when the national incumbent has almost no influence on regional policy outcomes ($w_n \rightarrow 0$), public output can still affect the election result of the national incumbent.*

Secondly, there is some cut-off value of w_n for which the effect of regional public output on the national incumbent becomes negative in the unaligned case. It can easily be shown that this occurs when $w_n < \frac{\eta}{1 + \eta}$ (see below). This means that if η is large enough or w_n small enough, the indirect positive impact on the national opposition candidate of the favourable evaluation of the regional incumbent can more than offset the direct positive effect of public output on the national incumbent. Consequently, the overall effect of public output on the latter's electoral result becomes negative. As a direct corollary, the national incumbent in such a setting will have no incentive to provide effort, leading to a corner solution where $e = 0$.⁹

Proposition 3a *When the national and regional incumbent are unaligned, the effect of public output on the national incumbent's election result becomes negative when $w_n < \frac{\eta}{1 + \eta}$.*

Proposition 3b *When the national and regional incumbent are unaligned, it is optimal for the national incumbent to exert zero effort when $w_n < \frac{\eta}{1 + \eta}$.*

Proof:

$\beta_u = \frac{w_n - (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2} < 0$ when $w_n - (1 - w_n)\eta < 0$. This is the case when $w_n < \frac{\eta}{1 + \eta}$. When

$\beta_u < 0$, we have a corner solution for optimal effort (see equation (9)), which becomes zero. ■

⁹ Note that this follows from our assumption that effort is non-negative. Allowing for negative effort (or 'sabotage'; Konrad, 2000; Chen, 2003) could lead to situations where the national incumbent actively undermines public output in regions with unaligned incumbents.

Note that $w_n < \frac{\eta}{1+\eta}$ implies that w_n must be strictly smaller than $\frac{1}{2}$ (since $0 < \eta < 1$). In other words, effort of the national incumbent only becomes zero in the unaligned case when policy outcomes are predominantly attributed to the regional incumbent (and thereby the national opposition candidate) and if intra-party correlation η is fairly high.

Thirdly, for all values of w_n lower than one, it holds that $\beta_a > \beta_u$. The intuition is as follows. In the aligned case, public output that voters attribute to the regional incumbent will also reflect favourably on the national incumbent. This increases the extent to which local output translates into vote share for the national incumbent. In the unaligned case, however, as discussed above, attribution of public output to the regional incumbent will reflect favourably on the national opposition candidate (through these politicians' partisan connection). Nevertheless, the level of effort exerted by the national incumbent will *not* always be higher in the aligned relative to the unaligned case. The reason is that in the aligned case, the intra-party correlation η not only increases the impact of output on the vote share (see above), but also increases the variance of the left-hand side of the voting rule in equation 5 – which reduces effort. As a result, effort can be higher in the unaligned case under certain conditions. Particularly, when σ_q^2 is relatively large, we can show that the variance effect dominates, and that effort will be smaller in the aligned compared to the unaligned case. When σ_α^2 is relatively large, the variance effect loses importance relative to the effect of public output on the vote share (β_i), and effort will be greater in the aligned compared to the unaligned case. Of course, effort will also be greater in the aligned case when $w_n < \frac{\eta}{1+\eta}$, since in that case effort is zero in the unaligned case.

Proposition 4a *The effect of regional public output on the vote share of the national incumbent is greater when the national and regional incumbent are aligned, compared to the case when they are unaligned, whenever the national incumbent is not fully accountable for regional output (i.e., $w_n < 1$).*

Proposition 4b *The national incumbent exerts more effort when the national and regional incumbent are aligned, compared to when they are unaligned when $w_n < \frac{\eta}{1+\eta}$ or when*

$$\sigma_q^2 < \frac{\sigma_\alpha^2}{2w_n(1-w_n)\eta} \left[\frac{(w_n^2 + (1-w_n)^2)^2}{((w_n - (1-w_n))\eta)^2} - \frac{(w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta)^2}{((w_n + (1-w_n))\eta)^2} \right].$$

Proof: See Appendix B.

As mentioned above, a national incumbent has less incentive to exert effort in a federal context than in a unitary context. A final question is therefore whether party cues increase the incentive for the national incumbent to exert effort in a federal framework. The answer is that, in the aligned context, the impact of public output on the vote share increases, which increases effort exerted by the national incumbent. However, the variance of the left-hand side of the voting rule (see equation 5) also increases, which has a negative effect on effort. Therefore, in the aligned case, party cues will increase/decrease effort depending on the relative size of the variance of q and α . In the unaligned case, party cues decrease the impact of public output on the vote share (as higher output helps the national opposition candidate). Therefore, in the unaligned case, party cues always reduce effort by the national incumbent.

Proposition 5a *Party cues increase the impact of public output on the national incumbent's vote share when the national and regional incumbent are aligned. The reverse occurs when the national and regional incumbent are not aligned.*

Proposition 5b *Party cues increase the national incumbent's effort when the national and regional incumbent are aligned whenever*

$\sigma_q^2 < \frac{\sigma_{\alpha}^2}{2w_n(1-w_n)\eta} \left[\frac{(w_n^2 + (1-w_n)^2)^2}{((w_n - (1-w_n))\eta)^2} - \frac{(w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta)^2}{((w_n + (1-w_n))\eta)^2} \right]$. *Party cues always decrease effort when the national and regional incumbent are not aligned.*

Proof: See Appendix B.

Overall, our model confirms that in a federal context, the accountability of the federal incumbent can become significantly impaired. However, it also points to the important role of party labels and the correlation in policy preferences (or policy quality) among politicians of the same party. We indeed find that the availability of party cues improves accountability for public policy outcomes in a federal setting, since it allows voters to extract *indirect* information about politicians from observed policy outcomes. This improvement in the information content of public policy outcomes generates the testable hypotheses that *a*) public policy outcomes retain an impact on the national incumbent's election result *even when* she has little direct influence on such outcomes and *b*) the effect of regional policy outcomes on the national incumbent's vote share depends on whether the national and regional incumbents are (un)aligned. We test these predictions in the empirical section below. Nevertheless, party cues may at the same time reduce politicians' effort under certain conditions, which we will return to in more detail in the concluding section of this article.

EMPIRICAL ANALYSIS

EMPIRICAL MODEL

Our empirical analysis exploits data on US presidential election outcomes across all 50 US states over the period 1972-2008. The US federal structure, its two-party system (with the same parties operating at both the federal and state-level) and the division of power between both parties across states provides a context in close accordance with our theoretical model. Following the vast literature on economic voting (for reviews, see Nannestad and Paldam, 2002; Lewis-Beck and Stegmaier, 2007), our central estimation equation takes the following form (with subscripts *i* and *t* referring to state and time respectively):

$$\text{Votes}_{i,t} = \alpha_i + \beta_1 \text{StateEcon}_{i,t} + \beta_2 \text{Controls}_{i,t} + v_t + \varepsilon_{i,t}$$

The dependent variable – $\text{Votes}_{i,t}$ – is the share of the two-party-vote obtained by the incumbent-party candidate in state *i* in year *t*. For the 2008-election, it thus represents the share of votes cast in favour of John McCain (from those cast for either McCain or Obama), as he represented the party of the previous incumbent (i.e., George W. Bush). Still, all results reported below remain valid when we define the dependent variable as the incumbent-party vote total as a share of all votes cast (details upon request). The central explanatory variables are captured in the vector $\text{StateEcon}_{i,t}$. First, we include state-level per capita personal income

growth over the two years prior to the election, measured in 2000 dollars, obtained from the US Bureau of Economic Analysis.¹⁰ Second, we introduce total per capita state debt outstanding at the end of the election year, likewise measured in 2000 dollars, obtained from the US Census Bureau.¹¹ The former is used to measure the effect of economic conditions on election outcomes (Lewis-Beck and Stegmaier, 2007), while the latter captures the fiscal conservativeness of the US population (Peltzman, 1992; Geys and Vermeir, 2008b). It is important to point out here that state-level fiscal outcomes are more likely to be predominantly driven by state-level political decisions compared to state-level economic growth (where national policies may have a stronger influence); in terms of our theoretical model, this implies that w_n is smaller for state-level indebtedness than for economic growth. This difference is important for our empirical analysis as it implies that state-level fiscal outcomes should not greatly affect federal election outcomes, unlike state-level economic growth (see proposition 2). As any such effects – to the extent that they do occur – operate via incumbents’ party-political connections, the analysis of state-level debt provides a stronger test-case for our theoretical predictions.

Our vector of control variables consists of four variables, following Kahane (2009). First, we include a dummy variable equal to 1 if the current president runs for re-election (0 otherwise), measuring the sitting presidents’ incumbency advantage (Fair, 1996). Second, we introduce the level of voter turnout, measured as the percentage of the voting age population that cast a ballot. Third, we control for the ‘home-grown’ effect, which argues that presidential election candidates have an advantage in their state of origin (Kjar and Laband, 2002; Mixon and Tyron, 2004; Kahane, 2009), by including two dummy variables. One (i.e., *Home IPC*) is set equal to 1 if a state is the home-state of the incumbent presidential candidate in a given year (0 otherwise), while the other (i.e., *Home RPC*) equals 1 for the home-state of the rival party candidate in a given year (0 otherwise). Finally, we include state (α_i) and year (v_t) fixed effects throughout all estimations. Especially the latter are critical as they capture time-specific effects that are invariant across states (e.g., the influence of the federal-level incumbent). Hence, by including them in the regression model, we estimate state-level economic effects controlling for any influence of federal-level economics.

Crucially, we estimate the above regression equation separately for states where the governor is aligned or unaligned in terms of partisan attachment with the US president.¹² This

¹⁰ While the two-year period was chosen to match the time period between midterm and presidential elections, our results are robust to using the growth rate in state-level per capita personal income over 1, 3 or 4 years. The same is true when employing state-level GDP growth rather than personal income growth.

¹¹ While outstanding debt is admittedly a stock variable, we prefer this over the growth of debt for two reasons. First, voters are more likely to obtain information about the stock of debt rather than its growth rate through the media. Second, politicians inheriting high debt become ‘associated’ with this if it is not dealt with sufficiently quickly (much like inheriting a war; see Mueller, 1973). Note also that including other fiscal variables – such as total tax revenues, total own revenues (i.e., total revenues minus federal-level grants), budget deficit as a share of total revenues or interest repayments (all measured in 2000 dollars and per capita) – does not affect our main conclusions. As the high correlation between such fiscal variables generates significant multicollinearity problems when introducing more than one of them, we constrain ourselves to public debt in the final model. The latter variable produces the strongest results (in terms of R^2 and statistical significance), and always retains statistical significance when introducing any other fiscal variable.

¹² In the US political system, a state governor faced with a legislature controlled (at least in part) by the other party may have limited ability to implement her preferred legislative agenda (Fiorina, 1992; Alesina and Rosenthal, 1995; Schelker, 2012). As an alternative – and more stringent – measure of partisan (un)alignment, we therefore combined information about both the state governor and the state legislature (i.e., aligned states then have to have a governor as well as house *and* senate majorities from the president’s party). Although the aligned sample becomes fairly small in this setting (N=66), our results remain qualitatively unchanged (details upon request). We are grateful to an anonymous referee for this insight.

separation allows evaluating whether economic conditions have different effects across both types of states, as predicted by our theoretical model. Identification of such effects is feasible since there is substantial variation in the partisan alignment of governors and presidents across states as well as within states over time. For each presidential election year in our sample, between 20 (in 1980) and 37 (in 1976) US states have a governor that is *unaligned* with the US president and *all* US states shift their alignment status at least once during the sample period (see Table A1 in Appendix A). However, a key identifying assumption underlying this approach is that the selection of states in both subsamples is independent of any factors that may simultaneously affect presidential election results at the state level and state-level economic variables. From this perspective, it is reassuring that the aligned and unaligned subsamples are not significantly different along a series of observable dimensions (e.g., state personal income growth, state GDP growth, total debt, turnout rates, fiscal deficit, total tax revenues, total own revenues (i.e., total revenues minus federal-level grants), federal-level grants, interest repayments, home-state of the incumbent or opposition candidate, status as oil producer (dummy=1 if more than 1% of US oil production), population size, age composition, term limit legislation, and so on – details upon request). Even so, we discuss several possible threats to our simple identification strategy in more detail below.

Before turning to the results, we should also note that, rather than separate the sample, we could also employ the full sample and add interactions between our economic variables and indicator variables designating whether the state governor is of the same or a different party than the US president. While this methodological choice does not affect our conclusions (see below), we prefer using separate samples as we rely on a fixed-effects estimator. The resulting deviations-from-state-means become less meaningful when states shift within the sample period from having a governor aligned with the US president to having an unaligned governor (as occurs frequently, see table A1). This problem does not occur when relying on separate samples.

EMPIRICAL RESULTS

Our baseline findings are summarized in Table 1. Columns (1) through (3) report results including state-level personal income growth as the economic variable, while Columns (4) through (6) also include state debt. In both cases, we report results for the full sample (Columns (1) and (4)), as well as those separated for states where the governor is of the same (Columns (2) and (5)) or a different (Columns (3) and (6)) party than the US president. To correct for the varying size of the US states, we rely on heteroscedasticity-consistent standard-errors in all regressions and weigh all regressions by the voting age population of 1988.¹³

To start our discussion with a brief look at the results for the control variables, we see that voter turnout never adds significantly to the model, while incumbency status has, in line with expectations, a very large and positive effect on the incumbent-party vote share. This incumbency effect is consistently stronger in unaligned compared to aligned states, which confirms earlier findings that the incumbency effect is “greatest in districts where voter partisanship is (...) aligned against the incumbent” (Ansolabehere *et al.*, 2000, 18; see also Erikson, 1971; Hirano and Snyder, 2009). This may reflect the idea that incumbency and the ensuing name recognition and ability “to utilize the direct office-holder benefits” (Hirano and Snyder, 2009, 293) is especially important in politically less sympathetic environments, or

¹³ While this weighting scheme intends to capture the unequal importance of states in the presidential race (see also Kahane, 2009), dropping these weights leaves our findings qualitatively unaffected (although significance levels tend to be reduced somewhat).

that incumbents in “vulnerable situations must work especially hard to remain in place” (Ansolabehere *et al.*, 2000, 19; see also Erikson, 1971). Both variables capturing ‘home-grown’ effects also provide signs in line with theoretical predictions. Incumbent-party candidates obtain a better electoral result in their home state (though not significantly so), but do significantly worse in the home state of their opponent. The latter effect is exclusively driven by states where the incumbent is of the opposing party compared to the federal-level incumbent party candidate.

Turning to the central economic variables, Column (1) illustrates that economic growth significantly benefits the incumbent party candidate. Crucially, however, Columns (2) and (3) illustrate that the positive effect of economic growth is more than three times as strong when the state governor and US president belong to the same party, compared to the situation where both incumbents belong to different parties (in line with proposition 4a). Interestingly, as shown in the next-to last row in Table 1, the difference between both effects is also statistically significant at conventional levels ($\text{Chi}^2(1)=3.03$; $p=0.08$). The explanation lies in the fact that, as discussed in section 2, positive economic conditions in unaligned states not only benefit the federal-level incumbent party candidate in that state, but also the candidate of the opposition party (through his partisan connection with the state-level incumbent). Nonetheless, this indirect effect on the federal-level opposition candidate is not strong enough to offset the direct effect on the federal-level incumbent party candidate (see proposition 3a).

Adding state-level debt to the regressions in Columns (4) through (6) (note that we lose one year of observations as we lack data on state-level fiscal variables in 2008) does not affect the qualitative nature of the above findings, although the difference between the coefficient estimates of state personal income growth in both groups is now no longer statistically significant ($\text{Chi}^2(1)=1.61$; $p>0.10$).¹⁴ Moreover, the coefficient estimate of state-level debt itself is unexpectedly positive and statistically significant (Column (4)). This appears to go against the common view of fiscally conservative voters (Peltzman, 1992; Geys and Vermeir, 2008b). Separating states where governors belong to the same or a different party than the US president in Columns (5) and (6), however, illustrates that state-level debt has a statistically significant *negative* effect in the former and a statistically significant *positive* effect in the latter. This supports both the fiscal conservativeness of the US population as well as our theoretical propositions. Indeed, in states where both incumbents (i.e., at federal and state level) are from the same party, fiscally conservative voters will take high debt levels as a bad signal concerning the federal-level incumbent party candidate because she is linked to the fiscally irresponsible governor through both politicians’ partisan attachments (supporting proposition 4a). Fiscally conservative voters in states with a governor from the national opposition party, on the other hand, interpret high debt levels at least partly as a bad signal about the federal-level opposition candidate – because her partisan link to the fiscally irresponsible state-level governor. In this case, this indirect negative effect on the election prospects of the opposition candidate more than offsets the direct negative effect on the federal-level incumbent party candidate – such that the latter effectively gains from high levels of state debt (supporting proposition 3a). Note also that the effects on state-level debt are statistically much stronger than those for economic growth discussed above, with the difference between both types of states being statistically significant well beyond the 99%

¹⁴ This reduced statistical significance is due to the inclusion of state-level debt, rather than to 2008 being dropped from the sample. Indeed, re-estimating the models in Columns (1) through (3) on the sample without 2008 gives very similar results as those presented in Columns (1) through (3).

confidence level ($\chi^2(1)=17.50$; $p<0.001$).¹⁵ This is especially interesting given that state-level fiscal outcomes are predominantly driven by state-level political decisions (i.e., low w_n in terms of our theoretical model) and should not normally affect federal election outcomes *except through* local incumbents' party-political connections to the national incumbent/opposition candidates. From this perspective, the clear-cut effects of state-level debt provide strong evidence in favor of our theoretical propositions.

Table 1 about here

These results remain valid under two additional robustness checks (besides those reported in footnotes 9 and 11 through 14). In the first of these, we added the vote share of the current presidential incumbent-party candidate in the previous election to the model. Properly specified, this is *not* a lagged dependent variable (such that we can ignore problems associated with such variables for panel estimations). While the introduction of such lagged electoral success increases the explanatory power of the model and mostly displays negative signs (suggesting a 'cost of ruling'; Frey and Schneider, 1978; Geys, 2010), our central findings are robust to this addition. Second, although federal-level effects are contained in our year effects, we also experimented with the inclusion of federal-level GDP growth. This, as expected, always has a significant positive effect on the incumbent party candidate's vote share, but, crucially, its addition does not affect the findings reported above.

*THREATS TO IDENTIFICATION*¹⁶

The analysis above disregards two potential threats to our identification strategy. First, although there is substantial variation in partisan alignment across time and space, changes in partisan alignment may derive from both changes in the US presidency or the state governorship. However, only the former can reasonably be treated as exogenous to the state-level, while the latter may be endogenous to the local economic situation – especially when the president has some effect on local outcomes. We try to account for this in two ways. In the first, we replicate our analysis under two conditions: restricting the sample to those cases where there was a) *no* change in governorship, and b) a change in governorship. The underlying identifying assumption here is that selection into the aligned versus unaligned condition is predominantly related to exogenous changes in the presidency for sample (a), while it is determined by possibly endogenous gubernatorial shifts in sample (b). Hence, if self-selection affects our results, this should be largely cleared out of the results on the first sample, and concentrate in the latter sample. The findings are summarized in Table 2.

Table 2 about here

¹⁵ This difference in statistical significance is also borne out when adding interaction terms consisting of our economic variables and indicator variables designating whether the state governor is of the same or a different party than the US president in the full-sample regressions. Specifically, the difference in the effect of economic growth between both types of states is statistically indistinguishable from zero ($p>0.10$), but it is statistically significantly different from zero for total debt ($p<0.05$) (details available upon request).

¹⁶ We are grateful to Jon Fiva, Lucy Goodhart and two anonymous referees for useful discussions and suggestions on this point.

Table 2 indicates that our earlier results are entirely driven by the unchanged-governor subsample. This is reassuring as it indicates that local fiscal conditions matter for presidential elections *only when* local incumbents have presided over the state long enough (and thus can truly be kept accountable for these conditions). More importantly, however, it implies that potential self-selection is not driving our results as the potential endogeneity problem discussed above is smallest in this sample.

The second way we try to tackle potential ‘self-selection’ effects from the (partial) endogeneity of gubernatorial elections is to restrict the sample to those states where governors narrowly lost/won the previous election (as narrow elections involve some degree of randomness; Lee, 2008; Petterson-Lidbom, 2008). Unfortunately, moving closer to the 50% election threshold reduces the number of observations to the point where credible regression analysis becomes unworkable. While the 3% and 5% margin we report below may not be as ‘close’ as we would like, sample size constraints prevent exploiting even closer elections (see also Schelker, 2012). Data on gubernatorial election margins were retrieved from List and Sturm (2006).

Table 3 about here

Table 3 illustrates that, if anything, our results in this restricted sample become substantially stronger. Indeed, the difference in the estimated effects of state-level economic growth and state-level debt as well as the statistical significance of this difference increases compared to our baseline results in Table 1. Hence, once again, we can conclude that potential self-selection of governors does not appear to be driving our results – since these results persist in a sample where such self-selection is arguably minimal due to the randomness inherent in close election outcomes.

Second, as mentioned, (un)observed factors simultaneously affecting presidential election results and state-level economic variables are unproblematic for our analysis *as long as* such elements do not have a differential effect across the aligned and unaligned subsamples. Such differential impact appears highly unlikely for general shocks such as, for instance, economic recessions or inflation and oil-price shocks (remember that both samples do not significantly differ in terms of containing states with substantial oil production). However, US presidents themselves could have different impacts on economic conditions in different states as they can differentiate their effort across states. Of particular concern here is the president’s influence over the distribution of federal grants and the fact that such grants are often significantly (re)directed to aligned lower-level governments (Ansolabehere *et al.*, 2002; Ansolabehere and Snyder, 2006; Solé-Ollé and Sorribas-Navarro, 2008). This may imply that shifts in federal grants could both increase presidential popularity *and* affect economic conditions more strongly in aligned compared to unaligned states. This is important for our analysis since, in line with previous work, the real growth rate of per capita federal grants is significantly higher in aligned compared to unaligned states in our sample (i.e., $p=0.066$ when comparing one-year growth rates in federal grants; $p=0.149$ when comparing two-year growth rates).¹⁷ To assess whether such differentiated grant policies are driving our results, Table 4

¹⁷ Note that if US presidents have an incentive to engage in strategic grant allocations especially when presidential popularity declines (e.g., as a vote-buying strategy), federal grants are endogenous and causation runs from popularity to grants rather than from grants to popularity. This is of relatively minor concern here

reports findings where we directly control for the real growth rate of per capita federal grants to the state in the two-year period prior to the presidential elections.

Table 4 about here

Table 4 clearly illustrates that our results are not driven by differentiated grant policies in aligned and unaligned states. Indeed, our core findings for state personal income growth (stronger positive effect in aligned states) and state debt (negative effect in aligned states and positive effect in unaligned states) persist even when we control directly for the fact that aligned states on average benefit from a stronger increase in federal grants in the two years prior to the presidential elections (the same holds when using the one-year growth in federal-level grants, details upon request). Moreover, looking at the ‘full sample’ results in column (1), the growth of federal-level grants appears to have a statistically significant *negative* effect on the incumbent president’s election results. If increases in federal grants are used as a vote-buying strategy by the incumbent president, this appears to be failing. One possible explanation for this counter-intuitive finding is suggested in columns (2) and (3). Here we observe that the effect of the growth of federal grants is weakly positive in aligned states, but significantly negative in unaligned states, with the difference between both effects being statistically significant at conventional levels ($\text{Chi}^2=7.88$, $p<0.01$). Within our theoretical framework, exactly such differentiated effects would arise when state governors are able to capture most of the political esteem from the increase in federal-level grants (e.g., by claiming credit for improved public provisions but suppressing that federal grants made them possible). Indeed, as such ‘capture’ implies that w_n declines, the growth in federal grants will mainly have an indirect effect on presidential election outcomes (i.e., through the partisan link with the governor). This indirect effect will be positive in aligned states and negative in unaligned states. The reason is that the credit awarded to the governor will rub off on the incumbent candidate in the presidential race in aligned states, but will benefit the opposition candidate in unaligned states.

CONCLUSION

When governing power is shared between a national- and lower-level of government, accountability has been argued to decline as only overall public policy outcomes are observed (Anderson, 2006, 2008, 2009; Joanis, 2009a, b). In this paper, we argue that voters can obtain additional information about politicians through their party-political attachments because politicians’ party membership provides cues about their characteristics and likely behaviour once elected (Jones and Hudson, 1998; Caillaud and Tirole, 2002; Snyder and Ting, 2002, 2003; Geys and Vermeir, 2008a). As a result, we show that the performance of incumbents at sub-national levels of government can help voters evaluate the national incumbent. This would evidently alleviate the above-mentioned incomplete information issues and weaken adverse selection problems under multilevel governance structures. Though not explicitly addressed in this article, the same line of argument likewise suggests that the performance of incumbents at the federal government level may assist voters in judging local-level politicians.

since it would bias our estimates ‘downward’: i.e., it would induce a negative relation between popularity and growth and a positive one between popularity and debt in aligned states (and vice versa).

Evidence from presidential election results across all 50 US states over the period 1972-2008 is supportive of our theoretical predictions. Specifically, we find that state-level public performance influences presidential election outcomes *even* for policy areas where national-level candidates can be expected to have very little influence (e.g., state-level debt). Moreover, and crucially, such effects depend on the presence/absence of a partisan affiliation between the state governor and the US president. For instance, state-level debt has a statistically significant *negative* effect in states where the governor belongs to the same party as the US president (as a result of party cues ‘bad’ local performance here reflects badly on an incumbent president from the same party) and a statistically significant *positive* effect in states run by governors associated with the national-level opposition party (as ‘bad’ local performance now hurts the presidential opposition candidate). This is important for our theoretical argument since no such difference would be expected when local conditions *as such* guide voters’ behaviour; that is, a given economic outcome would then induce the same response in voters regardless of the party responsible for it. These findings are not driven by potential self-selection of states into either subsample resulting from gubernatorial changes, nor from the substantial re-direction of federal-level government grants to aligned lower-level governments. In fact, the growth of federal-level government grants has a similar differentiated effect on presidential election outcomes across aligned and unaligned states, which can be credibly explained within the confines of our theoretical argument. Taken together, politicians’ membership of a political party provides an important mechanism (i.e., party cues) to alleviate voters’ incomplete information about national politicians under multilevel governance.

Nonetheless, the availability of party cues in a federal setting may also have an important drawback, since they can lead to a reduction in politicians’ effort under certain conditions. Particularly, they may cause the national incumbent to exert zero effort when the national and regional incumbents are unaligned. Since a similar prediction does not materialize when politicians across government levels are aligned, this suggests a rationale for forming “similar coalition governments in the federal and regional arenas” (Swenden, 2002, 80). Such aligned or ‘congruent’ governments have been a frequent feature of Belgian politics since the direct election of regional parliaments in the mid-1990s, but appear unusual outside the Belgian system (Swenden, 2002). Our analysis indicates, however, that such congruence across government levels can have clear benefits in terms of the incentives of politicians.

Although our analysis using the US political system provides substantial supportive evidence regarding the predictions of our model, and illustrates that party cues are an important dimension in elections in a multilevel governance context, more work is clearly required. Further research should, for instance, verify the existence of similar party cue effects in political contexts with more than two parties – taking into account potential difficulties posed in such settings by coalition governments. The German institutional setting appears a fruitful testing-ground for such extension. Given the close mapping of the Flemish and Walloon party systems at different levels of government, the Belgian setting provides similar benefits (though here, of course, additional institutional complexity should be accounted for). Also, our empirical analysis only establishes that state-level economic outcomes can influence presidential election results even for policy fields where the president arguably has little (to no) influence. Future research should address the reverse prediction that voters might well react at the state level to federal-level outcomes over which state-level politicians have little (or no) influence. Preliminary, though suggestive, evidence in this direction using Canadian data is provided in Gélinau and Bélanger (2005). They indeed show that provincial incumbents in Canada are “punished for national economic deterioration *when the incumbent*

federal party is of the same partisan family” (Gélineau and Bélanger, 2005, 407, italics added), whereas no similar effect arises in provinces controlled by a national opposition party. While the authors argue that such “provincial voting patterns reflect a referendum on the federal incumbent” (Gélineau and Bélanger, 2005, 421), a model based on party cues could provide an alternative, micro-economic foundation for such an observation. Finally, our argument implies that the assessment of incumbents at sub-national levels of governments influences the assessment of candidates of the same party at the federal level. One important avenue for future work would be to exploit individual-level data to more directly test this proposition.

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Table 1: Regression results using all observations

| <i>Variable</i> | (1) <i>Full sample</i> | (2) <i>'same party'</i> | (3) <i>'different party'</i> | (4) <i>Full sample</i> | (5) <i>'same party'</i> | (6) <i>'different party'</i> |
|---|---------------------------|----------------------------|---------------------------------|---------------------------|----------------------------|---------------------------------|
| Intercept | 49.365 *** (6.99) | 42.456 *** (4.14) | 38.710 *** (3.36) | 53.164 *** (7.85) | 66.306 *** (5.33) | 32.612 ** (2.65) |
| Pers. Inc. Growth (2-year growth rate) | 0.738 ** (2.14) | 1.419 ** (2.42) | 0.460 (1.50) | 0.727 ** (2.12) | 1.289 ** (2.01) | 0.550 * (1.78) |
| State debt (in election quarter) | - | - | - | 0.001 * (1.81) | -0.002 ** (-2.55) | 0.003 ** (2.47) |
| Voter turnout | -0.068 (-0.68) | 0.043 (0.28) | 0.108 (0.59) | -0.146 (-1.28) | -0.230 (-1.08) | 0.207 (0.92) |
| Home IPC | 2.439 (1.30) | 2.065 (0.97) | 3.833 (1.52) | 2.685 (1.08) | 4.171 (1.54) | 5.030 * (1.97) |
| Home RPC | -9.289 *** (-4.63) | -3.392 (-1.41) | -11.776 *** (-9.33) | -9.451 *** (-4.23) | -0.846 (-0.36) | -11.809 *** (-6.30) |
| Incumbent | 14.960 *** (12.59) | 12.382 *** (5.60) | 20.471 *** (7.35) | 14.311 *** (6.95) | 5.146 *** (2.92) | 18.099 *** (7.93) |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| (same=diff)_growth (same=diff)_debt | | 3.03 * - | | | 1.61 17.50 *** | |
| Number obs. | 500 | 210 | 290 | 450 | 188 | 262 |
| R ² overall | 0.407 | 0.321 | 0.430 | 0.396 | 0.324 | 0.287 |

Note: Dependent variable is vote share of national incumbent party candidate. The t-values between brackets are based on heteroscedasticity-consistent standard errors; *** significant at 1%, ** at 5% and * at 10%. 'Same=diff' exploits a Wald-type test to evaluate whether the coefficient estimates of Pers. Inc. Growth (growth) and State debt (debt) are statistically distinguishable from each other across both sub-samples (the test statistic has a Chi² distribution and should be evaluated under 1 degree of freedom).

Table 2: Regression results controlling for ‘endogenous’ gubernatorial elections

| Variable | <i>Unchanged state-level incumbent</i> | | | | <i>Changed state-level incumbent</i> | | | |
|---|--|--------------------------|----------------------|--------------------------|--------------------------------------|--------------------------|---------------------|--------------------------|
| | (1) ‘same party’ | (2) ‘different party’ | (3) ‘same party’ | (4) ‘different party’ | (5) ‘same party’ | (6) ‘different party’ | (7) ‘same party’ | (8) ‘different party’ |
| Intercept | 34.578 (1.62) | 55.422 *** (3.26) | 51.988 ** (2.02) | 31.138 * (1.88) | 54.130 *** (4.69) | -21.040 (-0.74) | 29.360 (1.10) | -14.939 (-0.57) |
| Pers. Inc. Growth (2-year growth rate) | 0.678 (1.19) | -0.051 (-0.15) | 0.648 (0.95) | 0.031 (0.08) | 2.086 * (1.72) | 1.253 (1.64) | 1.835 * (1.85) | 1.578 * (1.90) |
| State debt (in election quarter) | - | - | -0.003 ** (-2.30) | 0.005 *** (3.78) | - | - | -0.002 (-0.98) | 0.000 (0.31) |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| (same=diff)_growth | 1.52 | | 0.82 | | 0.76 | | 0.09 | |
| (same=diff)_debt | - | | 26.41 *** | | - | | 1.29 | |
| Number obs. | 132 | 171 | 113 | 152 | 74 | 108 | 71 | 99 |
| R ² overall | 0.184 | 0.450 | 0.201 | 0.215 | 0.386 | 0.201 | 0.348 | 0.240 |

Note: Dependent variable is vote share of national incumbent party candidate. The t-values between brackets are based on heteroscedasticity-consistent standard errors; *** significant at 1%, ** at 5% and * at 10%. ‘Same=diff’ exploits a Wald-type test to evaluate whether the coefficient estimates of Pers. Inc. Growth (growth) and State debt (debt) are statistically distinguishable from each other (the test statistic has a Chi² distribution and should be evaluated under 1 degree of freedom. Full set of controls as in Table 1 is included in all regressions.

Table 3: Regression results using states with ‘close’ gubernatorial elections

| <i>Variable</i> | <i>Margin < 5%</i> | | <i>Margin < 3%</i> | |
|---|----------------------------|---------------------------------|----------------------------|---------------------------------|
| | (1) <i>‘same party’</i> | (2) <i>‘different party’</i> | (3) <i>‘same party’</i> | (4) <i>‘different party’</i> |
| Intercept | 51.151 *** (4.39) | 44.194 * (1.76) | 33.265 (0.82) | 41.802 (1.62) |
| Pers. Inc. Growth (2-year growth rate) | 1.048 (1.38) | -1.989 (-1.43) | 0.865 (0.59) | -4.775 *** (-3.68) |
| State debt (in election quarter) | -0.009 *** (-2.94) | 0.006 *** (2.09) | -0.007 *** (-2.78) | 0.006 ** (2.44) |
| Year fixed effects | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes |
| (same=diff)_growth | 8.60 *** | | 18.28 *** | |
| (same=diff)_debt | 31.22 *** | | 28.50 *** | |
| Number obs. | 81 | 82 | 55 | 41 |
| R ² overall | 0.435 | 0.227 | 0.392 | 0.037 |

Note: Dependent variable is vote share of national incumbent party candidate. The t-values between brackets are based on heteroscedasticity-consistent standard errors; *** significant at 1%, ** at 5% and * at 10%. ‘Same=diff’ exploits a Wald-type test to evaluate whether the coefficient estimates of Pers. Inc. Growth (growth) and State debt (debt) are statistically distinguishable from each other across both sub-samples (the test statistic has a Chi² distribution and should be evaluated under 1 degree of freedom). Full set of controls as in Table 1 is included in all regressions.

Table 4: Regression results controlling for growth in federal-level grants

| <i>Variable</i> | <i>(1)</i> <i>Full sample</i> | <i>(2)</i> <i>'same party'</i> | <i>(3)</i> <i>'different party'</i> |
|--|----------------------------------|--|--|
| Intercept | 54.526 *** (8.18) | 59.472 *** (4.45) | 37.006 *** (3.06) |
| Pers. Inc. Growth (2-year growth rate) | 0.700 ** (2.07) | 1.338 ** (2.04) | 0.540 * (1.65) |
| State debt (in election quarter) | 0.001 * (1.72) | -0.002 *** (-2.79) | 0.003 *** (2.75) |
| Federal grants (2-year growth rate) | -0.076 * (-1.86) | 0.043 (1.52) | -0.121 ** (-2.07) |
| Year fixed effects | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes |
| (same=diff)_growth (same=diff)_debt (same=diff)_grants | | 1.82 [p=0.17] 19.01 *** 7.88 *** | |
| Number obs. | 450 | 188 | 262 |
| R ² overall | 0.398 | 0.321 | 0.302 |

Note: Dependent variable is vote share of national incumbent party candidate. The t-values between brackets are based on heteroscedasticity-consistent standard errors; *** significant at 1%, ** at 5% and * at 10%. 'Same=diff' exploits a Wald-type test to evaluate whether the coefficient estimates of Pers. Inc. Growth (growth), State debt (debt) and federal-level grants (grants) are statistically distinguishable from each other across both sub-samples (the test statistic has a Chi² distribution and should be evaluated under 1 degree of freedom). Full set of controls as in Table 1 is included in all regressions.

Appendix A: Partisan alignment US Governors and US Presidents (1972-2008)

Table A1: Partisan alignment (1972-2008)

| <i>Years</i> | <i>Aligned US States</i> |
|--------------|---|
| 1972 | AZ, CA, CO, CT, DE, IL, IN, IA, MA, MI, NH, NJ, NY, OR, TN, VT, VA, WA, WV, WY. |
| 1976 | AK, IN, IA, KS, MI, MO, NH, NC, OH, SC, VA, WA, WV. |
| 1980 | AZ, AR, CA, CO, CT, FL, GA, HI, ID, KS, KY, ME, MD, MA, MS, MO, MT, NH, NJ, NM, NY, NC, ND, OK, RI, SC, UT, WA, WV, WY. |
| 1984 | CA, DE, IL, IN, IA, MO, NH, NJ, ND, OR, PA, SD, TN, VT, WA. |
| 1988 | AL, CA, DE, FL, IL, IN, IA, KS, ME, MO, NE, NH, NJ, NM, NC, OK, RI, SC, SD, TX, UT, VT, WV, WI. |
| 1992 | AL, AZ, CA, IL, IA, KS, LA, ME, MA, MI, MN, MS, MO, MT, NH, NC, ND, OH, SC, SD, UT, WI. |
| 1996 | AL, AK, CO, DE, FL, GA, HI, IN, KY, MD, MO, NE, NV, NC, OR, VT, WA, WV. |
| 2000 | AL, AK, CA, DE, GA, HI, IN, IA, KY, MD, MS, MO, NH, NC, OR, SC, VT, WA. |
| 2004 | AL, AK, AR, CA, CO, CT, FL, GA, HI, ID, KY, MD, MA, MN, MS, MT, NE, NV, NH, NY, ND, OH, RI, SC, SD, TX, UT, VT. |
| 2008 | AL, AK, CA, CT, FL, GA, HI, ID, IN, LA, MN, MS, MO, NE, NV, ND, RI, SC, SD, TX, UT, VT. |

Appendix B: Proofs of Propositions 4 and 5

Proof of Propositions 4a and 4b:

To prove Proposition 4a, it suffices to show that $\beta_a > \beta_u$ when $w_n < 1$. We can write this inequality as:

$$\frac{w_n + (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta} > \frac{w_n - (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2} \quad (15)$$

Rearranging terms and simplifying leads to:

$$2(1 - w_n)\eta[(1 - w_n) + w_n\eta] > 0 \quad (16)$$

Given that w_n and η are constrained to lie between 0 and 1, inequality (16) always holds.

To prove Proposition 4b, we distinguish the two cases. The first case is when $w_n < \frac{\eta}{1 + \eta}$. In that case, an unaligned incumbent exerts no effort, while an aligned incumbent always exerts non-zero effort (see Proposition 3b).

For the other case, i.e., $1 > w_n > \frac{\eta}{1 + \eta}$, we have to show that:

$$\frac{w_n(w_n + (1 - w_n))\eta}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta} > \frac{w_n(w_n - (1 - w_n))\eta}{w_n^2 + (1 - w_n)^2} \sqrt{2\pi \left(\frac{(w_n + (1 - w_n)\eta)^2}{(w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta)} \sigma_q^2 + \sigma_{ai}^2 \right)}$$

Taking squares to remove the square root and rewriting, this implies that:

$$\sigma_q^2 < \frac{\sigma_{ai}^2}{2w_n(1 - w_n)\eta} \left(\frac{(w_n^2 + (1 - w_n)^2)^2}{((w_n - (1 - w_n))\eta)^2} - \frac{(w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta)^2}{((w_n + (1 - w_n))\eta)^2} \right)$$

Note that the right hand side of the equation is always positive when $w_n > \frac{\eta}{1 + \eta}$ (which is here assumed to be the case). Using Equations (12) and (13), we can further rewrite the inequality as:

$$2w_n(1 - w_n)\eta\sigma_q^2 < \sigma_{ai}^2 \left(\frac{1}{\beta_u^2} - \frac{1}{\beta_a^2} \right)$$

This shows that the effect of the variance in the left-hand side of the voting rule (equation 5), which reduces effort in the aligned case, has to be smaller than the positive effect through the larger β . ■

Proof of Propositions 5a and 5b:

To prove Proposition 5a, we have to prove that $\beta_a > \beta_n$ and $\beta_u < \beta_n$. This can easily be shown to be the case by comparing equations (12), (13) and (14).

To prove Proposition 5b, we know that for effort to be greater in the aligned case, we must have that:

$$\frac{w_n(w_n + (1 - w_n))\eta}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta} \sqrt{2\pi \left(\frac{(w_n + (1 - w_n))\eta^2}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta} \sigma_q^2 + \sigma_{ai}^2 \right)} >$$

$$\frac{w_n}{w_n^2 + (1 - w_n)^2} \sqrt{2\pi \left(\frac{w_n^2}{w_n^2 + (1 - w_n)^2} \sigma_q^2 + \sigma_{ai}^2 \right)}$$

Taking squares to remove the square root and rewriting, this implies that:

$$\sigma_q^2 < \frac{\sigma_{ai}^2}{2w_n(1 - w_n)\eta} \left(\frac{(w_n^2 + (1 - w_n)^2)^2}{(w_n)^2} - \frac{(w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta)^2}{((w_n + (1 - w_n))\eta)^2} \right)$$

Again, the inequality can also be written as:

$$2w_n(1 - w_n)\eta\sigma_q^2 < \sigma_{ai}^2 \left(\frac{1}{\beta_n^2} - \frac{1}{\beta_a^2} \right)$$

Note that the right hand side of the equation should be positive, as σ_q^2 is always positive. This can be shown to be the case if $w_n < \frac{1}{2}$. So for effort to be greater with party cues in the aligned case, the weight of the national incumbent in public output creation should be less than one half.

To prove that party cues reduce effort in the unaligned case, we need to prove that:

$$\frac{w_n(w_n - (1 - w_n))\eta}{w_n^2 + (1 - w_n)^2} \sqrt{2\pi \left(\frac{(w_n - (1 - w_n))\eta^2}{(w_n^2 + (1 - w_n)^2)} \sigma_q^2 + \sigma_{ai}^2 \right)} < \frac{w_n}{w_n^2 + (1 - w_n)^2} \sqrt{2\pi \left(\frac{w_n^2}{w_n^2 + (1 - w_n)^2} \sigma_q^2 + \sigma_{ai}^2 \right)}$$

This can be simplified to:

$$w_n^2 > w_n^2 + w_n^2(1 - w_n)^2\eta^2 - 2w_n(1 - w_n)\eta$$

or $w_n(1 - w_n)\eta < 2$. This is always true since $0 < w_n < 1$ and $0 < \eta < 1$. ■

Appendix C: Results from various robustness checks - - NOT FOR PUBLICATION

Table C1: Comparison of average state characteristics by partisan alignment of states

| | Pers. Inc. Growth | GDP Growth | Debt | Turnout | Deficit | Tax revenues | Own revenues | Federal grants | Oil producer | Population size (Mio) | Share 5-17 years | Share >65 years | Term Limit |
|----------------------------|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|-----------------------|------------------|-----------------|---------------|
| Aligned | 2.280 | 3.776 | 1459.308 | 55.818 | 253.925 | 1184.700 | 2114.471 | 623.779 | 0.160 | 5.136 | 0.205 | 0.118 | 0.604 |
| Unaligned | 2.291 | 3.670 | 1496.084 | 55.097 | 293.168 | 1258.422 | 2232.137 | 636.869 | 0.196 | 4.931 | 0.208 | 0.118 | 0.626 |
| Aligned = Unaligned | p=0.94 | p=0.71 | p=0.77 | p=0.30 | p=0.35 | p=0.15 | p=0.37 | p=0.68 | p=0.19 | p=0.71 | p=0.37 | p=0.85 | p=0.66 |

Table C2: Alternative timing state-level personal income growth

| <i>Variable</i> | <i>(A1)</i> <i>Full sample</i> | <i>(A2)</i> <i>'same party'</i> | <i>(A3)</i> <i>'different party'</i> | <i>(A4)</i> <i>Full sample</i> | <i>(A5)</i> <i>'same party'</i> | <i>(A6)</i> <i>'different party'</i> | <i>(A7)</i> <i>Full sample</i> | <i>(A8)</i> <i>'same party'</i> | <i>(A9)</i> <i>'different party'</i> |
|---|-----------------------------------|------------------------------------|---|-----------------------------------|------------------------------------|---|-----------------------------------|------------------------------------|---|
| Intercept | 51.113 *** (7.40) | 45.371 *** (4.57) | 40.087*** (3.45) | 49.903 *** (7.50) | 40.929 *** (4.57) | 40.184 *** (3.73) | 49.262 *** (7.85) | 40.096 *** (3.83) | 39.476 *** (3.72) |
| Pers. Inc. Growth (1-year growth rate) | 0.384 (1.45) | 0.927 * (1.85) | 0.247 (0.94) | - | - | - | - | - | - |
| Pers. Inc. Growth (3-year growth rate) | - | - | - | 0.641 ** (2.03) | 1.333 ** (2.21) | 0.246 (0.55) | - | - | - |
| Pers. Inc. Growth (4-year growth rate) | - | - | - | - | - | - | 0.835 ** (2.04) | 1.705 ** (2.66) | 0.440 (0.69) |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| (same=diff)_growth | | 1.49 | | | 2.93 * | | | 2.96 * | |
| Number obs. | 500 | 210 | 290 | 500 | 210 | 290 | 500 | 210 | 290 |
| R ² overall | 0.400 | 0.308 | 0.431 | 0.407 | 0.309 | 0.433 | 0.417 | 0.322 | 0.437 |

Note: Dependent variable is vote share of national incumbent party candidate. The t-values between brackets are based on heteroscedasticity-consistent standard errors; *** significant at 1%, ** at 5% and * at 10%. 'Same=diff' exploits a Wald-type test to evaluate whether the coefficient estimates of Pers. Inc. Growth (growth) are statistically distinguishable from each other across both sub-samples (the test statistic has a Chi² distribution and should be evaluated under 1 degree of freedom). Full set of controls as in Table 1 is included in all regressions.

Table C3: Alternative economic variables

| <i>Variable</i> | <i>(A10)</i> <i>Full sample</i> | <i>(A11)</i> <i>'same party'</i> | <i>(A12)</i> <i>'different party'</i> | <i>(A13)</i> <i>Full sample</i> | <i>(A14)</i> <i>'same party'</i> | <i>(A15)</i> <i>'different party'</i> |
|--|------------------------------------|-------------------------------------|--|------------------------------------|-------------------------------------|--|
| Intercept | 62.019 *** (13.31) | 53.727 *** (4.90) | 48.649 *** (4.67) | 39.141 *** (3.92) | 49.406 *** (4.01) | 34.543 ** (2.55) |
| State GDP Growth (2-year growth rate) | 0.164 (0.91) | 0.714 * (1.97) | 0.082 (0.52) | - | - | - |
| Unemployment level | - | - | - | -0.182 (-0.66) | -0.945 * (-1.70) | -0.141 (-0.35) |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| (same=diff)_GDP (same=diff)_unemp | | 4.04 ** - | | | - 1.99 [p=0.16] | |
| Number obs. | 500 | 188 | 290 | 450 | 188 | 262 |
| R ² overall | 0.410 | 0.290 | 0.455 | 0.267 | 0.210 | 0.295 |

Note: Dependent variable is vote share of national incumbent party candidate. The t-values between brackets are based on heteroscedasticity-consistent standard errors; *** significant at 1%, ** at 5% and * at 10%. 'Same=diff' exploits a Wald-type test to evaluate whether the coefficient estimates of State GDP Growth (GDP) and State unemployment (unemp) are statistically distinguishable from each other across both sub-samples (the test statistic has a Chi² distribution and should be evaluated under 1 degree of freedom). Full set of controls as in Table 1 is included in all regressions.

Table C4: Alternative definition of dependent variable and additional controls

| <i>Variable</i> | <i>(A16)</i> <i>Full sample</i> | <i>(A17)</i> <i>'same party'</i> | <i>(A18)</i> <i>'different party'</i> | <i>(A19)</i> <i>Full sample</i> | <i>(A20)</i> <i>'same party'</i> | <i>(A21)</i> <i>'different party'</i> | <i>(A22)</i> <i>Full sample</i> | <i>(A23)</i> <i>'same party'</i> | <i>(A24)</i> <i>'different party'</i> |
|---|------------------------------------|-------------------------------------|--|------------------------------------|-------------------------------------|--|------------------------------------|-------------------------------------|--|
| Intercept | 51.691 *** (8.00) | 60.306 *** (4.70) | 33.252 *** (3.10) | 69.326 *** (8.79) | 88.688 *** (7.35) | 33.447 ** (2.48) | 49.399 *** (7.53) | 58.391 *** (4.67) | 29.578 *** (2.67) |
| Lagged presidential vote | - | - | - | -0.156 *** (-5.18) | -0.417 *** (-5.09) | -0.012 (-0.18) | - | - | - |
| Federal GDP growth (2-year growth rate) | - | - | - | - | - | - | 0.651 *** (4.43) | 0.544 *** (2.79) | 1.043 *** (3.98) |
| Pers. Inc. Growth (2-year growth rate) | 0.613 * (1.94) | 1.087 * (1.77) | 0.474 (1.56) | 0.741 ** (2.05) | 1.459 ** (2.14) | 0.552 * (1.75) | 0.613 * (1.94) | 1.087 * (1.77) | 0.474 (1.56) |
| State debt (in election quarter) | 0.001 * (1.67) | -0.002 ** (-2.20) | 0.003 ** (2.36) | 0.002 ** (2.30) | -0.001 ** (-2.01) | 0.003 ** (2.55) | 0.001 * (1.67) | -0.002 ** (-2.20) | 0.003 ** (2.36) |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| (same=diff)_growth (same=diff)_debt | | 1.23 16.22 *** | | | 2.26 [p=0.13] 15.54 *** | | | 1.23 16.22 *** | |
| Number obs. | 450 | 188 | 262 | 450 | 188 | 262 | 450 | 188 | 262 |
| R ² overall | 0.554 | 0.533 | 0.412 | 0.394 | 0.475 | 0.286 | 0.554 | 0.533 | 0.412 |

Note: Dependent variable is vote share of national incumbent party candidate (defined over all votes cast in columns A7-A9 and over the two-party vote in all remaining columns). The t-values between brackets are based on heteroscedasticity-consistent standard errors; *** significant at 1%, ** at 5% and * at 10%. 'Same=diff' exploits a Wald-type test to evaluate whether the coefficient estimates of Pers. Inc. Growth (growth) and State debt (debt) are statistically distinguishable from each other across both sub-samples (the test statistic has a Chi² distribution and should be evaluated under 1 degree of freedom). Full set of controls as in Table 1 is included in all regressions.

Table C5: Alternative definition of partisan alignment (using governorship *and* legislature)

| <i>Variable</i> | (A25) 'same party' | (A26) 'different party' | (A27) 'same party' | (A28) 'different party' |
|---|--------------------------|-------------------------------|--------------------------|-------------------------------|
| Intercept | 69.904 *** (4.53) | 49.337 *** (6.82) | 71.894 *** (5.22) | 48.763 *** (6.65) |
| Pers. Inc. Growth (2-year growth rate) | 0.808 (1.11) | 0.738 ** (2.18) | 0.790 (1.15) | 0.743 ** (2.17) |
| State debt (in election quarter) | -0.001 (-1.45) | 0.002 *** (2.41) | -0.001 (-1.45) | 0.002 *** (2.49) |
| Year fixed effects | Yes | Yes | Yes | Yes |
| State fixed effects | Yes | Yes | Yes | Yes |
| (same=diff)_growth (same=diff)_debt | 0.02 12.65 *** | | 0.01 13.37 *** | |
| Number obs. R ² overall | 66 0.354 | 384 0.358 | 75 0.363 | 375 0.351 |

Note: Dependent variable is vote share of national incumbent party candidate. The t-values between brackets are based on heteroscedasticity-consistent standard errors; *** significant at 1%, ** at 5% and * at 10%. 'Same=diff' exploits a Wald-type test to evaluate whether the coefficient estimates of Pers. Inc. Growth (growth) are statistically distinguishable from each other across both sub-samples (the test statistic has a Chi² distribution and should be evaluated under 1 degree of freedom). Full set of controls as in Table 1 is included in all regressions. Same/different party in Columns A25 and A26 based on governor, state House and Senate being (un)aligned with US President. Same/different party in Columns A27 and A28 based on US President being (un)aligned with state governor and one chamber of the state legislature while the other chamber is split evenly.

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