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The Democratic-Republican Presidential Growth Gap and the Partisan Balance of the State Governments

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Abstract

Higher economic growth was generated during Democratic presidencies compared to Republican presidencies in the United States. The question is why. Blinder and Watson (2016) explain that the Democratic-Republican presidential growth gap (D-R growth gap) can hardly be attributed to the policies under Democratic presidents, but Democratic presidents – at least partly – just had good luck, although a substantial gap remains unexplained. A natural place to look for an explanation is the partisan balance at the state level. We show that pronounced national GDP growth was generated when a larger share of US states had Democratic governors and unified Democratic state governments. However, this fact does *not* explain the D-R growth gap. To the contrary, given the tendency of electoral support at the state level to swing away from the party of the incumbent president, this works *against* the D-R growth gap. In fact, the D-R presidential growth gap at the national level might have been even larger were it not for the mitigating dynamics of state politics (by about 0.3-0.6 percentage points). These results suggest that the D-R growth gap is an even bigger puzzle than Blinder and Watson's findings would suggest.

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1. Introduction

Annual GDP growth in the United States was higher under Democratic presidents than under Republicans. Scholars in political economy arrived at this conclusion quite some time ago (Hibbs 1986 and 1987, Alesina and Sachs 1988, Haynes and Stone 1990, Alesina and Rosenthal 1995, Belke 1996, Alesina et al. 1997, Blomberg and Hess 2003, Verstyuk 2004, Krause 2005, Bartels 2008, Grier 2008). The difference in economic performance under Democratic and Republican presidents, known as the D-R growth gap, has enjoyed a great deal of attention thanks to the study by Blinder and Watson (2016) – abbreviated as BW in the following. The authors show that over the period 1949-2012 the annual GDP growth rate was on average around 1.79 percentage points higher under Democratic compared to Republican presidents: on average 4.33 percent under Democrats and 2.54 percent under Republicans. The major question is why.

The partisan theories (Hibbs 1977, Chappell and Keech 1986, Alesina 1987) propose that GDP growth is higher under Democratic presidents than under Republican presidents because Democratic presidents implement more expansionary fiscal and monetary policies than Republicans.[1] Expansionary fiscal policies include, for example, increasing government expenditure. Expansionary monetary policies include decreasing interest rates and increasing the money supply.[2] Previous studies show, however, that fiscal policies under Democratic presidents hardly differed from those of Republican presidents, though monetary policies differed to some extent (Hibbs 1986 and 1987, Havrilesky 1987, Alesina et al. 1997, Faust and Irons 1999, Caporale and Grier 2000 and 2005, Abrams and Iossifov 2006, Chen and Wang 2013, BW, Pastor and Veronesi 2017). As a consequence, the results of BW do not suggest that national fiscal and monetary policies help to explain the D-R growth gap.

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[1] To be sure, US presidents cannot directly decrease interest rates and increase the money supply, but there are opportunities to politically influence the Federal Reserve, which designs monetary policies (e.g., Chappell et al. 1993, Havrilesky and Gildea 1992).

[2] For example, interest rates were expected to be higher and the dollar to be stronger under a George W. Bush presidency than under John Kerry (Snowberg et al. 2007a, b).

BW use many other variables to explain the D-R growth gap. In part, Democrats just had good luck - benign oil shocks, superior total factor productivity performance and a more favorable international environment explain about half of the higher GDP growth under Democratic presidents. A substantial portion of the D-R gap, however, remains unexplained. BW (p. 1043) conclude: "these factors together explain up to 56 percent of the D-R growth gap in the full sample, and as much as 69 percent over shorter (post-1963) samples. The rest remains, for now, a mystery of the still mostly unexplored continent. The word 'research' taken literally, means search again. We invite other researchers to do so."

We propose to examine the extent to which partisan politics at the state level contribute to the national D-R growth gap. Was it, perhaps, Republican state governments that boosted economic growth, to the good luck of Democratic presidents? Or were Democratic governors and unified Democratic state governments the channel through which the D-R growth gap operated – maybe because Democratic state governments implemented expansionary policies that gave rise to higher annual GDP growth – thus explaining the apparent lack of importance of federal monetary and fiscal policies? State politics is a particularly natural place to look for an answer – the US state governments have quite some leeway to implement discretionary economic policies which, in turn, are likely to influence GDP growth. For example, state governments design tax rates and minimum wages and, to a large extent, decide on the composition of the state budget. The state governments thus have policy measures at hand which are likely to influence both (a) GDP growth in the long-run and (b) quarterly and annual GDP growth which is a more short-run phenomenon (business cycle). We will focus on quarterly and annual GDP growth in the following. Because it is true that expansionary fiscal policies stimulate quarterly and annual GDP growth, expansionary policies implemented by individual state governments, especially in highly populated and economically influential US states such as California, Texas or New York, will influence national quarterly and annual GDP growth. Indeed, California is the world's "7th largest

economy", in 2015 overtaking Brazil[3] (in the expression of BW, it is no small tail wagging a big dog), and these states often set the trends for the rest of the nation.[4] Key components of the US GDP are not evenly distributed across the states, and policies implemented by state governments may be very important for individual industries. Manufacturing has traditionally been concentrated in the Midwest and Northeast. Energy has seen a recent boom in Texas and other currently Republican leaning states such as North Dakota, due in no small part to developments in hydraulic fracturing, a procedure banned in Democratic leaning New York, Vermont and Maryland.

While governors have substantial influence over state policy, even independent of the state legislature (Brudney and Hebert 1987, Cahan 2017, Jens 2017), one might expect the effect of state government ideology to be especially pronounced when state governments are unified, meaning that the governor and the majorities in the State House and State Senate have the same party affiliation (also known as a "trifecta").[5] With unified government it is much easier to push through policies in line with the party ideology. Following the 2016 presidential elections, the number of unified Republican state governments reached 25 – levels not seen for well over half a century. Unified Republican state governments started to coordinate policies, taking advantage of Donald Trump's success in the presidential election to act "with lightning speed to enact longstanding conservative priorities. In states from New England to the Midwest and across the South, conservative lawmakers have introduced or enacted legislation to erode union powers and abortion rights, loosen gun regulations, expand school-choice programs and slash taxes and spending."[6] It is conceivable that state governments aligned with the president have been active in implementing ideology-induced policies more generally, especially at the beginning of a term.

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[3] https://www.bloomberg.com/news/articles/2015-01-16/brown-s-california-overtakes-brazil-with-companies-leading-world.
[4] On learning and policy diffusion see, for example, Böhmelt et al. (2016).
[5] On divided governments in the United States see, for example, Alt and Lowry (1994), Alesina and Rosenthal (1995), Bjørnskov and Potrafke (2013), or Bernecker (2016).
[6] https://www.nytimes.com/2017/02/11/us/state-republican-leaders-move-swiftly.html?_r=0

Our results suggest that more Democrats governed in the states during times with higher short-run GDP growth. Pronounced national GDP growth was generated when a larger share of US states were controlled by Democratic governors and by unified Democratic state governments, during both Democratic and Republican presidencies. However, the D-R growth gap *cannot* be attributed to Democratic control at the state level. The reason is that there is a strong tendency for incumbent presidents to lose support in state level elections through the course of their term – Democratic presidents lose copartisan Democratic governors and state legislatures, while Republican presidents see increasing numbers of Democratic governors and state governments. Then, to the extent that Democratic state governments improve national GDP growth, these trends work to dampen the D-R presidential growth gap. We predict that GDP growth under Republican presidents may have actually been as much as 0.3-0.6 percentage points higher than under Democratic presidents, had incumbents been more effective at retaining control of state governments.

Given the link between the partisan balance of the state governments and national GDP growth, we also examine at the state level whether states with Democratic state governments had higher annual income per capita growth than states with Republican governments. We pay particular attention to highly populated states such as California, Texas and New York because these large states contribute disproportionately to the national GDP (for example, the top 10 states in terms of population made up 54% of the national population in 2016).

Some scholars took issue with the study by BW. The comment by Kane (2017) argues that a longer time lag between the inauguration of a new president and economic outcomes is more suitable, and shows how the D-R growth gap becomes smaller when no lag or more than one lag of the president's party affiliation is used to predict annual GDP growth. We elaborate on the timing between the inauguration of a new president and GDP growth. Pastor and Veronesi (2017) suggest that Democratic presidents did not cause higher GDP growth than

Republican presidents. In fact, risk-aversion, which is high in economic crises, is described as predicting electoral success for Democrats because they are likely to provide more social insurance than Republicans. The authors propose that the economy recovers under Democratic presidents, who then enjoy high GDP growth (and stock market returns). In line with BW, we acknowledge that we do not estimate a causal effect of (state) government ideology on national GDP growth – indeed, the risk-aversion argument by Pastor and Veronesi (2017) could just as well also apply at the state level. There is no econometric strategy yet to estimate causal effects of government ideology on macroeconomic variables at the national level, and yet, an important empirical regularity remains that has so far evaded explanation.

2. The political pendulum at the state level

Electoral success of the Democratic Party in gubernatorial and state legislative elections preceded electoral success of Democratic presidents (and, similarly, electoral success of Republicans in gubernatorial elections helped or heralded Republicans victories in presidential elections).[7] Over time the political pendulum swings, and the popularity of the incumbent president generally decreases. The president cannot be voted out of office until his term expires, but ample opportunities arise in lower level elections to express dissatisfaction (or apathy, by not turning out to vote). Figures 1-2 show the share of state governorships and legislatures that are controlled by the Democratic Party, over the period 1949-2017, while Figure 3 shows the share of Democratic unified governments.[8] We weight the share of Democratic governors, legislatures and unified governments by the population of the

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[7] We only distinguish between Democrats and Republicans at the state level. More fine-grained government ideology measures which consider differences within a party across states and over time (e. g., Shor and McCarty 2011 and Bonica 2014) are not available since the 1950s.
[8] Prior to statehood in 1959, Alaska and Hawaii did not have elected governors, but rather had territorial governors appointed by the president. We code territorial governors as being of the same party as the president that appointed them – in each case during our sample period the appointed territorial governor was indeed aligned with the party of the appointing president.

individual states because we will relate these variables to national GDP growth in sections 3 and 4, and states with larger populations contribute more to national GDP than less populated states.[9] The pattern is stark: at the beginning of Democratic presidential terms, the share of population weighted Democratic governors was 56 percent on average. By contrast, in the last year of Democratic presidential terms, the share of population weighted Democratic governors was 45 percent on average. In the first year of a Republican term, it was 46 percent, rising to 57 percent by the last year of the term. In a similar vein, the share of Democratic legislatures (unified governments) was around 54 percent (39 percent) in the first and 40 percent (28 percent) in the last year of a Democratic presidential term. The share of Republican legislatures (unified governments) was 32 percent (24 percent) in the first year of Republican terms, falling to 21 percent (13 percent) in the last year.

Thus, newly elected presidents enjoyed many copartisan governors and unified state governments – but tended to lose them over time. It is interesting to note that support of Republican presidents appears to erode less drastically, although the difference in decreasing support for Democratic and Republican presidents does not turn out to be statistically significant. In the case of governorships, the share of Democratic governors was almost always decreasing during Democratic presidencies, with the exception of Bill Clinton during whose second term the Democratic Party picked up state governorships (most notably California in 1998). While the trends under Dwight Eisenhower, Richard Nixon, and Gerald Ford are of large and steady losses of Republican governorships, the Republican Party was successful in state elections under Ronald Reagan and George H. W. and George W. Bush – the trends are quite flat, and include periods of gains.

In the case of state legislature control, the share of legislatures controlled by the president's party does not follow such a regular pattern – both parties tended to lose state legislatures over time, but there were frequent gains as well, and it is not obvious whether the

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[9] The weighted and unweighted measures are similar: the correlation coefficients between the weighted and unweighted Democratic share of governors, legislatures, and unified state governments are all about 0.92.

Democratic or Republican Party did a better overall job of retaining legislatures. The partisan balance was quite stable during Reagan's and Bush I's terms, although Republicans held very few states to begin with, so there was not much to lose. Nixon-Ford performed notably poorly, the share of Republican state legislatures dropping from almost 50% at the beginning to essentially zero at the end of Ford's term, a lot of the loss coming in the 1974 midterm elections which took place only three months after Nixon's resignation. Clinton also oversaw substantial loses during his first term, though the situation stabilized during his second.

For unified state governments, it is hard to tell from Figure 3 whether one party did better. The presidencies of Nixon and Ford again stand out as especially weak. Lyndon Johnson also lost many unified governments, though this occurred relatively late in his term in the 1966 midterm elections, during the heat of the unpopular Vietnam war and shortly following the passage of the Voting Rights Act of 1965, and the consequent higher African American participation. Barack Obama's first term is characterized by a substantial increase in Republican unified governments, though the number of Democratic unified governments remained fairly stable and even increased.

Figures 1 to 3 suggest that Republican governors and state legislators may have been more successful in holding onto their power, perhaps because their voters were more loyal, or through more active gerrymandering (Jacobson and Carson 2016, chapter 2). What is clear, in any event, is the pattern of decreasing support for the incumbent president.

3. State government ideology and national GDP growth

In the first year of Democratic presidential terms, we observe both (a) large shares of Democratic governors and unified Democratic state governments and (b) especially pronounced quarterly GDP growth (see also BW) – quarterly real GDP growth (annualized) was 4.47 compared to 0.67 percent on average during the first year of Democratic and

Republican terms (Table 1). We therefore expect the share of Democratic governors and unified Democratic state governments to be an excellent predictor of national GDP growth.

We estimate a linear regression model with Newey-West standard errors using the quarterly growth in real national GDP (annualized) as the dependent variable and a Democratic president dummy variable as the explanatory variable. In Table 2, column (1), we replicate the result of BW for the period 1949:II-2017:I: the coefficient estimate of the Democratic president dummy variable is 1.50 indicating that the D-R growth gap was 1.50 percentage points, moderately smaller than BW's D-R growth gap of 1.79 for the period 1949:II-2013:I. We follow BW and assign the quarter during which the new president is inaugurated and power changes hands (the first quarter, January-March, of the post-election year) to the outgoing president. In column (2), we only include the share of Democratic governors. We use the same convention in assigning transition quarters to governors (and state legislatures) as for the president – a new governor's influence starts in their first *full* quarter (April-June of the post gubernatorial election year). In columns (3) and (4) we include the share of Democratic and Republican controlled legislatures and unified Democratic and Republican state governments as explanatory variables. In columns (5) to (7) we include the Democratic president variable and either the share of Democratic governors, the share of Democratic and Republican controlled legislatures, or the unified Democratic and Republican state government variable. The coefficient estimate for the share of Democratic governors is 4.39 in column (2). Since the standard deviation of the Democratic share of governors is 0.13, we conclude that a one standard deviation increase in the share of governorships controlled by the Democratic Party is associated with a 0.57 percentage point increase in the real GDP growth rate. The coefficient estimate for the share of Democratic state legislatures is 7.25, so that a one standard deviation (about 0.16) increase in the share of Democratic state legislatures is associated with a 1.16 percentage point increase in the real GDP growth rate. Similarly, the coefficient for Democratic unified state governments, 5.91 (in column 4),

suggests that a one standard deviation increase (about 0.13) in the Democratic unified state government share is associated with a 0.77 percentage point increase in the real GDP growth rate. The variables measuring Republican state government ideology lack statistical significance.[10]

An obvious objection is that the share of Democratic governors or unified governments and the Democratic president dummy variable may be highly correlated and measuring the same thing. However, the correlation coefficients are only -0.056 and 0.060 and the coefficient estimate for Democratic president dummy variable remains statistically significant and similar in magnitude in columns (5) to (7). This suggests that the state government ideology variables are highly correlated with GDP growth, but are largely orthogonal to the Democratic president dummy variable. The positive correlation between the share of Democratic governors or unified governments and national GDP growth is present under both Democratic and Republican presidencies (columns 8 and 9). That is, we allow for the coefficient on the share of Democratic governors or unified state governments to be different under Democratic presidents compared to Republican presidents. The correlation between the share of Democratic governors and national GDP growth is positive under both Democratic and Republican presidents, though the interaction term between the share of Democratic governors and a Republican president dummy falls short of statistical significance at conventional levels. The coefficient of the share of Democratic unified state governments is also positive during both Democratic and Republican presidencies, and is statistically significant at the 5% and 10% level.

An important issue is the timing of when government ideology is likely to predict annual GDP growth. Following BW, we have so far considered one lag of the presidential dummy variable and the state government variables. Kane (2017) maintains that it takes longer than one quarter for government ideology to translate into GDP growth, because it

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[10] We do not include the share of Republican governors. As there were only a handful of independent governors during our sample period, it is very close to one minus the share of Democratic governors.

takes quite some time for new legislation and policies to be implemented. Consumer behavior and firm investment decisions have, however, been shown to immediately respond to electoral outcomes due to shifts in expectations (Snowberg 2007a and 2007b, Gerber and Huber 2009, Julio and Yook 2012, Falk and Shelton 2017, Jens 2017). We therefore use different lags and leads of state government ideology as explanatory variables (Table 3). The correlation between Democratic state government ideology and GDP growth is strong for lags 0 to 3. For governors and legislatures, the correlation is less pronounced and no longer statistically significant when we consider lags of more than three periods, while for unified governments it remains positive and statistically significant at the 10% level up to the 10th lag. The first and second leads of Democratic state government ideology (governors and unified governments) are also positively and significantly correlated with GDP growth. National GDP growth was high when there were more Democratic state governments. We return to discussing the alternative lag assumptions in the next section.

4. Explaining the D-R growth gap (BW model)

4.1 Methods

To "explain" the partisan growth gap by state government ideology we follow the empirical strategy of BW (p. 1028f.), who consider many variables potentially explaining the D-R growth gap.[11] The explanatory variables x are, for example, oil shocks from Hamilton (2003) or Kilian (2008); defense spending shocks from Ramey (2011); and monetary policy shocks from Romer and Romer (2004) and Sims (2006). We propose to also consider our variables capturing the partisan balance of the state governments. The x shock is based on a (z, x)-VAR model. The vector z includes: the GDP growth rate, inflation (measured by the GDP deflator), the three-month Treasury bill rate, and commodity prices. The lag length used is six quarters.

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[11] In section 3, we discussed the correlation between state government ideology and national GDP growth conditioned on national government ideology. We now elaborate on the correlation between state government ideology and national GDP growth conditioned also on other macroeconomic variables such as inflation.

The residuals e_t from the VAR model are then used as regressors in a distributed lag model, in which the growth rate of real GDP is regressed on e_t and six of its lags: that is, the model is $y_t = \gamma(L)e_t$ + other factors. As BW (p. 1028) describe, the average realization of $\gamma(L)e_t$ during Democratic presidencies may be different than during Republican presidencies. First, the shocks e_t are time varying, and their realization will differ over different time periods. Second, the coefficients γ may be different during Democratic and Republican presidencies, because different parties may respond differently to the same shock, for example. Following BW we run specifications where the γ coefficients are constrained to be the same for both parties (common lag weights), and specifications where they are not constrained (party-specific lag weights). We have good reasons to believe that the lag weights should be able to differ by party – a decrease in the share of Democratic state governments may undoubtedly elicit a different response from a Democratic presidential administration compared to a Republican administration. To be sure, the tendency for the incumbent to lose support is a widely understood phenomenon and may be expected. Our state politics shocks are therefore comparable to the policy related "endogenous" shocks considered in BW, such as monetary and fiscal policy shocks.

BW show (a) univariate results that are based on regressions only including one e variable and (b) multivariate results that are based on regressions including more than one e variables. The purpose is to show how much of the D-R growth gap is explained by the e variables. For example, the Hamilton oil price shock explains about 50 basis points of the full sample 179 basis point D-R growth gap. We re-estimate the models proposed by BW and also include our state politics variables to examine how many basis points of the D-R growth gap are explained by the partisan balance of the state governments.

4.2 Results

Table 4 shows the univariate results for various combinations of the state government ideology variables. Controlling for the share of Democratic governors, Democratic state legislatures and unified Democratic state governments does not explain the D-R gap. More than that, it even "pushes in the wrong direction" (BW p. 1037): the explained D-R growth gap is negative and large in magnitude in columns (1) to (5), though only attains statistical significance in some specifications. The point estimates are large: -0.31, -0.42 and -0.54 for Democratic governors, Democratic governors and legislatures together, and Democratic governors and unified governments together (party-specific lag weights). That is to say, the predicted D-R growth gap is 2.30 percentage points, or up to 0.54 more than the actual D-R gap of 1.76, since Republicans experienced more "favorable" shocks (an increasing share of Democratic state governors and unified governments).[12] Table 5 shows the multivariate results including oil price shocks (Hamilton), Total Factor Productivity (TFP), defense expenditure shocks (Ramey) and other variables as proposed by BW, together with the share of Democratic governors. Because of data availability for the explanatory variables other than our state government ideology variables, the sample ends in 2013:I as in BW. The results indicate that the share of Democratic governors increased the predicted D-R-growth gap, thus reducing the explained portion of the gap – however, the effects lack statistical significance at conventional levels. We see similar patterns – the explained portion is reduced compared to BW (though not a statistically significant reduction) – when we use BW's shorter samples (results not shown).

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[12] The baseline D-R growth gap for our sample is 176 basis points, not 179 as quoted in BW, because we consider the period 1950:I-2015:I rather than 1949:II-2013:I. Some early observations are lost due to the lags included in the VAR model of BW. This also happens for BW when they consider the Baa-Aaa spread and the Baker et al. (2013) uncertainty index, for which VAR models are also used. A few shocks like the Hamilton shock are available slightly earlier (1949:II) because they are not constructed by BW using the VAR. We also extended the dataset through to 2015:I for most of our models, though inferences are very similar if we end the sample at the same time as BW.

The effects are sensitive to the assumption we make about when a newly elected politician can begin to affect the economy. BW assume this occurs during the first full quarter in office (April-June after the presidential elections in November), attributing the quarter during which the inauguration takes place (January-March) to the predecessor. The effects (the explained proportion) of the D-R growth gap for the state politics variables are negative, large in magnitude, and statistically significant when we assume that the effect occurs with a lead, or is contemporaneous to the inauguration (Table 6). When considering the contemporaneous effect of Democratic governors, for example, the results in Table 6 suggest that GDP growth should have been 0.45, 0.50 or 0.58 percentage points higher under Republican presidents than under Democratic presidents (party-specific lag weights).

An intriguing issue is why the D-R growth gap is predicted to be larger when we allow changes in state government ideology to affect outcomes earlier than BW. The BW model involves obtaining a residualized share of Democratic governors from a VAR. The residual is fairly similar to the quarter-to-quarter change in the share of Democratic governors.[13] The first lead relates changes in the share of Democratic governors resulting from an election to GDP growth in the first quarter following the election (January-March). The second lead relates changes in the share of Democratic governors to GDP growth in the quarter during which the elections took place (the quarter October-December, with elections held in early November). Essentially, assuming the impact of a new politician starts one (or more) quarter earlier than assumed by BW, the relationship between increases in the share of Democratic governors and GDP growth would be weaker.[14] With a weaker relationship, the fact that the

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[13] In other words, we related national GDP growth to the level of the share of Democratic state governments in section 3 and to the change in the share of Democratic state governments in section 4.

[14] Table 7 shows the average quarterly GDP growth rate (annualized) for quarters around turnover elections. Elections in which Democratic (Republican) presidents took power from Republican (Democratic) incumbents also involved large increases in the share of Democratic (Republican) governors. Under BW's definition, new politicians take effect during their first full quarter. Thus, the last three quarters in column (1) of Table 7, and the first five quarters in column (2), are attributed to Democratic presidents and larger shares of Democratic governors, while the remaining quarters are attributed to Republican presidents and smaller shares of Democratic governors. Following BW, the growth rate 4.40 in cell * will be associated with an increase in the share of Democratic governors, while the 0.92 in cell ** will be associated with a decrease in the share of Democratic

share of Democratic governors tends to increase during Republican terms and decrease during Democratic terms, then, predicts less of an advantage (that would help to close the empirical D-R growth gap) to Republican presidents on the basis of state governors than with a stronger relationship. That is, a weaker relationship between increases in the share of Democratic governors and GDP growth gives rise to a larger predicted D-R growth gap.

There is no accepted convention for choosing when newly elected politicians begin to affect the economy. BW acknowledge (p. 1017) that their assumption, chosen "on a priori grounds," is the one that maximizes the size of the D-R gap – we can see why this is the case in Table 7 – while recognizing that political scientists usually prefer lags of a year or more (Bartels 2008; Comiskey and Marsh 2012). Kane (2017) takes issue with this assumption and shows that the D-R growth gap becomes much smaller when considering longer lags. We do not take a stand on which lag choice is the most suitable. On the one hand, it is certainly true that policies are implemented with a lag, in some cases a very long one of years. On the other hand, when uncertainty about the winning candidate is resolved, economic agents immediately begin to update their expectations about future economic conditions and policies that are yet to be implemented and, consequently, their economic decisions should begin to change immediately (or even before, if a landslide is expected) following the election (Snowberg 2007a and 2007b, Gerber and Huber 2009, Julio and Yook 2012, Falk and Shelton 2017, Jens 2017). Any discrete cutoff is a simplification of a continuous transition, since different policies or actions take different amounts of time to start to or cease to have an effect. In any event, the share of Democratic governors does not explain the D-R growth gap: at one extreme, it does not affect the size of the gap; at the other, it works in the opposite

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governors, which works to strengthen the relationship between increases in the share of Democratic governors and GDP growth. If, instead, we assume newly elected politicians take effect during the quarter of inauguration, we assign the growth rate 0.70 in cell (†) to an increase in the share of Democratic governors (rather than 4.40 before), and the 4.52 in cell (††) to a decrease in the share of Democratic governors (rather than 0.92). This works to weaken the relationship between increases in the share of Democratic governors and GDP growth. Turnover elections alone do not determine this pattern – all quarters should be considered – but help to illustrate the general idea.

direction, suggesting that changes in the partisan balance of the states actually helped Republicans and the D-R gap might have been even bigger otherwise.

Our results suggest that while more Democratic state governments are associated with higher GDP growth at the national level, changes in the partisan balance of the state governments were somewhat more favorable to Republican presidents. The results based on the model by BW suggest that the D-R growth gap might have been even larger had Democrats been more effective at winning and retaining control of state governments. As a consequence, it is conceivable that government ideology may have influenced economic performance and policies at the state level.

5. Economic performance and ideology-induced policies in the US states

5.1 Previous studies

Scholars have examined the effects of government ideology on economic performance and policies in the US states for a long time (for an encompassing survey see, for example, Potrafke 2017). In previous studies, many outcome variables such as income per capita, tax rates, types of public expenditure etc. were regressed on variables measuring the party affiliation of the governor and majorities in the State House and State Senate. The results of Chang et al. (2009) suggest, for example, that real personal income growth over the period 1951-2004 was higher under Democratic than Republican governors, especially in the first part of a legislative period. The results of many other studies suggest that size and scope of government was somewhat larger under Democratic governments (e.g., Besley and Case 1995 and 2003). The early studies often included almost all US states, but did not derive causal effects of government ideology on the dependent variables because the government ideology variables were endogenous.[15] Reverse causality is an important reason for endogeneity of the

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[15] Alaska and Hawaii are often excluded, as is Nebraska because it has a non-partisan, unicameral state legislature.

government ideology variable since voters may vote incumbents out of office when they disagree with the incumbents' policies. Some progress has been made using Regression Discontinuity Designs (RDD) that exploit close vote margins to estimate causal effects of governor party affiliation on economic policy variables and outcomes (e.g., Lee and Lemieux 2010, Beland 2015). Other studies also use close vote margins in the legislature (e.g., Caughey et al. 2017). The results of the RDD studies suggest that parties do matter sometimes, however, the RDD studies do not suggest that governors' ideology influenced overall government expenditure. There is no RDD study using income per capita as dependent variable. A limitation of the RDD approach is that it focuses on elections with close vote margins (often in swing states), which may be precisely the elections where we would expect not to observe effects because of median voter forces or a limited mandate for sweeping policy changes. Some states with crystal-clear political majorities such as California and Texas seldom experience close elections and are often not included in RDD studies, despite the fact that much of the action is perceived to take place in precisely these states.

5.2 Annual income per capita growth: some new empirical evidence

We examine whether annual personal income per capita growth in the US states was higher under Democratic than Republican governments (there is no data for GDP at the state level available until the 1960s). Because states with large populations and crystal-clear political majorities are central to our study, we cannot use RDD and rather use descriptive statistics and estimate linear panel data models that report correlations between government ideology and annual personal income per capita growth.

We use annual data for real personal income per capita growth across the 50 US states over the period 1949-2016 (inferences are very similar for the shorter BW-sample over the period 1949-2012). With annual rather than quarterly data, we assume new politicians take effect the year of their inauguration (almost always in January of that year). Table 8 shows

that annual real personal income per capita growth was on average higher under Democratic governors than under Republican governors (2.02 percent versus 1.79 percent, t-statistic 2.27), and higher under Democratic unified governments than under Republican unified governments (2.16 percent versus 1.79 percent, t-statistic 2.47). The difference between Democratic and Republican legislatures does not turn out to be statistically significant.

We split the sample based on population and consider the top 10 states by population (in 2016) which account for about 54% of the population (California, Texas, New York, Florida, Illinois, Pennsylvania, Ohio, Georgia, North Carolina, Michigan) and the remaining 40 states. The results show that income per capita growth was on average higher under Democratic than Republican governors (2.06 percent versus 1.65 percent). The differences were also pronounced under Democratic and Republican legislatures (2.07 percent versus 1.69) and, especially, under unified state governments (2.24 percent versus 1.63 percent).

We estimate linear panel data models regressing income per capita on state government ideology variables including fixed state and fixed year effects. The results in Table 9 show that growth in income per capita was around 0.16 percentage points higher under Democratic than Republican governors, or 0.24 percentage points if we weight by population. The correlation between Democratic governors and income per capita growth is statistically significant at the 5% level both when we weight by population and when we do not. For legislatures, income per capita growth was around 0.30 percentage points (0.44 when weighting) higher when Democrats had control relative to when Republicans had control (statistically significant at the 1% level). When there was a Democratic unified state government, income per capita growth was about 0.15 percentage points (0.21 when weighting) higher than when the governorship and the legislature were not held by the same party. When there was a Republican unified state government, income per capita growth was about 0.24 percentage points (0.30 when weighting) lower than when the governorship and

the legislature were not held by the same party (statistically significant at the 5% and 1% level).

When we estimate the same panel regressions looking only at the top 10 and bottom 40 states in terms of population (columns 3 to 6 of Table 10), the results are similar for both size categories. For the top 10 states, the differences are quite pronounced, especially for legislatures, and often attain statistical significance despite the small number of states.[16] This suggests that those states that matter the most for national GDP growth indeed experience pronounced differences in state-level performance under Democratic and Republican state governments.

5.3 Southern Democrats and changes in party ideology

While our results suggest that the economy grows faster when Democrats control state governments, this is, of course, not necessarily a causal relationship – indeed, the mechanism proposed by Pastor and Veronesi (2017) may well also apply at the state level. In addition, even if we were able to interpret the results as causal, it need not be thanks to the "modern" Democratic Party. As noted by BW (page 1017), the D-R growth gap gets smaller over time. This is while the platforms and constituencies of both parties have seen substantial changes since the immediate post-WWII period – polarization on many issues has increased and party platforms have moved further apart (McCarty et al. 2006, Gentzkow et al. 2016). Another highly notable change was the large scale realignment of the "Solid South'' away from the Democratic Party towards the Republican Party through the 1960s to the 1990s. Table 10 shows how average state-level growth rates in income per capita differed by region (we use the four Census regions: South, West, Midwest, Northeast) under Democratic versus Republican presidents and governors. Column (1) shows that income per capita growth was higher under Democratic presidents compared to Republicans for states in all regions,

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[16] Because of the small number of states when looking at subsets of the 50 states, we also report heteroscedasticity robust standard errors rather than standard errors clustered at the state level.

especially the South and the Northeast, though for the Midwest the difference is not statistically significant. Column (2) shows that income per capita growth was higher for states in the South and the Midwest under Democratic governors compared to Republicans, while states in the West did not experience a statistically significant difference, and states in the Northeast performed significantly worse under Democratic governors. Column (3) shows that inferences do not change when we include variables for both the president and governors in the regression. Columns (4)-(6) show the analogous results weighting by population – the most notable difference is that now the higher income per capita growth rate under Democratic presidents compared to Republican presidents in the Midwest is statistically significant, while for the South the difference now falls short of statistical significance. These descriptive statistics do not disentangle the influence of Democratic governors from the influence of the time period, especially for the South since in the early period Democratic control was close to 100 percent at the state level. Incorporating time fixed effects into the column (2) specification, states in all regions experienced faster income per capita growth under Democratic governors, though the differences do not turn out to be statistically significant.

These results suggest that, while the South certainly contributes to our findings, it was not alone in experiencing differences in income per capita growth under different parties, in regards to both presidents and governors.

6. Conclusions

We examine the extent to which party politics at the US state level explain the GDP growth gap under Democratic and Republican presidents. Our results are stark: higher national GDP growth was generated when more US states had Democratic governors and unified Democratic state governments. Over the period 1949:II-2017:I, a one standard deviation increase in the share of governorships controlled by the Democratic Party or unified

Democratic state governments was associated with a 0.57 or 0.77 percentage point increase in the real national GDP growth rate. However, this does not explain the D-R growth gap. To the contrary, given drastic swings in electoral support at the state level away from the party of the incumbent president, GDP growth might have been, following the method of BW, around 0.3 to 0.6 percentage points higher under Republican presidents than under Democratic presidents over our main sample period. We observe, however, quite the opposite: GDP growth is 1.76 percentage points higher under Democratic presidents than Republicans. That is, the D-R presidential growth gap at the national level may have been even larger had incumbents been more effective at retaining control of state governments. Our results have three important implications.

First, an important question is whether market-oriented policies under Republican state governments may have given rise to pronounced *long-run* growth in real personal income per capita and GDP. We emphasize that short run economic performance is different from long run growth. Also, it does not necessarily reflect "good" governance – growth oriented policies do not come for free, and must be traded off against other considerations (e. g., growth/employment versus inflation, stimulus packages versus budget consolidation). Different constituencies have different priorities, and elected officials are tasked with representing these interests (see, for example, Kitschelt 2000).

Second, studies examining the effects of government ideology on national economic performance in federal states may benefit by considering party politics at the lower jurisdictional level. This includes industrialized countries such as Canada and Germany but also somewhat less developed countries such as India. Future research may well investigate how ideology-induced state policies influence economic performance at the national level, and how ideology-induced state policies vary with institutions, the level of decentralization,

economic diversity and development, etc.[17] For example, there may have been strategic interaction and interjurisdictional competition across state governments due to fiscal externalities, potentially lowering GDP growth (through, say, increasing uncertainty, relocation costs imposed on firms, or partisan conflict and obstruction across different tiers of government) or raising it (since states compete to offer a more attractive business environment). Moreover, it also needs to be examined how ideology-induced policies at the local level, for example in cities, influence economic performance at the state or even the national level.

Third, the D-R growth gap remains puzzling indeed. We find that the partisan balance in state governments certainly matters for national GDP growth, but it does not explain the D-R growth gap; it is the opposite. Our results are in line with BW in suggesting that higher GDP growth was generated under Democratic politicians than under Republicans, but future research still needs to explore the channels through which the relationship arises and the extent to which, if at all, Democratic policies may have caused higher GDP growth.

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[17] On partisan politics in OECD countries see, for example, Schmidt (1996) and Potrafke (2016).

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Figure 1. The share of state governorships controlled by the Democratic Party was high (low) at the beginning of Democratic (Republican) presidential terms and tended to decrease (increase) drastically during the course of the terms.

Partisan control of state governorships

Legend: Dem. pres — Dem. governors (pop. weighted)

Blinder and Watson (2016) sample period is 1949:II to 2013:I
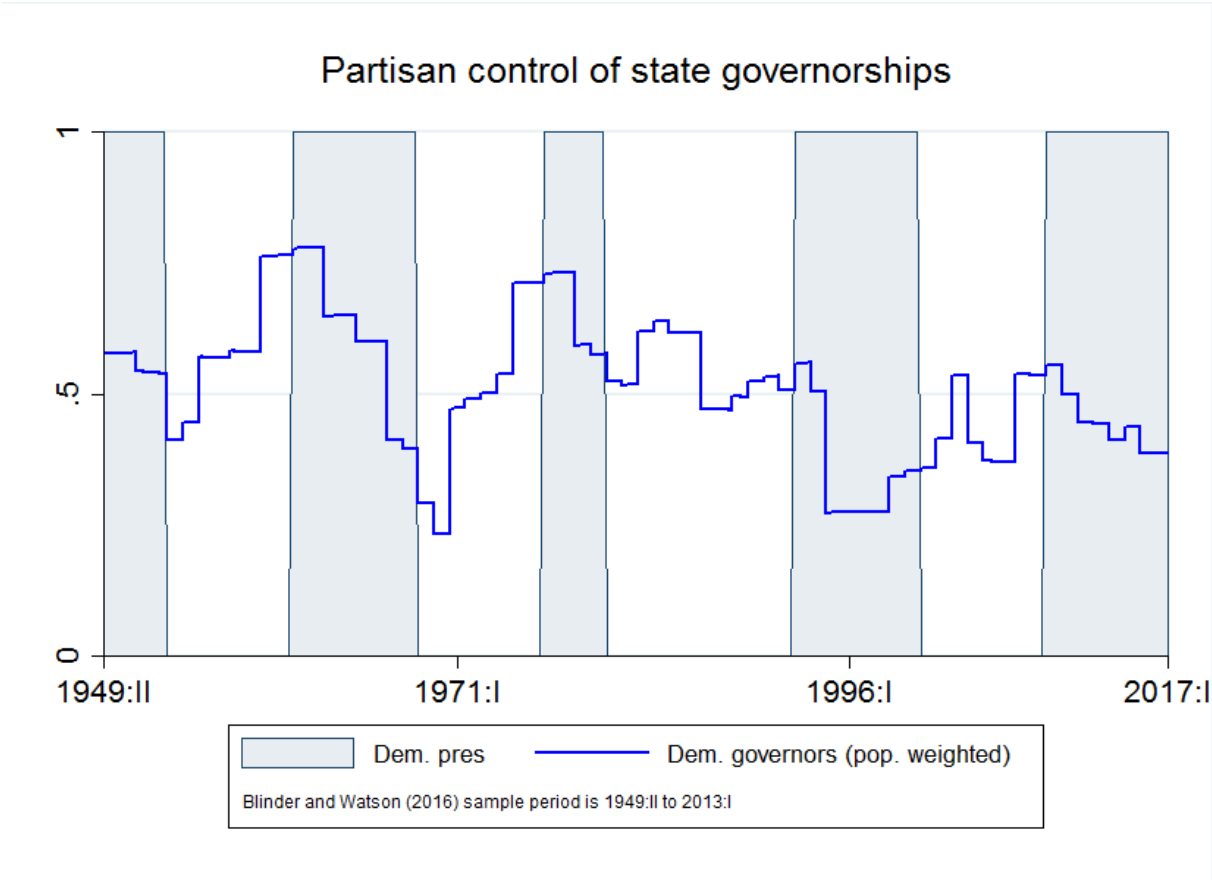
Source: Data on state level election results are taken from a variety of publicly available online sources, including David Leip's Atlas of US Presidential Elections, Carl Klarner's datasets (2013a), state agency websites.

Figure 2. The share of state legislatures that were controlled by the incumbent president's party also decreased in the course of the presidential term (though not as consistently and not as drastically as in the case of control of governorships).
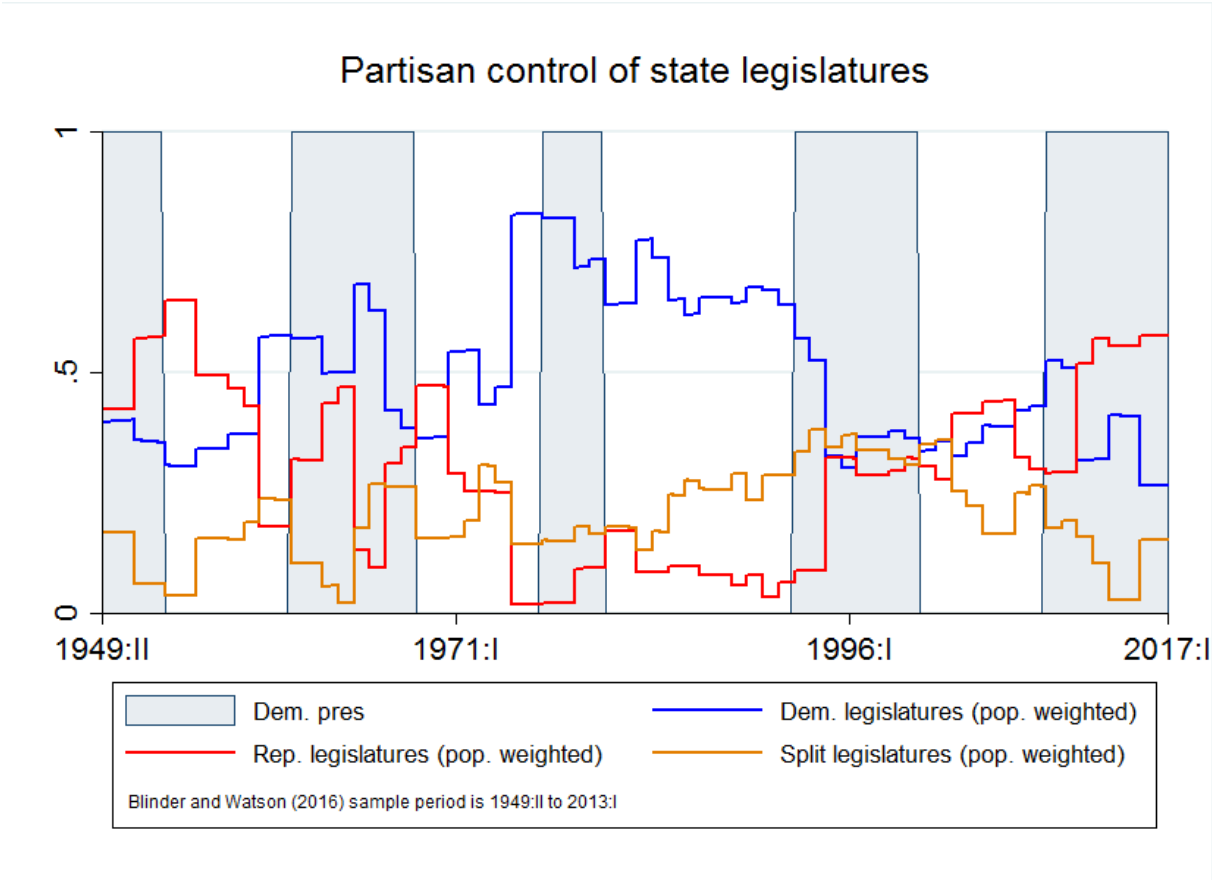
Source: Klarner (2013b), own calculations.

Figure 3. Newly elected presidents enjoyed many copartisan governors and unified state governments – but tended to lose them over time.

Partisan unified governments

Blinder and Watson (2016) sample period is 1949:II to 2013:I

Legend:
- Dem. pres
- Dem. (pop. weighted)
- Rep. (pop. weighted)

X-axis: 1949:II, 1971:I, 1996:I, 2017:I
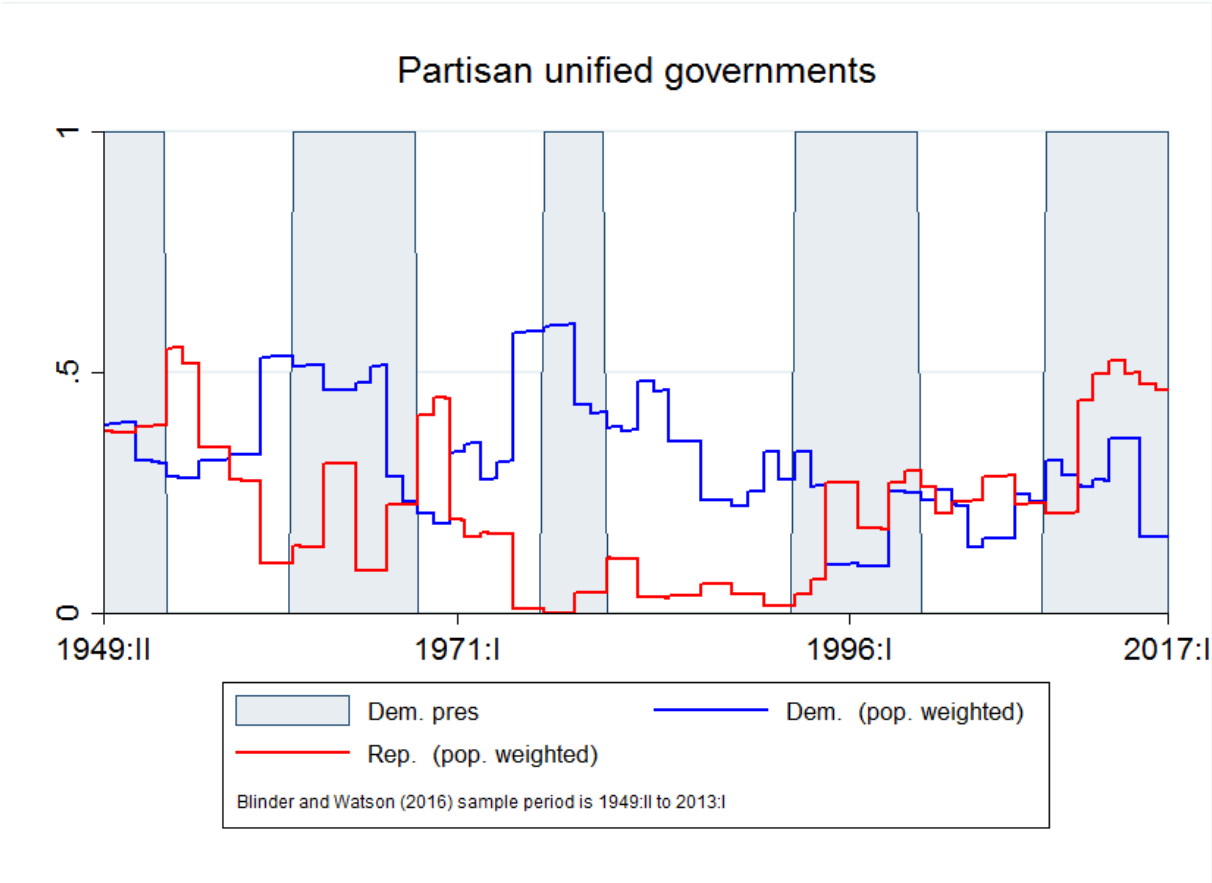
Source: Klarner (2013a, b), own calculations.

Table 1. Descriptive statistics on real national quarterly GDP growth (annualized) under Democratic and Republican presidents (1949:II-2017:I).

	No. of quarters	Avg. annualized GDP growth	Dem. governors	Dem. leg.	Rep. leg.	Dem. unified gov.	Rep. unified gov.
Dem. pres.	128	4.05	0.51	0.47	0.33	0.33	0.25
First year	32	4.47	0.56	0.54	0.26	0.39	0.19
Second year	32	4.67	0.55	0.53	0.26	0.38	0.19
Third year	32	3.49	0.46	0.41	0.39	0.28	0.30
Last year	32	3.57	0.45	0.40	0.41	0.28	0.31
Rep. pres	144	2.54	0.52	0.52	0.27	0.32	0.18
First year	36	0.67	0.46	0.46	0.32	0.27	0.24
Second year	36	2.28	0.47	0.47	0.32	0.28	0.23
Third year	36	4.37	0.58	0.57	0.21	0.37	0.14
Last year	36	2.86	0.57	0.57	0.21	0.35	0.13
Overall	272	3.25	0.51	0.50	0.30	0.32	0.22

Notes: Government ideology measured with one lag (BW).

Table 2. State government ideology predicting real national (annualized) quarterly GDP growth (1949:II-2017:I).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dem. pres.	1.50**				1.57**	1.59**	1.50**	0.91	1.70
	(0.63)				(0.61)	(0.63)	(0.62)	(1.87)	(1.35)
Dem. governors		4.39**			4.72***				
		(1.92)			(1.65)				
Dem. leg.			7.25**			7.01**			
			(3.64)			(3.22)			
Rep. leg.			4.49			3.53			
			(3.00)			(2.56)			
Dem. unified governments				5.91**			4.86**		
				(2.49)			(2.12)		
Rep. unified governments				0.33			-1.06		
				(2.09)			(2.12)		
Dem. pres. × Dem. governors								5.27**	
								(2.20)	
Rep. pres. × Dem. governors								3.98	
								(2.81)	
Dem. pres. × Dem. unified governments									5.05**
									(2.26)
Rep. pres. × Dem. unified governments									5.91*
									(3.32)
Cons.	2.54***	1.00	-1.67	1.27	0.09	-2.02	1.20	0.48	0.67
	(0.45)	(0.98)	(2.62)	(1.15)	(0.92)	(2.24)	(0.99)	(1.44)	(1.11)
$R2$	0.04	0.02	0.02	0.04	0.06	0.06	0.07	0.06	0.07

Notes: Dependent variable is quarterly GDP growth (annualized). Newey-West (6 lag) standard errors in parentheses. N=272. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 3. State government ideology predicting real national quarterly GDP growth (annualized) for alternative lags of state government ideology (1949:II-2017:I).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
No. of lags of state government ideology	-2	-1	0	1 (BW)	2	3	4
Governors							
Dem. pres.	0.84	0.86	1.33**	1.57**	1.15*	0.73	0.42
	(0.62)	(0.61)	(0.58)	(0.61)	(0.61)	(0.61)	(0.66)
Dem. governors	3.57*	4.04**	4.88***	4.72***	3.92**	3.69*	2.75
	(1.98)	(1.83)	(1.68)	(1.65)	(1.77)	(1.92)	(1.94)
Cons.	1.05	0.79	0.13	0.09	0.70	1.02	1.64
	(0.99)	(0.93)	(0.85)	(0.92)	(1.00)	(1.06)	(1.11)
Legislatures							
Dem. pres.	0.86	0.89	1.37**	1.59**	1.14*	0.68	0.33
	(0.62)	(0.62)	(0.60)	(0.63)	(0.63)	(0.61)	(0.65)
Dem. leg.	1.36	2.60	5.03*	7.01**	6.03*	5.49	4.83
	(3.06)	(2.80)	(2.75)	(3.22)	(3.37)	(3.57)	(3.52)
Rep. leg.	-0.32	0.45	1.79	3.53	3.41	3.43	3.91
	(2.71)	(2.31)	(2.13)	(2.56)	(2.69)	(2.86)	(2.91)
Cons.	2.28	1.43	-0.41	-2.02	-1.29	-0.81	-0.46
	(2.14)	(1.93)	(1.89)	(2.24)	(2.37)	(2.56)	(2.57)
Unified governments							
Dem. pres.	0.80	0.79	1.29**	1.50**	1.00	0.53	0.14
	(0.62)	(0.61)	(0.59)	(0.62)	(0.62)	(0.61)	(0.64)
Dem. unified gov.	3.25	4.14*	4.36**	4.86**	5.16**	5.25**	5.16**
	(2.24)	(2.14)	(2.04)	(2.12)	(2.27)	(2.43)	(2.55)
Rep. unified gov.	-0.93	-0.70	-1.59	-1.06	0.09	0.63	1.92
	(2.05)	(2.07)	(1.99)	(2.12)	(2.07)	(1.97)	(2.14)
Cons.	2.05**	1.71*	1.58*	1.20	1.09	1.16	1.09
	(0.90)	(0.94)	(0.94)	(0.99)	(1.01)	(1.06)	(1.13)
N	270	271	272	272	272	272	272

Notes: Dependent variable is average quarterly GDP growth (annualized). Newey-West (6 lag) standard errors in parentheses. 0 lags correspond to assigning the quarter during which a politician is inaugurated to the incoming politician. 1 lag is the BW baseline, where politicians are assigned their first full quarter in office. All political variables in a single regression assume the same lag. * p<0.10, ** p<0.05, *** p<0.01.

Table 4. Explaining the D-R-growth gap with state government ideology. BW model

	(1)	(2)	(3)	(4)	(5)	(6)
Begin	1950:I	1950:I	1950:I	1950:I	1950:I	1950:I
End	2015:I	2015:I	2015:I	2015:I	2015:I	2015:I
Total D-R gap	1.76	1.76	1.76	1.76	1.76	1.76
	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)	(0.66)
Dem. governors	-0.23			-0.16	-0.15	-0.40
	(0.17)			(0.22)	(0.35)	(0.34)
Dem. leg.		-0.22		-0.16		-0.37
		(0.17)		(0.22)		(0.24)
Rep. leg.		-0.00		0.04		
		(0.27)		(0.26)		
Dem. unified gov.			0.02		0.07	0.25
			(0.07)		(0.13)	(0.20)
Rep. unified gov.			-0.36		-0.32	
			(0.19)		(0.20)	
Explained D-R gap (common lag weights)	-0.23	-0.22	-0.34	-0.28	-0.40	-0.52
	(0.17)	(0.17)	(0.16)	(0.21)	(0.23)	(0.28)
Explained D-R gap (party-specific lag weights)	-0.31	-0.23	-0.39	-0.42	-0.54	-0.60
	(0.17)	(0.19)	(0.16)	(0.26)	(0.26)	(0.29)
p-value	0.51	0.28	0.01	0.05	0.00	0.00

Notes: Total D-R gap refers to the difference in average growth between Democratic and Republican presidents for the corresponding time period. The explained D-R gap is computed as described in the text using the combination of shocks indicated. With common lag weights, distributed lag weights are assumed the same for Democratic and Republican presidents; with party-specific lag weights, they can be different. Newey-West (6 lag) standard errors in parentheses. The *p*-value corresponds to F-tests for equality between the party-specific distributed lag coefficients.

Table 5. Explaining the D-R-growth gap with the share of Democratic governors. Multivariate results. BW model.

	(1)	(2)	(3)	(4)	(5)
Begin	1950:I	1950:III	1950:III	1950:III	1950:III
End	2013:I	2013:I	2013:I	2013:I	2007:IV
Total D-R gap	1.90	1.70	1.70	1.70	1.91
	(0.68)	(0.62)	(0.62)	(0.62)	(0.62)
Oil (Hamilton)	0.47	0.37	0.37	0.37	0.17
	(0.10)	(0.11)	(0.11)	(0.11)	(0.09)
Defense (Ramey)	0.18	0.14	0.13	0.12	0.17
	(0.06)	(0.06)	(0.06)	(0.06)	(0.07)
TFP (BW)		0.38	0.38	0.38	0.38
		(0.07)	(0.07)	(0.07)	(0.10)
Baa-Aaa spread			-0.03		
			(0.10)		
Uncertainty (BBD)				-0.02	
				(0.05)	
Taxes (RR)					-0.01
					(0.01)
Dem. governors	-0.19	-0.16	-0.16	-0.16	-0.15
	(0.16)	(0.14)	(0.14)	(0.15)	(0.12)
Explained D-R gap (common lag weights)	0.46	0.72	0.69	0.69	0.56
	(0.19)	(0.17)	(0.22)	(0.19)	(0.16)
Explained D-R gap (party-specific lag weights)	0.48	0.79	0.61	0.75	0.45
	(0.45)	(0.48)	(0.55)	(0.50)	(0.61)
p-value	0.81	0.00	0.00	0.00	0.00

Notes: see Table 3. Similar to BW, Table 8.

Table 6. Explaining the D-R-growth gap with state government ideology and alternative lag assumptions. BW model.

			Explained D-R gap; distributed lag model			
No. lags	Shocks included	Sample period	Total D-R gap	Common	Party-specific	*p*-value
-2	DG	1950:I-2015:I	0.98 (0.68)	-0.33 (0.17)	-0.40 (0.18)	0.56
	DG DL RL	1950:I-2015:I	0.98 (0.68)	-0.36 (0.20)	-0.51 (0.23)	0.02
	DG DUG RUG	1950:I-2015:I	0.98 (0.68)	-0.42 (0.21)	-0.52 (0.24)	0.00
-1	DG	1950:I-2015:I	0.99 (0.67)	-0.33 (0.19)	-0.43 (0.19)	0.43
	DG DL RL	1950:I-2015:I	0.99 (0.67)	-0.41 (0.23)	-0.58 (0.25)	0.02
	DG DUG RUG	1950:I-2015:I	0.99 (0.67)	-0.45 (0.22)	-0.57 (0.23)	0.02
0	DG	1950:I-2015:I	1.48 (0.65)	-0.38 (0.18)	-0.45 (0.18)	0.25
	DG DL RL	1950:I-2015:I	1.48 (0.65)	-0.40 (0.20)	-0.50 (0.23)	0.00
	DG DUG RUG	1950:I-2015:I	1.48 (0.65)	-0.47 (0.23)	-0.58 (0.25)	0.00
1 (BW)	DG	1950:I-2015:I	1.76 (0.66)	-0.23 (0.17)	-0.31 (0.19)	0.51
	DG DL RL	1950:I-2015:I	1.76 (0.66)	-0.28 (0.21)	-0.42 (0.26)	0.05
	DG DUG RUG	1950:I-2015:I	1.76 (0.66)	-0.40 (0.23)	-0.54 (0.26)	0.00
2	DG	1950:I-2015:I	1.55 (0.66)	-0.10 (0.16)	-0.19 (0.18)	0.46
	DG DL RL	1950:I-2015:I	1.55 (0.66)	-0.16 (0.20)	-0.28 (0.21)	0.30
	DG DUG RUG	1950:I-2015:I	1.55 (0.66)	-0.18 (0.22)	-0.33 (0.23)	0.00
3	DG	1950:I-2015:I	1.34 (0.65)	-0.11 (0.15)	-0.19 (0.17)	0.71
	DG DL RL	1950:I-2015:I	1.34 (0.65)	-0.19 (0.19)	-0.27 (0.19)	0.37
	DG DUG RUG	1950:I-2015:I	1.34 (0.65)	-0.15 (0.21)	-0.30 (0.21)	0.00

Notes: Number of lags refers to when the effect of incoming politicians is assumed to start, relative to the quarter in which they are inaugurated. DG, DL, DUG (RG, RL, RUG) refer to Democratic (Republican) governors, legislatures and unified governments. Newey-West standard errors (6 lags) in parentheses. The *p*-values corresponds to F-tests of equality of coefficients across party-specific and common lag weight specifications. See also Table 5.

Table 7. Average real national quarterly GDP growth rate (annualized) around turnover elections for Democratic and Republican victories.

	(1) Democratic turnover victories	(2) Republican turnover victories
Election year		
Q1	5.17	3.19
Q2	2.01	1.82
Q3	1.27	1.85
Q4	-1.46	5.52
Post-election year		
Q1	0.70 (†)	4.52 (††)
Q2	4.40 (*)	0.92 (**)
Q3	4.35	0.93
Q4	4.44	-2.78

Turnover elections are those where the winner and incumbent were from different parties. The eight quarters of the election year and the post-election year are shown; the election takes place in the fourth quarter of the election year. Each cell corresponds to the average of four observations.

Table 8. Annual growth in states' income per capita under Democratic and Republican state governments.

| | Income per capita growth (1949-2016) in percent | | |
	All states	Top 10	Bottom 40
Overall	1.91 (3396)	1.87 (680)	1.92 (2716)
Dem. governor	2.02 (1793)	2.06 (359)	2.01 (1434)
Rep. governor	1.79 (1577)	1.65 (321)	1.82 (1256)
Independent/other	1.18 (26)	- (0)	1.18 (28)
D-R difference	0.24[2.27]	0.42 [1.89]	0.19 [1.61]
Dem. legislature	2.02 (1631)	2.07 (319)	2.01 (1312)
Rep. legislature	1.81 (1104)	1.71 (213)	1.83 (891)
Split. legislature	1.78 (619)	1.69 (151)	1.81 (468)
D-R difference	0.21 [1.62]	0.37 [1.21]	0.17 [1.19]
Dem. unified government	2.16 (1073)	2.24 (229)	2.14 (844)
Rep. unified government	1.79 (735)	1.63 (158)	1.83 (577)
Non unified government	1.79 (1520)	1.71 (293)	1.81 (1227)
D-R difference	0.37 [2.47]	0.61 [2.01]	0.30 [1.79]

Average values by state government partisanship. Number of state-years in parentheses. Nebraska is not included with respect to legislatures, since it has a nonpartisan unicameral legislature. For the D-R differences, the t-statistic (in square brackets) is calculated by regressing the outcome on state government dummy variables, clustering at the state level. The top 10 states by population (in 2016) are CA, TX, FL, NY, IL, PA, OH, GA, NC, MI, and account for about 54% of the population.

Table 9. Panel regression results. Annual growth in states' real income per capita under Democratic and Republican state governments.

	Income per capita growth (1949-2016)					
	All states		Top 10		Bottom 40	
	(1)	(2)	(3)	(4)	(5)	(6)
Governors						
Dem.	0.16**	0.24**	0.18	0.29	0.15*	0.17*
	(0.07)	(0.10)	(0.17)	(0.17)	(0.08)	(0.09)
			[0.12]	[0.12]	[0.11]	[0.08]
Indep.	-0.16	-0.02	-	-	-0.19	-0.18
	(0.33)	(0.21)	-	-	(0.34)	(0.29)
					[0.37]	[0.32]
R^2	0.43	0.62	0.74	0.74	0.39	0.54
N	3396	3396	680	680	2716	2716
Legislatures						
Dem.	0.30***	0.44***	0.53**	0.54**	0.20	0.30**
	(0.11)	(0.13)	(0.19)	(0.20)	(0.12)	(0.10)
			[0.19]	[0.19]	[0.17]	[0.12]
Split	0.18	0.36***	0.48***	0.56***	0.09	0.13
	(0.11)	(0.11)	(0.15)	(0.14)	(0.13)	(0.12)
			[0.18]	[0.18]	[0.19]	[0.13]
R^2	0.43	0.63	0.74	0.74	0.40	0.55
N	3328	3328	680	680	2648	2648
Unified governments						
Dem.	0.15*	0.21*	0.07	0.20	0.16	0.21**
	(0.08)	(0.11)	(0.16)	(0.17)	(0.09)	(0.09)
			[0.15]	[0.15]	[0.11]	[0.09]
Rep.	-0.24**	-0.30***	-0.38*	-0.35*	-0.19	-0.25**
	(0.11)	(0.10)	(0.18)	(0.13)	(0.13)	(0.12)
			[0.18]	[0.18]	[0.18]	[0.12]
R^2 (overall)	0.43	0.63	0.74	0.74	0.40	0.55
N	3328	3328	680	680	2648	2648
Pop. weighted		Y		Y		Y

State and year fixed effects included. Standard errors clustered at the state level in parentheses, heteroscedasticity robust standard errors in square brackets (asterisks based on the more conservative standard errors). Nebraska is excluded from the legislature and unified government regressions, since it has a nonpartisan unicameral legislature. * p<0.10, ** p<0.05, *** p<0.01.

Table 10. Panel regression results. Annual growth in real state income per capita under Democratic and Republican governors and presidents, by region.

	Income per capita growth (1949-2016)					
	(1)	(2)	(3)	(4)	(5)	(6)
South	2.01***	1.71***	1.55***	1.78***	1.48***	1.33***
	(0.07)	(0.11)	(0.16)	(0.09)	(0.09)	(0.14)
West	1.46***	1.72***	1.53***	1.18***	1.44***	1.15***
	(0.08)	(0.12)	(0.14)	(0.06)	(0.08)	(0.10)
Northeast	1.76***	2.16***	1.93***	1.73***	2.19***	2.02***
	(0.08)	(0.10)	(0.08)	(0.02)	(0.08)	(0.08)
Midwest	1.74***	1.63***	1.55***	1.38***	1.53***	1.24***
	(0.18)	(0.09)	(0.20)	(0.10)	(0.08)	(0.15)
Dem. pres. × South	0.28**		0.31**	0.21		0.28*
	(0.12)		(0.14)	(0.13)		(0.15)
Dem. pres. × West	0.40**		0.41**	0.73***		0.72***
	(0.18)		(0.17)	(0.18)		(0.16)
Dem. pres. × Northeast	0.49***		0.50***	0.38***		0.32***
	(0.11)		(0.14)	(0.06)		(0.08)
Dem. pres. × Midwest	0.16		0.18	0.57***		0.59***
	(0.28)		(0.29)	(0.18)		(0.21)
Dem. gov. ×South		0.64***	0.66***		0.70***	0.72***
		(0.19)	(0.20)		(0.14)	(0.15)
Dem. gov. ×West		-0.12	-0.11		0.19	0.06
		(0.18)	(0.17)		(0.20)	(0.12)
Dem. gov. ×Northeast		-0.32*	-0.34*		-0.58***	-0.55***
		(0.18)	(0.18)		(0.16)	(0.17)
Dem. gov. ×Midwest		0.45***	0.46***		0.29	0.32
		(0.14)	(0.14)		(0.19)	(0.22)
N	3396	3396	3396	3396	3396	3396
$R2$ (overall)	0.26	0.26	0.26	0.31	0.31	0.31
Pop. weighted				Y	Y	Y

Variables for independent governors also included, omitted from table; constant excluded from regression to avoid collinearity. Standard errors clustered at state level. * $p<0.10$, ** $p<0.05$, *** $p<.01$.