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This is the authors' accepted, refereed and final manuscript to the article published in

Journal of the European Economic Association,
12(2014)4: 1029-1058

DOI: 10.1111/jeea.12081

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Publisher's version available at <http://dx.doi.org/10.1111/jeea.12081>

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

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Acknowledgements:

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“Jobs in general ought not to be an insuperable problem for Mr. Obama in Ohio: the unemployment rate, at 7%, is nearly a point below the national average (...). Mr. Obama, though, has to share some of the credit for Ohio’s solid recovery with John Kasich, the hyper-energetic Republican governor (...). That makes it hard for independent voters to know whom to praise and whom to blame.”

The Economist, 27 October 2012, p. 39.

1. INTRODUCTION

A key feature of federal government structures is that authority over many competences – e.g., unemployment, education, crime, or infrastructure – is distributed across different levels of government (Jametti and Joanis, 2009; Widmer and Zweifel, 2012). Nevertheless, a country’s laws rarely provide a clear delineation of 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. As a result, it often becomes hard for voters to understand whether the national *or* local incumbent is responsible for policy outcomes. Both mass media (see citation from *The Economist* above) and academics (Anderson, 2006, 2008; Joanis, 2009, forthcoming) therefore have argued that multilevel governance structures decrease the clarity of governments’ responsibility, and political accountability.

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 the fact 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; 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, 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 appropriate recipe, but do not a priori know which policy – and party – will be more successful as this might depend on the context.

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

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).

work both horizontally (i.e., relative to politicians of the same party in neighboring jurisdictions) or vertically (i.e., at different levels of government). Indeed, 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 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 can judge the national incumbent by taking into account her partisan attachment and that of the regional incumbent. Our central argument is that such (vertical) party cues can help voters in their assessment of candidates based on observed economic outcomes in elections under multilevel institutional settings.

Our theoretical model first of all shows that when a 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 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 suggest that regional public output affects the national incumbent’s election result differently in aligned versus unaligned

regions. This is confirmed using state-level data from ten US presidential elections between 1972 and 2008. Nevertheless, while increasing the information content of public policy outcomes, the availability of party cues is not a uniquely positive force. We indeed show that they may cause the national incumbent to exert zero effort when the incumbents at various government levels are unaligned. 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), Myerson (2006) and Joanis (2009, forthcoming) 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.

2. 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 federal government structure with one national government and M 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 $C_n = \sum_{i=1}^M C(e_{ni})$. Both effort (e) and quality (q) are unobservable to voters. We can then write public output in each jurisdiction i ($=1, \dots, M$) as:

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

² We assume that the party systems at the federal and sub-national level are completely analogous. While full analogy rarely occurs in reality, extensive overlap in the party systems at various levels of government exists, for instance, in the US, Germany and Belgium (within both parts of the country), though only to a lesser extent in, say, Canada or Spain.

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 $0 \leq w_n \leq 1$ (Solé-Ollé and Sorribas-Navarro, 2008). This weight captures the effect of asymmetric federal designs where different levels of government bear responsibility for a given policy area to varying degrees. In line with the observation that most federal systems are characterised by symmetric sub-national competences (e.g., Belgium, Germany, Spain, US), we here assume that w_n is the same for all jurisdictions. Note, however, that our results remain valid if we allow for asymmetries as long as $w_n > 0$ for all jurisdictions. 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.^{4,5} For ease of reference, we encapsulate this in the following definition.

³ This simple representation of public output is open to various extensions such as the introduction of cost shocks, a fixed tax burden related to public output, or multiple policy variables. We abstain from such extensions and analyse the most basic set-up to illustrate the effect of politicians’ intra-party similarity.

⁴ 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.

Definition 1

Party cues exist when the intra-party correlation in policy quality (η) is strictly larger than 0.

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.⁶ 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 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.

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

⁵ 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. We instead look at how policy outcomes across (un)aligned governments affect election results. However, the biggest theoretical difference lies in the fact that Solé-Ollé and Sorribas-Navarro (2008) treat parties as monolithic actors. Our theoretical model refines this assumption via the concept of party cues.

⁶ 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 also in neighboring jurisdictions (as long as they cannot observe output in *all* jurisdictions).

the highest expected q in the first-period elections. They 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:

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

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 .⁷ 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 quality 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

⁷ 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.

well as the national opposition candidate's policy quality and public output (i.e., q_o and x_i) 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

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

where $\beta_i = \frac{w_n + (1 - w_n)(\eta_{ni} - \eta_{oi})}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta_{ni}} \quad (5)$

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.

Assuming the national vote share is the average of the vote share in each jurisdiction (with equal weight for 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 the inequality in (5) follows a normal distribution, the incumbent's expected vote share as a function of her effort level equals:⁸

$$S_{ni}(e_{ni}) = 1 - \Phi \left[\frac{-\beta_i [w_n e_{ni} - w_n e_{ni}^f + (1-w_n)e_{ri} - (1-w_n)e_{ri}^f]}{\sqrt{\beta_i^2 (w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni})\sigma_q^2 + \sigma_{ai}^2}} \right] \quad (6)$$

Where $\Phi[.]$ represents the cumulative distribution function of the standard normal distribution. The incumbent therefore chooses effort e_{ni} in region i such as to maximize:

$$\frac{\sum_{i=1}^M S_{ni}(e_{ni})}{M} B - \sum_{i=1}^M C_{ni}(e_{ni}) \quad (7)$$

Here B stands for the net benefit linked to a higher national vote share, while M , as mentioned, is the number of regions. We implicitly assume that a higher vote share allows capturing a higher share of the benefit *even when* the incumbent fails to be re-elected. This reflects the idea that opposition leaders are often more powerful when the opposition obtains a higher vote share (Hecklo 1974; Strom 1990).

Optimal effort in region i is obtained by deriving the first-order condition, which effectively states that, in equilibrium, the marginal gain in terms of

⁸ To see this, note that the left hand side of the inequality presented in equation (5) has

mean $\beta_i [w_n e_{ni} - w_n e_{ni}^f + (1-w_n)e_{ri} - (1-w_n)e_{ri}^f]$ and variance

$[\beta_i^2 (w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta_{ni})\sigma_q^2 + \sigma_{ai}^2]$.

average vote share (and benefit) should exactly compensate the marginal cost of effort. Using that under rational expectations voters' forecasts of politicians' effort are correct in equilibrium, optimal effort can be characterized as:

$$\frac{w_n \beta_i B}{M \sqrt{2\pi(\beta_i^2 (w_n^2 + (1-w_n)^2) + 2w_n(1-w_n)\eta_{ni})\sigma_q^2 + \sigma_{ai}^2}} = C'(e_{ni}) \quad (8)$$

From equation (8), it can be shown that effort of the national incumbent is higher when β_i and benefits B are larger. However, effort decreases with the variance of the left-hand side of the voting rule in equation (5). Note also that as β_i can become negative, a corner solution in which effort is zero may arise (we return to this below).

Equations (5) and (8) provide the basic ingredients for analysing the effect of party cues (η) in elections under multilevel governance. To do so, 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 (5), we find for the case of *aligned* incumbents that:

$$\beta = \beta_a = \frac{w_n + (1-w_n)\eta}{w_n^2 + (1-w_n)^2 + 2w_n(1-w_n)\eta} \quad (9)$$

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

$$\beta = \beta_u = \frac{w_n - (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2} \quad (10)$$

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

$$\beta = \beta_n = \frac{w_n}{w_n^2 + (1 - w_n)^2} \quad (11)$$

A first set of key results concerns the effects of regional public output on the national incumbent's election result. It is easy to see that equations (9), (10) and (11) all converge to one when the weight of the national incumbent on public output (w_n) tends to one, but converge to different values when w_n goes to zero. Indeed, equation (9) converges to η , equation (10) converges to $-\eta$, and equation (11) to zero. 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 no influence on this output (i.e. $w_n=0$) – provided that the 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 $w_n=0$) 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, voters in a federal system can still infer something about her via the indirect information contained in party cues.

Proposition 1

When party cues exist as defined under Definition 1, even when the national incumbent has no influence on regional policy outcomes ($w_n=0$), public output can still affect the election result of the national incumbent.

Secondly, for $w_n < 1$, it always holds that the impact of output on the election results of the national incumbent is greater in the aligned compared to unaligned case: $\beta_a > \beta_u$. 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, attribution of public output to the regional incumbent will reflect favourably on the national opposition candidate (through these politicians' partisan connection). Moreover, when $w_n < \eta/(1+\eta)$, the effect of regional public output on the national incumbent becomes negative in the unaligned case. In other words, 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.

Proposition 2

When the national incumbent is not fully responsible for regional output ($w_n < 1$), the effect of regional public output on the national incumbent's vote share is greater when the national and regional incumbent are aligned, compared to when they are unaligned ($\beta_a > \beta_u$). In the unaligned case, the effect of public output on the national incumbent's election result becomes negative when $w_n < \eta/(1+\eta)$.

Proof:

Using equations (9) and (10), $\beta_a > \beta_u$ implies that:

$$2(1 - w_n)\eta[(1 - w_n) + w_n\eta] > 0 \quad (12)$$

Given that w_n and η are constrained to lie between 0 and 1, equality (12) always holds when $w_n < 1$.

To prove that the impact on the vote share can become negative in the unaligned case, it suffices to state that

$$\beta_u = \frac{w_n - (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2} < 0 \text{ when } w_n - (1 - w_n)\eta < 0, \text{ or } w_n < \eta/(1 + \eta). \quad \blacksquare$$

While these ‘positive’ implications of our theoretical model will be tested empirically below, a second set of key findings is of a more normative nature. The first of these is that party cues generally decrease voters’ uncertainty regarding their vote choice. To see this, remember that individuals’ vote choice is determined by the difference in the (expected) quality between the national incumbent and opposition candidate. It can be shown, however, that party cues tend to reduce the variance, conditional on observed output, of the difference in quality between national incumbent and opposition candidate (which reflects voters’ uncertainty on the difference in quality). This is always true in the aligned case but only materializes in the unaligned case whenever $w_n < \eta/(2 + \eta)$ (for details and proof, see Lemma 1 in the appendix). The second normative implication of our model concerns the incentives for the

national (and regional) incumbent to exert effort.⁹ Using the fact that $C(e)$ is increasing and strictly convex, we can indeed exploit equation (8) to compare the optimal effort choices under various settings. This provides two insights. First, the national incumbent always exerts more effort in a unitary compared to a federal context. The intuition is that the impact of effort is weighted by a factor $w_n \leq 1$ in a federal setting whereas effort counts fully in a unitary setting (since $w_n = 1$). Furthermore, the impact of public output on the national incumbent's vote share (β) tends to be lower in a federal compared to a unitary context. This is always true when $w_n < 1/2$, and holds more generally when the national and regional incumbents are unaligned (details and proof provided in Lemma 2 in the appendix).

Secondly, *within* a federal setting, we can assess whether party cues affect the incentives for the national incumbent to exert effort. In the unaligned case, we can show that party cues always decrease the impact of public output on the national incumbent's vote share (see Lemma 3 in the appendix), which reduces her effort. In the aligned context, however, two opposing effects occur. On the one hand, party cues increase the impact of public output on the national

⁹ In the version of the model presented here, we take the behaviour of the regional politician as given (reflecting a sort of partial equilibrium analysis). Still, given that effort and quality at the regional and national level enter in the determination of public output as substitutes (see equation (1)), we verified that our key results are unaffected when both national and regional efforts are chosen optimally. Specifying the same voting rule and cost-of-effort function for national and regional politicians, this extension also shows that the impact of party cues on regional politicians' incentives to exert effort is similar to those of the national politician discussed in the main text. Even so, without specifying a particular functional form of the cost-of-effort function, the effect of party cues on the *overall* effort of both the regional and national politician cannot be unequivocally determined (full details upon request).

incumbent's vote share whenever $w_n < 1/2$ (see Lemma 3 in the appendix), which increases her effort. However, party cues also increase the denominator of the left-hand side of equation (8), which has a negative effect on effort. Therefore, in the aligned case, party cues can either increase or decrease effort depending on the relative size of the variance of q and α_i (as well as the level of w_n).

Consequently, although we saw in Proposition 2 that the impact of public output on the national incumbent's vote share is always greater in the aligned compared to the unaligned case, the same is *not* necessarily true for the level of effort exerted by the national incumbent. In particular, effort will tend to be smaller (larger) in the aligned compared to the unaligned case when σ_q^2 is larger (smaller) relative to $\sigma_{\alpha_i}^2$. Of course, effort will certainly be higher in the aligned case whenever $w_n < \eta/(1+\eta)$ since in that case effort is zero in the unaligned case (while it is always positive in the aligned case).¹⁰ We combine these insights into one single proposition related to the national incumbents' effort choice.

Proposition 3

The national incumbent exerts more effort in a unitary compared to a federal context. In the federal context,

¹⁰ This is a direct corollary from the fact that $\beta_u < 0$ when $w_n < \eta/(1+\eta)$ (see Proposition 2). A negative value of β indeed induces a corner solution to equation (8) in which $e=0$. 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.

- (i) *party cues can either increase or decrease the national incumbent's effort when the national and regional incumbents are aligned.*
- (ii) *party cues always decrease effort when the national and regional incumbents are unaligned. The national incumbent will exert zero effort in this setting when $w_n < \eta/(1 + \eta)$.*
- (iii) *the national incumbent's effort when the national and regional incumbent are aligned may exceed or fall short of the effort exerted when they are unaligned depending on w_n , η , σ_{ai}^2 and σ_q^2 .*

Proof: See Appendix.

3. EMPIRICAL ANALYSIS

3.1. EMPIRICAL MODEL

Our empirical analysis exploits data on US presidential election outcomes across all 50 US states over the period 1972-2008 to test Propositions 1 and 2. The US federal structure, its two-party system (with the same parties operating at 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 a review, see Lewis-Beck and Stegmaier, 2007), our central estimation equation takes the following form (with subscripts i and t referring to state and time respectively):

$$\text{Votes}_{i,t} = \gamma_i + \delta_1 \text{StateEcon}_{i,t} + \delta_2 \text{Controls}_{i,t} + v_t + \varepsilon_{i,t}$$

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. The central explanatory variables are captured in the vector $StateEcon_{i,t}$. 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.¹¹ 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.¹² The former is used to assesses the effect of economic conditions on election outcomes (Lewis-Beck and Stegmaier, 2007), while the latter measures the fiscal conservativeness of the US population (Peltzman, 1992; Geys and

¹¹ 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 personal income growth.

¹² 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.

Vermeir, 2008b). It is important to point out here that state-level fiscal policies in the US are usually significantly constrained by state-level fiscal rules, which have been shown to be a key determinant of state-level fiscal performance (Alt and Lowry, 1994). Consequently, state-level fiscal outcomes are more likely to be predominantly driven by state-level political decisions compared; in terms of our theoretical model, this implies that w_n is substantially smaller for state-level indebtedness than for economic growth. This difference is important as it implies that state-level fiscal outcomes should not greatly affect federal election outcomes, *except* via incumbents' party-political connections.

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; Kahane, 2009), by including two dummy variables. One (*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 (*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 (ν_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.¹³

¹³ Note that, given the definition of our dependent variable, our fixed effects effectively capture the state-specific propensity (constant over time) to vote for an

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.¹⁴ This 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 1). 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 to learn from Table 2 that

incumbent party. In the empirical analysis, as in the theoretical model, an underlying assumption here is that the state-level propensity to vote for an aligned or unaligned incumbent does not depend on the incumbents' party affiliation. Still, as there appears no clear theoretical reason to expect a difference in any particular direction, this does not appear overly constraining.

¹⁴ 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 should 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=85), our results remain qualitatively unchanged (see Table 5 below). We are grateful to an anonymous referee for this insight.

although the aligned and unaligned subsamples show some differentiation on the main explanatory variable, they are *not* significantly different along a series of observable dimensions (e.g., state personal income growth, state GDP growth, total debt, voter turnout, fiscal deficit, federal-level grants, status as oil producer (dummy=1 if more than 1% of US oil production), population size and term limit legislation). Even so, we discuss several possible threats to our identification strategy in more detail below.

Tables 1 and 2 about here

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 Table 5 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 1). Hence, our main identification derives from within-state variation within a given group of states (i.e. aligned or unaligned) rather than mere within-state variation (as in the full-sample results in Table 5 below).

3.2. *EMPIRICAL RESULTS*

Our baseline findings are summarized in Table 3. 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 1988.¹⁵

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,¹⁶ 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 that incumbents in

¹⁵ 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).

¹⁶ One could argue that voter turnout and vote choice are joint decisions, leading to a potential concern about simultaneity bias in our estimates. Our results remain unaffected, however, when excluding turnout from the model, or when implementing a 3SLS approach that simultaneously estimates a turnout equation (inspired by Geys, 2006, this turnout model includes lagged voter turnout, the closeness of the previous presidential election and the number of registered voters in 1988 as key explanatory variables, as well as our remaining control variables). We are grateful to an anonymous referee for pointing this out.

“vulnerable situations must work especially hard to remain in place” (Ansolabehere et al., 2000, 19; 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 2). Interestingly, as shown in the next-to-last row in Table 3, 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 2).

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

($\text{Chi}^2(1)=1.61$; $p>0.10$).¹⁷ 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. Fiscally conservative voters in states with a governor from the national opposition party, on the other hand, could interpret high debt levels at least partly as a bad signal about the federal-level opposition candidate – due to her partisan link to the fiscally irresponsible state-level governor. 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 (in line with proposition 2). Note also that the effects on state-level debt are statistically stronger than those for economic growth ($\text{Chi}^2(1)=17.50$; $p<0.001$). This is interesting given that state-level fiscal outcomes are predominantly driven by state-level political decisions

¹⁷ 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).

(i.e., low w_n) and should not normally affect federal election outcomes *except through* local incumbents' party-political connections to the national incumbent/opposition candidates.

Table 3 about here

These results remain valid under three additional robustness checks (besides those reported in earlier footnotes). 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 its addition does not affect the findings reported above. Finally, although the analysis thus far includes both incumbents running for re-election and incumbent-party candidates, our theoretical model considers only the former. Restricting the sample to only incumbents running for re-election provides results that are equivalent to those reported above.

3.3. THREATS TO IDENTIFICATION¹⁸

¹⁸ We are grateful to Jon Fiva, Lucy Goodhart and three anonymous referees for useful discussions and suggestions while developing this section.

The analysis above disregards two potential threats to our identification strategy. First, 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. Table 4 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.

Table 4 about here

The second attempt 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. Data on gubernatorial election margins were retrieved from List and Sturm (2006).

Table 5 about here

Table 5 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 3. Hence, once again, we can conclude that potential self-selection of governors does not appear to be driving our results.

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 economic recessions, inflation or 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 due to 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).¹⁹ To assess whether such differentiated grant policies are driving our results, Table 6 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 6 about here

Table 6 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 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). 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. One possible

¹⁹ 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 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).

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 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.

4. 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; Joanis, 2009, forthcoming; *The Economist*, 27 October 2012, 39). 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 alleviates the above-mentioned incomplete information issues and weakens

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.

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). Overall, politicians’ membership of a political party appears to provide 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 it 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. From a theoretical perspective, it would be interesting to extend the normative side of our analysis to derive more explicit conclusions regarding the ‘optimal’ weight of the national incumbent in determining public output in a particular jurisdiction (i.e., w_n) or the ‘optimal’ degree of intra-party cohesion (η). While the former would contribute to a better understanding – and evaluation – of the tendency since the 1980s towards more decentralized government structures (Rodden 2006, Freitag and Vatter 2008), the latter may help explain the wide variation across countries in the extent to which candidates of the same party follow strictly a party line. From an empirical standpoint, further research should, for instance, verify the existence of similar 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. 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 or 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.²⁰ Preliminary, though suggestive, evidence in this direction using Canadian data is provided in Gélinau and Bélanger (2005). They show that provincial incumbents in Canada are “punished for national economic deterioration *when the incumbent federal party is of the same partisan family*” (Gélinau and Bélanger, 2005, 407, italics added), whereas no similar effect arises in provinces controlled by a national opposition party. Our model provides a 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. An important avenue for future work would be to exploit individual-level data to more directly test this proposition.

²⁰ This prediction follows from a straightforward extension of our model to the analysis of regional elections. Assuming that voters only observe output in their own jurisdiction and that regional incumbents maximize their vote share, it is easy to establish – analogous to Proposition 1 above – that even when the regional incumbent has almost no influence on (regional) policy outcomes ($w_n \rightarrow 1$), public output can still affect the election result of the regional incumbent.

Table 1: 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.

Table 2: Comparison of average state characteristics by partisan alignment of states

	Incumbent Vote Share	Incumbent Vote Share (1972-1988)	Incumbent Vote Share (1992-2008)	Pers. Inc. Growth	GDP Growth	Debt	Turnout	Deficit	Federal grants	Oil producer	Pop. Size (Mio)	Term Limit
Aligned	51.869	52.863	50.931	2.265	3.812	1777.74	55.818	344.929	757.274	0.157	5.136	0.604
Unaligned	52.825	55.901	49.620	2.133	3.657	1772.49	55.097	364.492	730.274	0.197	4.931	0.626
Aligned = Unaligned	p=0.27	p=0.01	p=0.24	p=0.44	p=0.62	p=0.97	p=0.30	p=0.72	p=0.45	p=0.25	p=0.72	p=0.66

Note: Incumbent Vote Share is the vote share of national incumbent party candidate (our main dependent variable). Pers Inc Growth is the 2-year growth rate in state-level personal income, GDP growth is the 2-year growth rate in state-level GDP, Debt is total state-level debt outstanding per capita, Turnout is the state-level turnout rate in presidential elections, Debt is total state-level deficit (expenditures minus revenues) per capita, Federal Grants is total state-level grants (per capita) received from US federal government, Oil producer is 1 if state produces more than 1% of US oil, Population Size is the state population in millions and Term Limit is 1 if state has term limit legislation for governors.

Table 3: Main results

<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	40.73	32.11	43.00	39.62	32.39	28.66

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 4: 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	29.773 (1.13)	62.873 *** (3.59)	56.548 * (1.95)	16.446 (0.73)	51.320 *** (3.91)	22.273 (1.09)	37.203 (1.58)	30.221 (1.51)
Pers. Inc. Growth (2-year growth rate)	0.737 (1.30)	-0.287 (-0.73)	0.429 (0.50)	-0.233 (-0.49)	1.849 * (1.77)	0.628 (0.96)	1.864 * (1.85)	0.878 (1.23)
State debt (in election quarter)	-	-	-0.005 ** (-3.09)	0.006 *** (3.68)	-	-	-0.001 (-0.37)	0.000 (0.09)
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 (same=diff)_debt	2.64 [p = 0.104] -		0.80 44.61 ***		2.14 [p = 0.140] -		1.41 0.21	
Number obs.	123	158	104	139	83	122	80	113
R ² overall	13.41	31.70	10.46	13.88	39.19	34.34	39.18	44.02

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 3 is included in all regressions.

Table 5: Robustness checks

Variable	Alternative definition of partisan alignment		Margin < 5%		Margin < 3%		Interaction effects	
	(1) 'same party'	(2) 'different party'	(3) 'same party'	(4) 'different party'	(5) 'same party'	(6) 'different party'	(7) Full sample	(8) Margin < 2%
Intercept	69.904 *** (4.53)	49.337 *** (6.82)	56.556 *** (4.39)	45.376 ** (2.41)	36.773 (0.72)	77.674 *** (4.88)	58.265 *** (8.52)	55.672 ** (2.54)
Pers. Inc. Growth (2-year growth rate)	0.946 * (1.81)	0.704 * (1.95)	0.093 (0.12)	-1.213 (-1.12)	-0.254 (-0.17)	-1.390 * (-1.74)	-	-
State debt (in election quarter)	-0.003 *** (-2.96)	0.002 ** (2.50)	-0.008 ** (-2.40)	0.003 (1.52)	-0.007 * (-1.85)	0.005 ** (2.52)	-	-
Pers. Inc. Growth * 'same party'	-	-	-	-	-	-	0.762 (1.30)	3.146 ** (2.26)
Pers. Inc. Growth * 'different party'	-	-	-	-	-	-	0.730 ** (2.41)	-0.777 (-0.73)
State debt * 'same party'	-	-	-	-	-	-	0.000 (0.22)	-0.002 (-0.44)
State debt * 'different party'	-	-	-	-	-	-	0.002 * (1.68)	0.003 (0.90)
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 (same=diff)_debt	0.26 21.19 ***		2.23 [p=0.14] 19.23 ***		1.07 *** 18.31 ***		0.00 5.15 **	7.59 *** 9.36 ***
Number obs.	85	356	96	102	65	56	450	85
R ² overall	29.46	37.09	34.76	14.56	29.05	6.73	39.69	30.89

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 for Columns (1) to (6) and an F distribution in Columns (7) and (8) – and should be evaluated under 1 degree of freedom in all cases. Same/different party in Columns (1) and (2) based on state governor, House *and* Senate being (un)aligned with US President, whereas Columns (3) to (8) are based on state governor being (un)aligned with US President. Columns (3) to (6) and (8) restrict the sample to states where the governor was elected with a narrow margin (<5%, <3%, or <2% respectively). Full set of controls as in Table 3 is included in all regressions.

Table 6: Regression results controlling for growth in federal-level grants

<i>Variable</i>	(1) <i>Full sample</i>	(2) <i>'same party'</i>	(3) <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	39.79	32.14	30.24

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 3 is included in all regressions.

Appendix: Lemmas and proof of Proposition 3

Lemma 1

Voters' uncertainty regarding their vote choice – reflected in the updated variance of the difference in quality between the national incumbent and opposition candidate – is

- (i) *higher in a federal compared to a unitary context*
- (ii) *smaller in the aligned compared to the unaligned case*

Moreover,

- (iii) *party cues always reduce the updated variance of the difference in quality in the aligned case*
- (iv) *party cues reduce the updated variance of the difference in quality whenever $w_n < \eta / (2 + \eta)$ in the unaligned case*

Proof:

In the unitary context, voters cannot learn anything about the national opposition candidate. Hence, the updated variance of the national opposition candidate's quality, conditional on realized output, is σ_q^2 . They do learn, however, about the policy quality of the national incumbent, which removes all uncertainty about her q . Consequently, the variance of the difference of both candidates' q is:

$$\text{Var}[(q_n - q_o)|x_i] = \sigma_q^2 \quad (15)$$

In the federal context, we have to distinguish between the aligned and unaligned case. In the aligned case, the variance of the difference in quality, conditional on realized output, equals:

$$\text{Var}[(q_n - q_o)|x_i] = \left(2 - \frac{(w_n + (1 - w_n)\eta)^2}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta}\right)\sigma_q^2 \quad (16)$$

In the unaligned case, the variance of the difference between both candidates, conditional on output, becomes:

$$\text{Var}[(q_n - q_o)|x_i] = \left(2 - \frac{(w_n - (1 - w_n)\eta)^2}{w_n^2 + (1 - w_n)^2}\right)\sigma_q^2 \quad (17)$$

Since $0 \leq w_n \leq 1$ and $0 < \eta < 1$, it can easily be seen that the updated variances in equations (16) and (17) are always larger than the updated variance in equation (15), proving section (i) of Lemma 1. For the same reason, it is clear that the updated variance is smaller in the aligned compared to the unaligned case, validating section (ii) of Lemma 1.

In the federal setting without party cues, we have that the updated variance equals:

$$\text{Var}[(q_n - q_o)|x_i] = \left(2 - \frac{w_n^2}{w_n^2 + (1 - w_n)^2}\right)\sigma_q^2 \quad (18)$$

This is always larger than the updated variance in (16). Therefore, in the aligned case, the existence of party cues lead to less uncertainty regarding the difference in quality between the two candidates, which proves part (iii) of Lemma 1. Similarly, using equation (17), it can easily be shown that the same is only true in the unaligned case whenever $w_n < \eta/(2 + \eta)$, which proves part (iv) of Lemma 1. ■

Lemma 2 *The impact of public output on the vote share of the national incumbent is larger in a unitary context than in a federal context, when $w_n < 1/2$ in the aligned case and when $w_n < (\eta+1)/2$ in the unaligned case.*

Proof:

In a unitary context, the national incumbent has full responsibility for public output ($w_n=1$). From equation (5), we therefore know that $\beta=1$ in a unitary context. In a federal context, we must distinguish the aligned and unaligned cases. For the impact of public output on the national incumbent's vote share to be lower in the aligned case, we must have that:

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

It can easily be shown that this is the case whenever $w_n < 1/2$. In the unaligned case, we must have that:

$$\beta_u = \frac{w_n - (1 - w_n)\eta}{w_n^2 + (1 - w_n)^2} < 1 \quad (14)$$

Some manipulation of equation (14) indicates that this holds whenever $w_n < (\eta+1)/2$. ■

Lemma 3 *Party cues increase (decrease) the impact of public output on the national incumbent's vote share when the national and regional incumbents are aligned and $w_n < 1/2$ ($w_n > 1/2$). Party cues always decrease the impact of public output on the national incumbent's vote share when the national and regional incumbents are unaligned.*

Proof:

The proof of Lemma 3 follows directly from a comparison of equations (9) and (10) with equation (11). Note thereby that β is effectively given by the difference between the covariance of the incumbent's policy quality and output and the covariance of the opposition candidate's policy quality and output, divided by the variance of output. In the aligned case, party cues increase the covariance of the incumbent's policy quality and output, but also increase the variance of output. When $w_n < 1/2$, the numerator effect dominates and β increases as a result of party cues (and vice versa when $w_n > 1/2$). ■

Proof of Proposition 3:

Given the strict convexity of the cost function, optimal effort of the national incumbent in a unitary setting will be higher than in a federal setting if the marginal cost of effort is higher. We must show that this conclusion holds both in the aligned and unaligned case. Assuming that the national incumbent in a unitary context maximizes the average of the vote share in each region, equation (8) indicates that her optimal effort choice is determined by:

$$\frac{B}{M\sqrt{2\pi(\sigma_q^2 + \sigma_{ai}^2)}} = C'(e_{ni}) \quad (19)$$

Hence, using equations (19), (8) and (9), in the aligned case we must have that:²¹

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

Similarly, using equations (19), (8) and (10), in the unaligned case we must have that:

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

It can easily be seen that both inequalities always hold, which proves that optimal effort of the national incumbent in a unitary setting exceeds her optimal effort in a federal setting.

²¹ Note that 2π , M and B always appear on both sides of the inequality, such that they are dropped here for notational convenience.

Turning to parts *i*) and *ii*) of Proposition 3, we know from equations (8) and (9) that party cues increase the national incumbent's effort when:

$$\frac{w_n(w_n + (1 - w_n)\eta)}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta} > \frac{w_n^2}{w_n^2 + (1 - w_n)^2} \sqrt{\frac{(w_n + (1 - w_n)\eta)^2}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta} \sigma_q^2 + \sigma_{ai}^2} \quad (20)$$

Using equations (9) and (11), inequality (20) can also be written as:

$$2w_n(1 - w_n)\eta\sigma_q^2 < \sigma_{ai}^2 \left(\frac{1}{\beta_n^2} - \frac{1}{\beta_a^2} \right) \quad (21)$$

The left-hand side of equation (21) is always positive since all its constituting terms are positive. From Lemma 3, it follows that the right-hand side is positive when $w_n < 1/2$, and negative when $w_n > 1/2$. Hence, for the effort of the national incumbent to increase with party cues in the aligned case, her weight in public output creation should be less than one half *and* σ_q^2 should be small relative to σ_{ai}^2 .

Similarly, using equations (8) and (10), we know that party cues will decrease the national incumbent's effort when:

$$\frac{w_n(w_n - (1 - w_n)\eta)}{w_n^2 + (1 - w_n)^2 \sqrt{2\pi \left(\frac{(w_n - (1 - w_n)\eta)^2}{(w_n^2 + (1 - w_n)^2)} \sigma_q^2 + \sigma_{ai}^2 \right)}} < \frac{w_n}{w_n^2 + (1 - w_n)^2 \sqrt{2\pi \left(\frac{w_n^2}{w_n^2 + (1 - w_n)^2} \sigma_q^2 + \sigma_{ai}^2 \right)}} \quad (22)$$

Straightforward manipulations indicate that this is always true since $0 \leq w_n \leq 1$ and $0 < \eta < 1$, which proves part *ii*) of Proposition 3.

Finally, to analyse when effort is higher in the aligned compared to the unaligned case, we must distinguish two cases. The first is when $w_n \leq \eta/(1 + \eta)$. In that case, we know from Proposition 2 that $\beta_u < 0$, which leads to a corner solution for optimal effort where effort is 0 (see equation (8)). An aligned incumbent, however, always exerts non-zero effort, such that effort will be higher in the aligned compared to the unaligned case. In the other case – i.e. $1 > w_n > \eta/(1 + \eta)$ – we have to verify when:

$$\frac{w_n(w_n + (1 - w_n)\eta)}{w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta \sqrt{\frac{(w_n + (1 - w_n)\eta)^2}{(w_n^2 + (1 - w_n)^2 + 2w_n(1 - w_n)\eta)} \sigma_q^2 + \sigma_{ai}^2}} > \frac{w_n(w_n - (1 - w_n)\eta)}{w_n^2 + (1 - w_n)^2 \sqrt{\frac{(w_n - (1 - w_n)\eta)^2}{(w_n^2 + (1 - w_n)^2)} \sigma_q^2 + \sigma_{ai}^2}} \quad (23)$$

It is easy to show that, using Equations (9) and (10), this is equivalent to:

$$2w_n(1 - w_n)\eta\sigma_q^2 < \sigma_{ai}^2 \left(\frac{1}{\beta_u^2} - \frac{1}{\beta_a^2} \right) \quad (24)$$

The left-hand side of equation (24) is always positive since all its constituting terms are positive. Since $\beta_a > \beta_u$ in a federal setting (see Proposition 2), the right-

hand side will also be positive. Hence, when $1 > w_n > \eta / (1 + \eta)$, effort in the aligned case can still exceed that in the unaligned case as long as σ_q^2 is small relative to σ_{ai}^2 , and w_n and η are both small. ■

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