

How can we understand the collective context of political institutions in state politics? For decades, there has been extensive research on the role of individual institutions such as the ballot initiative (Gerber 1996; Matsusaka 2018), campaign finance laws (La Raja and Schaffner 2015), term limits (Kousser 2005), and legislative professionalism (Squire 1992; Bowen and Greene 2014) among many others. Each of these lines of inquiry have improved our understanding of how institutions affect a variety of political phenomena from policy making to individual political behavior. However, far less is known about how these institutions fit together. Are there underlying dynamics that we can identify by which state institutions are organized?

I argue that we can build on our institutional understanding of state politics by borrowing from the extensive comparative politics literature on institutional configurations. This approach evaluates groupings of institutions, while also allowing for operationalization of concepts that are difficult to directly observe. For example, democracy cannot be directly measured (Treier and Jackman 2008), but emerges from numerous institutions that contribute to the same concept (Coppedge, Alvarez and Maldonado 2008; Dahl 1973). This paper builds on the theoretical perspective of works highlighting the importance of a cross-branch understanding of a state's institutional context (Brown 2010). I collect data from 1975 to 2016 to build a comprehensive dataset of state institutions from the executive, legislative, and judicial branches. I then conduct an exploratory factor analysis to identify institutional dimensions that collectively represent the context in which state politics operates.

I identify two primary ways in which state institutions are organized. The first, accountability pressure, reflects the extent to which institutions incentivize politicians to respond to public opinion both during elections and once in office. I find two dimensions that load onto this concept, the first structuring pressure during elections (often called the selection mechanism) and the second structuring incentives to respond to the public between elections (adaptation mechanism). The second concept is the strength of the checks and balance system in the state and reflects the ability of each branch of government (including the informal branch of the public) to assert itself in the policy making process. Collectively these two dimensions identify the primary ways in which state institutions are organized. I use a Bayesian factor analysis of mixed data to score states along both of dimensions from 1975-2016.

This project bridges the methodological approach from comparative politics to measure democracy (Lijphart 1999; Treier and Jackman 2008) with the literature that takes a cross-branch understanding of institutional heterogeneity across US states (Boushey and McGrath 2017; Kousser 2005). It allows researchers to see the collective effect of a state's institutions, while also being able to evaluate how individual institutions contribute to these underlying dimensions through their factor loadings. I build upon the theoretical foundation developed by institutional specific research to identify considerable state level variation that can be leveraged to further our understanding of institutional design, and the richness of state level data will allow researchers to answer questions about how democracy operates at the sub-national level (Goldberg, Wibbels and Mvukiyehe 2008). Additionally, this approach allows for multi-dimensionality to recognize multiple dynamics by which institutions are organized. These new measures represent new concepts that

can be applied to countless studies of state politics, and researchers can choose which dimensions they want to include depending on the research question. Lastly, these scores build on the existing literature that evaluates the importance of a cross-branch institutional approach to understanding the influence of institutions on the politics of US states.

I explore significant temporal and geographic variation in the scores, and find that states have seen significant institutional shifts, with increased levels of accountability pressure and decreases in the strength of the checks and balance system. I find that increased electoral competition, increases in income, and increases in urban populations are driving the rise in accountability pressure, and the decrease in the checks and balance system can be attributed to population and wealth increases across states. Lastly, replicate Lax and Phillips (2012) to provide a brief application of the scores in a model of policy congruence. I find that states with higher levels of accountability incentives are more likely to have policies congruent with the majority opinion while the strength of the checks and balance system is unrelated to policy congruence. These scores can be a resource for scholars to incorporate a fuller institutional context into research in state politics.

1 Institutional Design

Political scientists in comparative politics and international relations have measured institutional configurations for decades. Ranging from measures of regime type (Pemstein, Meserve and Melton 2010) to democratic consolidation (Power and Gasiorowski 1997), researchers have recognized that multiple institutions often contribute to the same underlying concept, and that underlying concepts such as democracy often have multiple dimensions (Coppedge, Alvarez and Maldonado 2008). Frequently, these concepts cannot be directly observed or measured, forcing researchers to implement a variety of strategies to aggregate institutional data. Scholars have leveraged cross national institutional variation to measure levels of democracy (Treier and Jackman 2008), and identify the different ways in which democracies are organized (Lijphart 1999). This approach has allowed political scientists to understand differences in consensus versus majoritarian-oriented democracies and the effects of these differing types of configurations on a variety of topics including policy responsiveness (Wlezien and Soroka 2012) and legislative delegation to the executive (Huber and Shipan 2002).

There is considerably less research within the state politics literature focused on developing measures to understand how each branch of government fits into the overall institutional configuration of a state. Much of the research on institutions has focused on the role of single institutions, such as term limits (Kousser 2005) or campaign contribution limits (La Raja and Schaffner 2015). Relatively little is known how these institutions fit together, despite research finding that institutions operate differently depending on the existing institutional context (Miller, Nicholson-Crotty and Nicholson-Crotty 2011). While some research does incorporate multiple institutional indicators, these studies typically include the variables separately meaning they are assumed to have independent effects. Generally, researchers try to absorb omitted institutional context through the use of fixed or random effects by state.

At the same time, there has been some recognition of the value of taking a macro-institutional approach within a single branch of government. Perhaps the most studied is legislative professionalism (Squire 1992; Mooney 1994; Bowen and Greene 2014). Legislator salary, staff resources, length of legislative session, and other indicators have all be found to contribute to the overall capacity of legislative bodies to develop legislation, perform constituent service, and oversee other branches. Similarly, others have developed measures of gubernatorial power that combine indicators that measure the ability for governors to drive state policy (Beyle 1968; Beyle, Niemi and Sigelman 2002). These measures acknowledge that gubernatorial power and legislative professionalism are a function of multiple institutions having a common effect on an underlying concept that cannot be directly observed. These broad measures of each branches' capacity have provided valuable insights for scholars to understand how states organize their institutions. Furthermore, these measures recognize that the individual institutional choices for the components underlying the scales were not arrived at independently. States that give their legislators high salaries are also giving them more staff resources, and often longer session lengths. Combining these pieces into a single scale captures the underlying logic of the institutional choices that states are making, in this case for a more professionalized legislature or more powerful governor.

Furthermore, recent scholarship has increasingly recognized the importance of understanding cross-branch institutional organization. The extent to which legislatures or governors are the stronger force in state politics has implications for how resources are allocated (Brown 2010), what types of policies are passed (Lewis, Schneider and Jacoby 2015), and the extent to which states delegate decision making authority to bureaucracies (Krause and Woods 2014; Boushey and McGrath 2017). I argue that we can build upon the extensive individual institutional research by taking a cross-branch understanding of how state institutions are organized.

This extension represents a novel attempt to apply the logic of comparative institutional design to the study of US states. Although US states do vary in style of government as dramatically as countries, there is still significant institutional variation in US states (Goldberg, Wibbels and Mvukiyeye 2008). Comparativists have used a variety of approaches to comparing governing systems, and one common method is to use factor analysis to aggregate institutional features to produces indices along a common dimension such as levels of democracy (Treier and Jackman 2008). Just as comparativists use measures of democracy to measure institutional effects on a variety of outcomes such as economic growth or population health, state politics scholars can understand the collective effect of a state's institutional structure. An aggregate approach also allows scholars to identify broad shifts or trends in institutional design. Are states trending over time in a particular direction? Can we identify regional patterns in these decisions?

This approach is not designed to replace individual institutional analysis, but rather to provide another framework by which to understand state politics. Aggregate measures are unable to identify many of the institutional specific mechanisms that define much of state politics research. When institutions are combined, researchers are unable to credit (or blame) specific institutions for an outcome, and aggregate stability in institutional measures may hide major,

counterbalancing shifts in state institutions. Furthermore, due to the necessary levels of abstraction when generating an aggregate measure, scholars will likely disagree with how to best conceptualize and operationalize these measures, and what dimensions should be measured and included.

It is therefore necessary to take a variety of approaches to researching institutions in US states. This would mirror the research in comparative politics that has vibrant research in both studies of aggregate measures of democracy (Coppedge et al. 2011) and individual institutions such as direct democracy (Hainmueller and Hangartner 2019), term limits (Klašnja and Titunik 2017), and other specific institutions. These complementary approaches are both necessary to build an understanding of the role of institutions in state politics.

2 Approaches to Modeling Institutional Design

There are a variety of ways to model institutional design, including separate indicators for institutions, adding the institutions together in an additive scale, and using a measurement model to identify latent commonalities between units, and each method has certain advantages and disadvantages. The goal of developing measures of concepts that are not directly observable is to identify commonalities across a range of variables that all load onto the same concepts. I use a measurement model for a number of reasons.

First, measurement models reduce the number of dimensions while accounting for the influence of each component, which creates a parsimonious but comprehensive measure the influence of institutions. Evaluating the institutions in isolation would impede understanding the extent to which they may balance out or reinforce each other's influence on the relationship between opinion and policy. State institutions do not operate independently from one another. Yet including each institution as a separate variable in the same model assumes their effects on an outcome are independent, reduces degrees of freedom, and can be susceptible to high correlation between institutions. For example, all but one of the states to adopt term limits is an initiative state (Bowler and Donovan 2004a). However, if researchers only include term limits in a model of policy responsiveness, the estimates will suffer from omitted variable bias, and the initiative's effect may be wrongly assigned to term limits. A measurement model approach helps researchers overcome this dilemma to see how institutions are interacting in tandem to provide a more complete understanding of a state's institutional context, while producing consistent parameter estimates.

A latent variable approach assumes that there are unobservable dynamics that emerge from some combination of observable characteristics (Bollen 2002). Democracy (Treier and Jackman 2008), intelligence (Bollen 2002), and policy liberalism (Caughey and Warshaw 2016) are just a few examples of scholars using a measurement model approach to quantify unobservable data. These approaches generate low-dimensional information about complex phenomena that can be more easily analyzed (Caughey and Warshaw 2015).

While other methods such as additive or weighted scales also reduce dimensionality of key concepts, they present other drawbacks. Additive scales can result in arbitrary cutoffs between respondents (Treier and Jackman 2008).

Components of an additive scale are given equal weight, and movement from one value to another within a component (low to moderate legislative professionalism vs moderate to high professionalism, for example) are assumed to have the same effect on the latent measure. If either one of these assumptions are violated, which they often are (see Treier and Jackman (2008) for examples of assumption violations), the measures will suffer from measurement error. This can result in inconsistent estimates that suffer from attenuation bias. Unless a researcher can demonstrate that each item in the additive scale has equivalent influence on the concept of interest, an additive scale is likely to introduce measurement error. Using an additive scale fails to account for the correlation between indicators, whereas a latent factor can incorporate local dependencies (Martin and Quinn 2002; Fabrigar and Wegener 2011). States are making decisions about their institutional design, so I do not expect that institutional choices are independent. Going back to the earlier example, the initiative process made adopting term limits much more likely (Bowler and Donovan 2004a). For the reasons highlighted above I argue that a factor analysis approach is appropriate for measuring institutional design.

Traditional factor analysis also comes with its own set of drawbacks. Standard factor analysis requires continuous variables to contribute to the underlying distribution. However, many of the institutions used in this analysis are binary or categorical. For example, a state either limits PAC campaign contributions or it does not. Other state-level characteristics, such as the strength of a governor (Beyle 1968) or the rigidity of term limits, are categorical in nature, while indices of legislative professionalism (Bowen and Greene 2014) and speaker power (Mooney 2013) are continuous. A traditional factor analysis assumes normally distributed components (Quinn 2004), but a categorical or binary variable clearly violates any normality assumption. A mixed factor analysis, discussed in more detail shortly, allows me to use both continuous and categorical when estimating latent dimensions (Fahrmeir and Raach 2007) and balance their influence so that each type “contributes equally to the construction of the principal components” (Kassambara 2017).

3 Institutional Data and Exploratory Factor Analysis

To measure institutional design I collect state institutional data from 1975 to 2016, which results in 2,100 state-year observations.¹ Even if many of the institutions only weakly load onto these dimensions, the sample size is sufficiently large to conduct factor analysis. I use publicly available sources to collect historical information on state institutions. Some institutions, have been developed by political scientists such as measures of legislative professionalism (Bowen and Greene 2014) and gubernatorial power (Beyle, Niemi and Sigelman 2002). I also collected data from Michigan State’s Correlates of State Policy Project and the National Conference of State Legislatures for information about initiative qualification requirements. My primary source for identifying institutions is the annual *Book of the States*.

¹Fabrigar and Wegener (2011) suggest at least 200 observations for latent factor analysis, although samples of at least 400 are recommended for more complex measurements models. Other researchers recommend a ratio of at least five observations for each variable (Gorsuch 1983). These guidelines are rules-of-thumb, and there is not hard rule for the ideal number of observations, although there is agreement that the larger the number of observations, the better, particularly when components load lowly onto dimensions.

This series of books details historical institutional data, including campaign finance laws, signature requirements for initiative qualification, and a variety of other institutions. See table supplemental material for a list of all institutions, the variable type, and the years covered in the data.

Data collection prioritized finding institutions that have been previously been used by the state politics literature, and institutions from each branch of government. There are measures for institutions that affect elections (campaign finance regulations, primary type, and voter registration laws), the courts (elected court), legislative institutions (speaker power, legislative professionalism), the executive branch (gubernatorial power, veto override requirements), and the general policy making environment for the state (direct democracy, and balanced budget requirements).

I estimate a Bayesian factor analysis of mixed data (Quinn 2004) on observations between 1975 and 2016 in order to maximize the number of years covered while also minimize the gaps in individual institutional coverage. Some are duplicate measures of the same institution, such as Squire's (1992) and Bowen and Greene's (2014) measures of legislative professionalism. Duplicate measures are not included in the same model.² The institutions are a collection of binary, categorical, and continuous variables. There are 15 binary variables, 13 continuous ones, and 2 categorical ones. Institutions include the legislative, executive, and judicial branches of state government, as well as electoral regulations and direct democracy. For some institutions, such as the initiative and term limits, a categorical measure is used to reflect the ease of qualifying ballot measures or the strictness of term limits.

I first conduct an exploratory mixed factor analysis, which examines the best fit for number of dimensions and what components to include.³ I allow for up to eight potential dimensions to be included in the measurement model. I first evaluate the contribution of each dimension by the percentage of explained variation. While there are no hard rules for determining the number of dimensions to include, it is generally advised to look for when there is a sharp change in the slope connecting each bar in a scree plot showing the explanatory power of each dimension (see supplemental material for the scree plot). The plot indicates that a fourth dimension does not add much explanatory power to the total explained variance in the model, and suggests estimating a factor analysis with three dimensions.

Figure 1 shows the contribution of each institution to the three dimensions, in rank order of the size of its contribution.⁴ The dotted line is a cutoff at what the contribution would be for each institution if they all had identical loadings. Institutions that contribute above the dotted line have above average contribution to that latent dimension. Electoral rules dominate the first dimension. Union and individual campaign contribution limits contribute the most to the dimension, followed by same day voter registration. Publicly financed campaigns, low barriers to qualifying

²I use the scales for legislative professionalism, speaker power, and gubernatorial power rather than the individual components to construct my measure. I do this to not dominate the factor analysis with legislative institutions to make it a more cross branch measure, and to prevent the components from emerging as dimensions to the measure. These components have already been demonstrated to measure underlying concepts and are strongly correlated. Finally, the model is already very complex due to the number of parameters being estimated and took millions of interactions to converge. Adding another 10-15 components would not add to the underlying understanding of institutions but would make the model much more difficult to converge.

³I use the Factor Analysis of Mixed Data (FAMD) package in R. This frequentist model uses a similar logic to the Bayesian mixed model, and explained in detail in Audigier, Husson and Josse (2016).

⁴See supplemental material for factor loadings and summary statistics

ballot initiatives, and larger legislative bodies also contribute to this dimension. Virtually all of the components that contribute significantly to this dimension are directly related to elections, including the rules that govern campaign finance and voter registration regulations, as well as rules that determine the number of seats in an election, how often members can run, and the ease by which initiatives can be placed on the ballot.

The second dimension focuses less on electoral rules, and more on institutions that are traditionally thought of as those that influence policy-makers once they reach office. The strongest contributor is the measure of ease of initiative qualification, followed by term limits⁵, limitations on the ability for legislatures to raise taxes, and legislative professionalism. Not only does this dimension primarily affect politicians once they are in office, but also is focused largely on the legislative branch.

The third dimension includes institutions that affect the relative power of different branches of government. The largest contributors to this dimension include ballot initiatives (which empower voters to act as an unofficial fourth branch of government), legislative professionalism and speaker power (which empowers the legislature), as well as gubernatorial power and high veto override requirements (which empower the executive branch). I call this dimension checks and balances because states that score high in this dimension have powerful branches of government that compete for power. States high in checks and balances have stronger actors that can develop their own policy solutions and veto those of other branches. When there are more actors with the ability to stop policy change, the probability of policy change decreases (Tsebelis 2002). When checks and balances is high, it should be harder to move the status quo because more actors have the power to stop policy change.

The first two dimensions appear to measure two distinct mechanisms identified in the responsiveness literature, selection and adaptation. The first dimension consists of institutions that affect state elections. These include campaign finance regulations and voter registration laws. Campaign finance laws, such as individual limits and union limits, help to reduce the influence of forces seeking ideological or particularistic benefits (La Raja and Schaffner 2015; Barber 2016), which increases the relative power of parties who support candidates closer to the median voter. States with high values of this dimension have relatively strict campaign finance regulations (particularly on individuals and interest groups), same day registration, and a relatively low cost of voting. The first way public opinion is translated into policy is through the election of politicians who share constituent views, often referred to as selection (Levitt 1996). When the selection mechanism is strong, the institutional configuration is expected to incentivize politicians who run for office to be less ideologically polarized because ideological donors have less power to support ideologically pure nominees. Additionally, same day registration should result in more voters participating (Mitchell and Wlezien 1995). This makes it harder for candidates to win solely with a small coalition. The first dimension appears to be measuring institutions that would affect the selection mechanism of policy responsiveness.

⁵I estimated the model with and without term limits due to its high correlation with the initiative process, and found model produces highly correlated score estimates in the states (above .9).

The second dimension consists of institutions that affect a politician's behavior once elected (Erikson, Wright and McIver 1993). These institutions reflect the pressure to respond to voters once in office. States high in this dimension have the initiative process (as well as low barriers to qualify initiatives on the ballot), high levels of legislative professionalism, and large population legislative districts, and term limits. These institutions provide information to representatives about constituent preferences. Ballot initiatives and popular referendum, whether successful or not, provide the state with direct information about median voter preferences (Gerber 1996), and high profile popular vetoes of government policy provide a way for voters to show the state they are out of line with public opinion (Kogan 2016). Initiative states and states with larger populations also have denser and more representative interest group populations that provide vital information to legislators about the distribution of preferences in the district. Finally, professionalized legislatures have more resources to interact with constituents and learn more about district preferences (Squire 1992; Pacheco 2013).

The institutional contributions point to both dimensions being part of the two responsiveness mechanisms. For example, the initiative process is theorized to have both a relatively weak direct effect and strong indirect effect on policy responsiveness (Gerber 1996; Matsusaka 2018). The direct effect (placing and pass policies on the ballot) is weak because initiatives are rare, occurring on average one to two times on per election cycle. The indirect effect (the threat of initiatives) is theorized to be much stronger because interests can use the threat of initiatives to push policy closer to the median voter. So, the initiative is expected to have some influence on policy through elections themselves, but a much stronger influence from the constant pressure it puts on elites. Dimension 1 appears to be picking up on something approximating the direct influence of the initiative, while dimension 2 picks up on a more influential indirect effect.⁶ Given the groupings of institutions and their contributions in these first two dimensions, they appear to be picking up on the separate pieces of the influences on policy responsiveness.

I add these two dimensions together after estimating the factor analysis to generate scores for accountability pressure, but both factors will be made available for scholars that want to separate the two mechanisms. Depending on the application scholars may want to keep them separate or combine them. I am not trying to parse out the mechanisms by which public opinion is translated into policy but rather understand the extent to which a state has designed its institutions to either insulate or expose it to the influence of public opinion. Collectively accountability pressure is analogous to the inverse of Bowler and Donovan's (2004b) legislative insulation index. When accountability pressure is high, the entire state government has less insulation from public opinion.

The third dimension is a clear measure of the dispersion of power between the branches of government. The initiative process, veto override requirements, and Bowen and Greene's second dimension of legislative professional all directly relate to how the branches of government interact with each other and the population to pass (or block)

⁶It should be noted I am not arguing that these contributions are empirically able to parse out the direct and indirect effect of the initiative, but rather conceptually the contributions align with where scholars would expect a stronger or weaker contribution when thinking about the importance of an institution to responsiveness.

policy change. When checks and balances is high, power is less concentrated in a single branch of government and actors are better able to block unilateral policy changes.⁷ Governors can successfully veto legislation more easily, legislatures are more professionalized and able to unilaterally develop legislation, and voters can more easily place initiatives on the ballot. I next use a Bayesian factor analysis of mixed data to calculate each component's loading to each dimensions and provide scores for each state-year observation along each dimension.

4 Bayesian Factor Analysis

A Markov Chain Monte Carlo (MCMC) simulation approach is used to generate scores for accountability pressure and checks and balances (Gill 2014). This algorithm is the foundation of many Bayesian analyses, including in political science to measure legislative ideal points (Clinton, Jackman and Rivers 2004), Supreme Court justices' ideological locations (Martin and Quinn 2002), and democracy (Treier and Jackman 2008). When the parameter space is complex (i.e. has multiple dimensions, among other characteristics) this approach requires a large number of iterations, often in the millions, to fully understand the distribution of the parameters.

Each score is calculated as a distribution rather than a point-estimate (Dunson and Herring 2005). Uncertainty can be modeled in both the construction of the latent variable, and in the values generated. Median posterior scores for each dimension can be compared to the 97.5% and the 2.5% values from the posterior distribution. The posterior distribution reflects uncertainty in estimates produced. The posterior distribution is a function of the prior distribution and a likelihood function (the data being used to construct the measure).

The package *MCMCpack* includes a Bayesian Mixed Factor Analysis command that generates a posterior distribution of scores for each dimension (Quinn 2004). The factor loadings and scores are given normal prior distributions, and cutpoints are assigned improper uniform priors. The posterior distribution is simulated using a Metropolis-Hastings within Gibbs sampling algorithm. This sampling algorithm operates through a stochastic process that explores potential values of a parameter space, where the value of θ^t is only defined by θ^{t-1} . This iterative process will explore the entire distribution of the state space, and with sufficient iterations the Markov Chain will full explore the state space and the distribution of each parameter (Cowles and Carlin 1996).

I use the information from the exploratory factor analysis to estimate the Bayesian factor analysis of mixed data, including constraining the model to estimate three dimensions.⁸ The model is computationally intense due to the large number of parameters being estimated, so the first four million iterations were discarded as burn-in followed by another ten million iterations, storing every 200th iteration.⁹ Convergence diagnostics do not indicate that non-convergence is

⁷Accountability pressure is positively correlated with Boehmke and Skinner's (2012) rate score for policy innovation (.19), while checks and balances is negatively correlated (-.05).

⁸Several of the variables were given constraints on the direction of their factor loadings. For example, the initiative was constrained to have positive loadings on dimensions 2 and 3, while individual campaign limits were constrained to have positive loadings on only dimension 1. These constraints do not alter the strength of the factor loading, only the direction.

⁹The thinning interval was only used when stores were scored, as suggested by the package *MCMCPACK* this is done because storing 10 million iterations of thousands of parameters requires too much memory. Therefore, every 200th iteration is stored from the posterior estimates

a problem.¹⁰ The factor scores for each dimensions are normalized with a mean of zero and a standard deviation of 1.

After estimating the scores for each dimension, I add the factor scores for dimensions one and two together to get an estimation of overall accountability pressure for the reasons discussed above.¹¹ Depending on the application, scholars may want to keep these two dimensions separate or combine them. The median, 2.5%, and 97.5% factor score estimates for the three dimension factor scores will be made available in addition to the scores for accountability pressure. Accountability pressure and checks and balances correlate very weakly at .08.

5 Patterns of Institutional Design

Figure 2 shows the mean levels of accountability pressure and checks and balances each year across all 50 states.¹² The two dimensions have opposite trajectories. Checks and balances decreases over time, while accountability pressure increases. This would suggest that states may be putting more emphasis on crafting institutions to give clearer signals of public opinion to governing actors rather than keeping a strong system of checks and balances. Increases in accountability pressure mirror the rise of campaign finance reform over the last four decades as well as the growth in the importance of the initiative process since the 1990s (Initiative and Referendum Institute 2017). The figure highlights the value of creating aggregate measures because scholars can immediately recognize striking temporal variation in institutional design.

The decline in checks and balances matches the growing body of research that has found the executive branch is increasingly becoming the central actor in state politics at the expense of other branches of government (Haider-Markel and Ferguson 2013; Rosenthal 2008; Krupnikov and Shipan 2012; Boushey and McGrath 2017). The relative increase in gubernatorial power has also been documented through increases in legislative reliance on bureaucratic expertise (Boushey and McGrath 2017). Additionally, the decline in checks and balances occurs in the same era that real differences begin to emerge in how states are governed by Democrats and Republicans in terms of policy liberalism (Caughey, Xu and Warshaw 2017). As the checks and balance system in the states weakened, out of power parties are less able to check the in-power party, which makes it easier for a party to move policy in their preferred direction. This also matches trends at the national level as parties in Congress have increasingly operated more like those in a parliamentary system (Mann and Ornstein 2016) where the majority dominates the legislative process, and institutions that place more checks on the system (such as the filibuster) are increasingly either removed or weakened.

Figure 3 show geographic trends for the two dimensions over three time periods. These maps provide a snapshot of the scoring of the states in each dimension in 1975, 1995, and 2015. Darker shades indicate relatively high levels

¹⁰I first used the Raftery and Lewis (1992) diagnostic to determine the minimum number of iterations needed for an acceptable level of precision and then used the Geweke (1992) diagnostic and estimated 3 parallel chains to use the Gelman and Rubin diagnostic to determine that non-convergence was not a problem.

¹¹Public health scholars have used a similar approach to develop measures of human development that combines factor scores measuring poverty, nutrition, and other factors into a composite index of development (Antony and Rao 2007). In other cases, scholars may want to separately estimate the two dimensions to evaluate differences between selection and adaptation.

¹²From this point on, I will discuss two dimensions. accountability pressure (the sum of dimensions 1 and 2) and checks and balances (dimension 3)

of a dimension, and lighter shades low levels. Accountability pressure is more concentrated in initiative than non-initiative states, which is unsurprising given the high loading of the initiative process on this dimension. States in the Ohio River valley and the Deep South are the lowest in accountability pressure, while states in the Great Plains and West Coast tend to be higher in this dimension. Checks and balances appears to be more concentrated in on the West Coast in earlier eras, but gradually has shifted toward the middle of the country over time. Overall, states west of the Mississippi River tend to be higher in both accountability pressure and checks and balances, and states in Appalachia tend to be low in both dimensions. Both sets of maps demonstrate the same trend as identified in figure 2 as many states see an increase in accountability pressure and a decrease in the checks and balance system.

Some states, such as Minnesota, Delaware, and Indiana remain tightly bound to a score over the entire time period whereas others such as Louisiana, Illinois, and North Carolina see much large shifts in their score for accountability pressure. Oklahoma, Michigan, Maine and California are consistently among the highest scoring states in accountability pressure throughout the sample, whereas Tennessee, Alabama, and Indiana consistently score among the lowest. There are less clear rankings for states in terms of checks and balances. There is a large group of states that generally fall between zero and one, and a smaller cluster of states that consistently score lower in this dimensions, including North Carolina, Arkansas and West Virginia (see figures 1 and 2 in the appendix for more information).

5.1 Determinants of accountability pressure and checks and balances

Figures 2 and 3 demonstrate the significant temporal and geographic variation in the scores. I model levels of accountability pressure and checks and balances to identify what causes states to be high or low in either dimension, as well as identify potential causes for the national trend lines discussed above. Are there patterns that help explain the national rise in accountability pressure and decline in the checks and balance system? I model predictors of both dimensions in seemingly unrelated regression models.¹³ I include a number of political and demographic variables to predict levels of each dimension. I include state population, percent urban, and median income (both standardized) to control for state size and wealth when evaluating political determinants of each dimension. I next include measures of unified control of state government (the legislature and governor's office) by the GOP or Democrats. I expect Democratic control to be negatively associated with the checks and balance system because of the party's views on a more active government with fewer constraints, while I expect GOP control to be associated with more decentralization and restrictions on unilateral government action. The expectations for accountability pressure are less clear by partisanship because it has a mix of institutional features favored by Democrats (strict campaign finance laws) and Republicans (taxation limits and term limits) and other institutions that conditionally are favored by Republicans or Democrats depending on the distribution of preferences (the ballot initiative).

I include Ranney's (1976) measure of competition between the parties, and expect higher levels of competition to increase levels of both dimensions. Competitive elections mean that there is higher uncertainty about what the

¹³The correlation between the residuals of each model is very small (-.004) and statistically insignificant.

voting population wants (McCarty et al. 2019) and a greater likelihood of a party losing power. Strategic elites are expected to design institutions that maximize their ability to learn about public opinion, while also building checks to constrain the other party when they take power, leading to higher levels of both accountability pressure and checks and balances. Next, I include percent black to measure the influence of racial diversity on both dimensions. I expect that higher percentages of the population that are black will result in a stronger checks and balance system and weaker accountability pressure. More homogeneous societies are more likely to view fellow citizens as deserving (Aarøe and Petersen 2014), so I expect that states with larger minority populations are more reluctant to design institutions that emphasize broad participation and input from all citizens.

Lastly, I use Elazar's (1966; 1984) measures of moralistic, individualist, and traditionalistic political cultures. This time invariant measure incorporates migratory patterns of immigrants who spread across the country, with each category having a unique set of beliefs about the role of government in society. States with a moralistic culture have relatively positive views of a strong government and place more emphasis on the general welfare compared to other cultures, while also believing strongly in civic values such as protecting minority rights. Individualistic states place more of a focus on individual rights and private goods and take a more limited view of the role of government and tend to be more particularistic in their preferences for government action. Lastly, traditionalistic states view the government as a tool to reinforce social order. Citizens in these states generally place the least emphasis on serving the public good rather than preserving the status quo. I therefore expect states with moralistic subcultures to have the highest levels of accountability pressure, and checks and balances due to the emphasis on representing the beliefs of all citizens and respecting civic values. All independent variables are lagged one year.

The results for both dimensions can be seen in figure 4.¹⁴ There is partial support for expectations around partisan control. Unified Democratic control of state government is not associated with levels of accountability pressure, but Democratic control leads to a weaker checks and balance system ($p=.058$), as expected. GOP control, is positively related to a modest increase in accountability pressure, while it has no relationship with levels of checks and balances. These partisan dynamics help explain the national growth in accountability pressure as the GOP has grown significantly at the state level over the past few decades while advocating for taxation and term limits in states.

As expected, competition is strongly positively associated with accountability pressure but competition is unrelated to checks and balances. This may help explain why states in the South have relatively low levels of accountability pressure, particularly in the 1970s and 1980s, as they were dominated by single party control for over a century. As state-level elections became more competitive from the 1980s to 2000s in the South (Valentino and Sears 2005) levels of accountability pressure in the region start to increase (see figure 3). When competition between the parties is high, it appears states design institutions to provide more and more accurate information about public opinion.¹⁵ Governing

¹⁴See supplemental material for the regression coefficients and standard errors.

¹⁵High Levels of accountability pressure could also lead to more competitive elections For this reason, competitiveness is lagged to avoid endogeneity

actors in competitive systems have more incentives to learn about public preferences because if they are out of step with voters there is a credible threat they may be replaced by the opposite party. Within the data, there is a dramatic increase in competition from the 1980s to 2010, which mirrors the rise of accountability pressure of the same time period. However, competition does not explain the decrease in the checks and balance system. This dynamic merits further investigation as a similar dynamic can be seen with Congress. The last 30 years have been highly competitive at the national level, yet has not yielded a stronger national checks and balance system as Congressional delegations increasingly behave like parliamentary parties and the president plays an ever growing role. Polarization may be an important factor to consider when thinking about how competition affects institutional choices. High competition and polarization may make it challenging for governing actors to form coalitions needed to overcome super-majority requirements, meaning that competition under polarized systems may not yield the expected changes to institutions.

As expected states with larger black populations have somewhat lower levels of accountability pressure ($p=.1$), and somewhat stronger checks and balance systems.¹⁶ Finally, when evaluating political culture, moralistic states tend to have much higher levels of accountability pressure and checks and balances on average compared to states with an individualistic or traditionalistic political culture. This matches with Elazar's political culture framework because moralistic states tend to prioritize government advancing the common good (Elazar 1966), while other cultures are more associated with particularized interests dominating politics. States with high levels of accountability pressure are on average more competitive, more urban, more homogeneous, and belong to the moralistic political culture.

Moving to the controls, more populous states have weaker checks and balance systems, but population is not associated with accountability pressure. Income is associated with greater accountability pressure and a weaker checks and balance system, and controlling for other factors, more urban states have higher levels of both dimensions. Collectively, these results help explain some of the geographic trends discussed above. The growth in population, and income help to explain the national decrease in the strength of the checks and balance system, while increasing competitiveness, wealth, and urbanization help to explain accountability pressure's rise. State political culture also has significant explanatory power for the geographic variation observed in figure 3, with moralistic states having higher levels of both dimensions (roughly the Norther third of the country) than other political cultures. Individualistic cultural states having the lowest levels of accountability pressure on average also explains why the Ohio River valley has significantly lower levels than the rest of the country. Now that the geographic and temporal heterogeneity in the scores has been explored and modeled, I briefly provide an application for the scores in order to demonstrate how they could be integrated into existing studies of state politics.

¹⁶Models were also estimated with the percentage of the population that is non-white and the checks and balance system was again found to be stronger when states have a larger minority population.

5.2 Policy Congruence Application

To demonstrate the utility of these scores I include both accountability pressure and checks and balances in a replication of Lax and Phillips's (2012) study on the democratic deficit in the states.¹⁷ The dependent variable is a binary indicator for whether a policy is congruent with majority opinion in a state. The data includes measures for public opinion on 39 policies across a variety of issue areas in all 50 states. I mirror the analysis from the original paper by estimating a multi-level logistic regression with random effects for state and policy, as well as random slopes for state-specific opinion and policy specific opinion. I include the same controls as the original specification from Lax and Phillips (2012).

In the original paper, Lax and Phillips find that legislative professionalism, elected courts, and term limits increase the probability of policy being congruent with public opinion, while the citizen initiative has no effect. While the choice of institutions reflects the most commonly studied institutions with respect to policy representation, this model does not include a state's broader institutional context. When replicating these findings, the decision to include or exclude institutions does affect conclusions. For example, elected courts are only a significant predictor of congruence when a measure of direct democracy is included in the model, and the size of the coefficients for each institutional measure shifts depending on what other institutions are included/excluded. Researchers could attempt to include an exhaustive list of institutional measures, but this creates other problems. Chiefly, this model would not be parsimonious, and the measures would likely be heavily inter-related. For example, all but one state with term limits also has the initiative process, and Lax and Phillips concede that the initiative process may be influencing policy responsiveness and representation indirectly through the term limits (2012). Unlike the original specification, including accountability pressure and checks and balances can more directly test when multiple institutions are expected to have inter-related effects.

I expect accountability pressure to increase the probability of policy being congruent with public opinion due to politicians having better information about public opinion, and institutions structuring incentives for policymakers to respond to public opinion or face being overridden by the voters. When accountability pressure is high, states have many institutions that are documented to be associated with more responsive and representative policy including an easy to use initiative process (Matsusaka 2018), professionalized legislature (Pacheco 2013), strict campaign finance laws (La Raja and Schaffner 2015), and term limits (Lax and Phillips 2012). When accountability pressure is high there are few, if any institutions in a state that insulate it from public opinion. Strategic politicians should be more likely to adopt policies congruent with public opinion in states with high levels of accountability pressure because they should have a more accurate perception of public opinion, and face greater institutional incentives to respond to it.

The expectations for checks and balances are less clear. Having a strong system of checks and balances could

¹⁷Data and code for replication were provided by (Hare and Monogan 2018) that can be found in the Harvard Dataverse

protect a status quo that is congruent with majority opinion, or make it difficult to make a policy congruent when it is out of step with the majority. While individual measures such as the initiative score or legislative professionalism should be relevant to policy congruence, its expected influence on congruence has already been accounted for by the accountability pressure dimension. This application demonstrates that the dimensions are orthogonal, with distinct expectations and applications. In this case, there are clear reasons to expect accountability pressure to play a strong role in policy congruence, but not for the checks and balance system. This analysis provides a way to strip out the multi-dimensional influences that institutions may have on state politics.

I replace the institutional measures from the original analysis with accountability pressure and checks and balances to understand how institutional design is related to policy congruence in the states in table 2. I estimate three parallel analyses with the median, 2.5% and 97.5% estimates from the posterior distribution of both institutional measures. In all three models, accountability pressure has a positive and significant relationship with policy congruence as expected. States with high levels of accountability pressure are more likely to have policies congruent with public opinion. checks and balances on the other hand, has no significant relationship with policy congruence in the models.¹⁸ High levels of accountability pressure are associated with a higher probability of opinion-policy congruence, while checks and balances is unrelated to policy congruence. After accounting for the institutional context, only two of the other variables from Lax and Phillips' (2012) original specification have changed in their relationship with congruence. The salience of the issue and governor partisan opposition no longer significantly predict policy congruence after including accountability pressure and checks and balances in the model. All other covariates remain the same in both direction and significance. While institutions that affect checks and balances may affect other state political phenomena such as policy innovation, these results show that the institutional dimensions measure distinct concepts with different theoretical implications.

These findings highlight the trade off in approaches to understanding the role of institutions in US states. In the original specification one can easily identify specific institutional features that influence levels of policy congruence. Identifying and testing a mechanism for a specific institution is also more straightforward than using relatively abstract institutional measure. Furthermore, there are clear normative recommendations for how state can change institutions to achieve the goal of higher opinion-policy congruence. The institutional design approach provides a more comprehensive institutional understanding for institutions, as well as allows for multi-dimensional institutional effects, but comes at the cost of coarsening institutional distinctions across states, meaning that effects cannot be clearly attributed to a single institution. However, with this design researchers can evaluate the collective institutional choices states have made to evaluate which have placed a greater emphasis on developing accountability pressure or checks and balances, and the influences these decisions have on state politics. I argue that both approaches should be employed

¹⁸As a robustness check I estimated the same model with all three original dimensions of institutional design (see supplemental material). Dimension 1 of accountability pressure has a positive but insignificant relationship with policy congruence, while the second dimension has a consistent positive relationship with congruence, and checks and balances remains unrelated.

depending on the question being answered. However, if institutions are not the key variable of interest, these institutional measures provide a clear and concise way to control for a state's institutional configuration, and these scores could be used to control for the variation in institutional context.

6 Discussion and Conclusion

This paper represents a continuation of efforts to build a cross-branch understanding of the role of institutions in state politics. I generate a new measure to understand institutional design in US states. As frequently done in the comparative politics literature, I take a collective understanding of institutional configuration to understand the effect of a state's institutional context (Treier and Jackman 2008). I use a novel dataset of historical state institutions to identify commonalities across institutions through a Bayesian factor analysis of mixed data (Quinn 2004). I take this approach to create a parsimonious measure that can account for the multi-dimensionality of how states organize their institutions while also recognizing the uncertainty in parameter estimates through posterior distribution estimates. This over time measure is a resource for state politics scholars looking to leverage large variation in institutional context in the states.

I find three primary dimensions of policy making institution, two of which structure incentives and ability to learn about and respond to public opinion, and one of which measures the ability for the branches of government to compete for control. I combine the first two dimensions into a measure called accountability pressure, and call the last dimension checks and balances. Basic descriptives of these scores indicate there is tremendous temporal and geographic variation in how states have decided to develop their institutions. checks and balances has gone down over time, whereas accountability pressure is generally increasing. When modeling the determinants of these scores, I find that states high in accountability pressure have more competitive systems, are states with a moralistic political culture, wealthier and more urban. States with a strong checks and balance system on average have a larger percentage of their population that is black, are less population, less wealthy, more urban, and also have a moralistic political culture.

A cross-branch measure of state institutions provides several contributions to the existing research in state politics. First, researchers have found inter-dependence between the branches of government when evaluating their institutional effects, meaning that the effect of institutions such as term limits, legislative professionalism, or gubernatorial power differ depending on the institutional context of a state (Boushey and McGrath 2017; Kousser 2005; Krause and Woods 2014; Lewis, Schneider and Jacoby 2015). The factor analysis used to generate these scores can better incorporate this interdependence into a single aggregate index. For example, figure 2 shows clear cross-branch trends in the relative balance of power between states. This measurement approach allows researchers to clearly see the dramatic fall in the strength of the checks and balances system across states.

Secondly, as discussed in the policy congruence application, the decision to include or exclude individual institutions can affect the results and conclusions. These measures identify this heterogeneity in a comprehensive and

parsimonious way across a large period of time. Additionally, these scores recognize the multi-dimensionality of institutions. Just as others have found that there are multiple dimensions of unobservable concepts such as legislative professionalism (Bowen and Greene 2014), accountability pressure and checks and balances represent two distinct ways in which the same institutions can affect state politics. Legislative professionalism increases the amount of information about public preferences, but also empowers the legislature to be a stronger check on executive action. Similarly, the initiative process can strengthen the opinion-policy link, while also altering the gridlock intervals in a state (Boehmke, Osborn and Schilling 2015). There are a wide variety of applications for these measures to be incorporated into studies of state politics.

However, the approach this paper takes is not without its own limitations. First, this approach should not be viewed as a challenge or replacement to existing institutional research in state politics. By aggregating institutions to common dimensions, researchers lose the ability to identify institutional specific effects. The results from the congruence model cannot identify institution specific reforms that states could make to increase levels of congruence. Additionally, the dimensions developed in this paper are hardly exhaustive for potential ways that institutions affect state politics. With the addition of further institutions researchers may identify new dimensions that affect state politics. Lastly, an aggregate approach could make two states with very different institutions look very similar. For example, a state with an extremely powerful governor and extremely weak legislature may score similarly to a state that has moderately powerful governor and legislature. There is an inherent trade off when deciding how to operationalize abstract concepts (Coppedge et al. 2011), and using a variety of theoretical and methodological approaches to understand the role of institutions in state politics will be the best way build knowledge. I argue both approaches are needed thoroughly understand the effect of individual state institutions and also know how they fit together to understand how state governments are organized. This paper is a first step in building an institutional design understanding to US states.

Scholars should consider acknowledging a state's broader institutional context when researching the politics of US states. These scores have a host of potential applications across a wide range of topics in state politics. Are states with a strong checks and balance system less likely to innovate on policy adoption? Does accountability pressure lead to more responsive policies? Additionally, how do both dimensions both citizen and elite behavior? Can we identify differences in the polarization and nationalization of state politics by institutional configuration? Furthermore, do increases in polarization lead to shifts institutional design? These scores are publicly available and will be a resource for scholars to use to build an understanding of the effects of institutional design on state politics.¹⁹

¹⁹The author declares no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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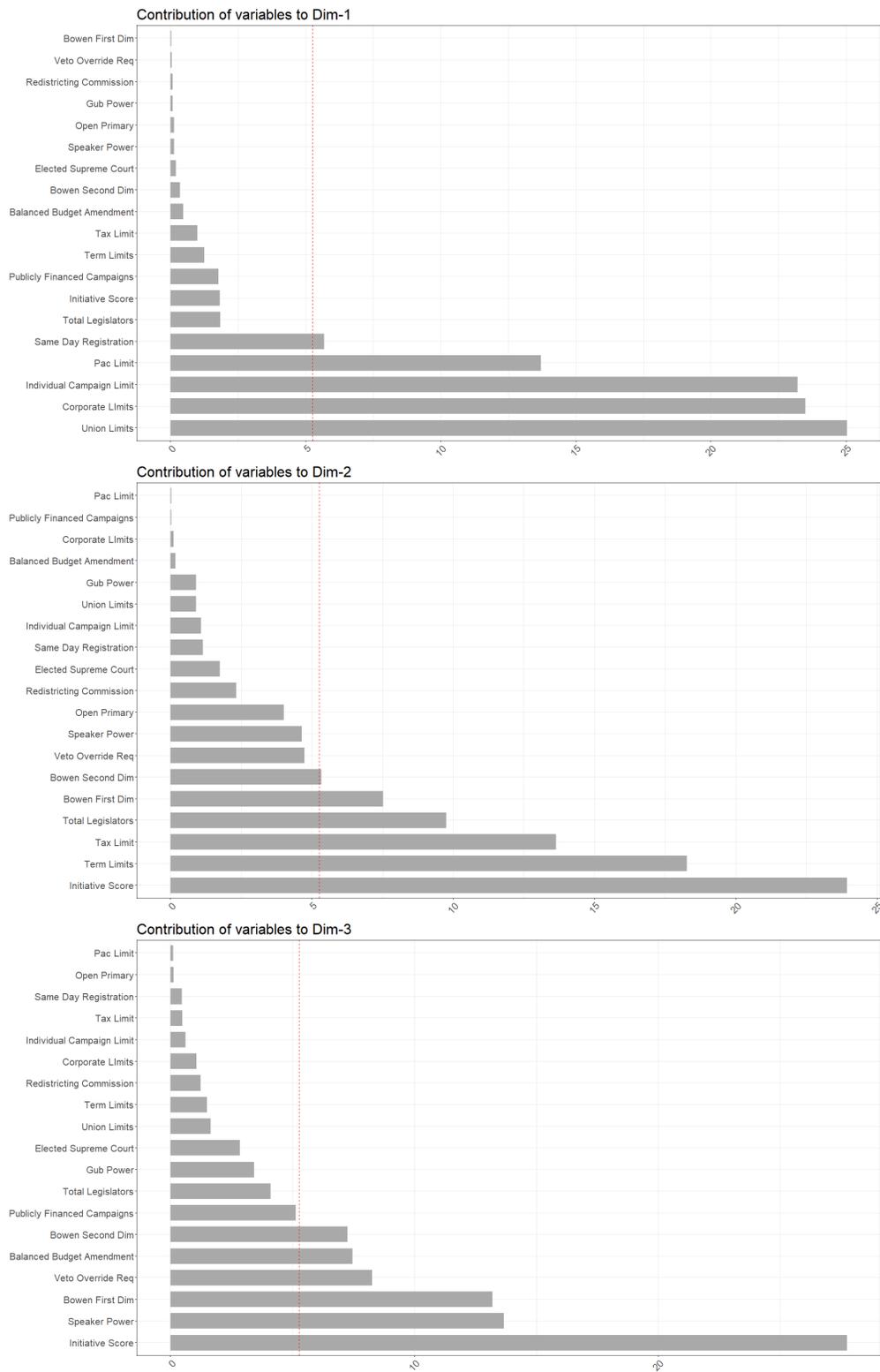


Figure 1: Contribution of Institutions to Each Dimensions

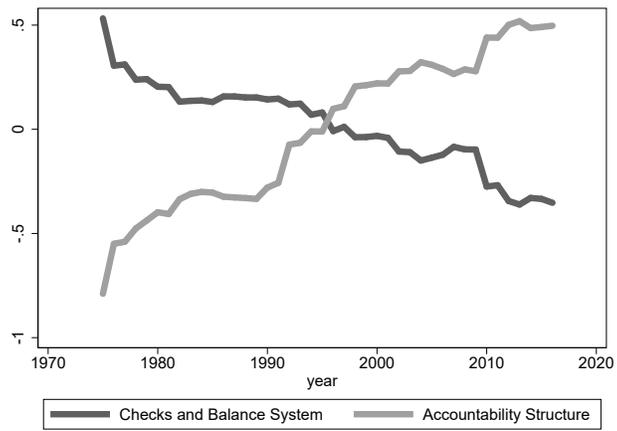


Figure 2: Average accountability pressure and checks and balances by Year

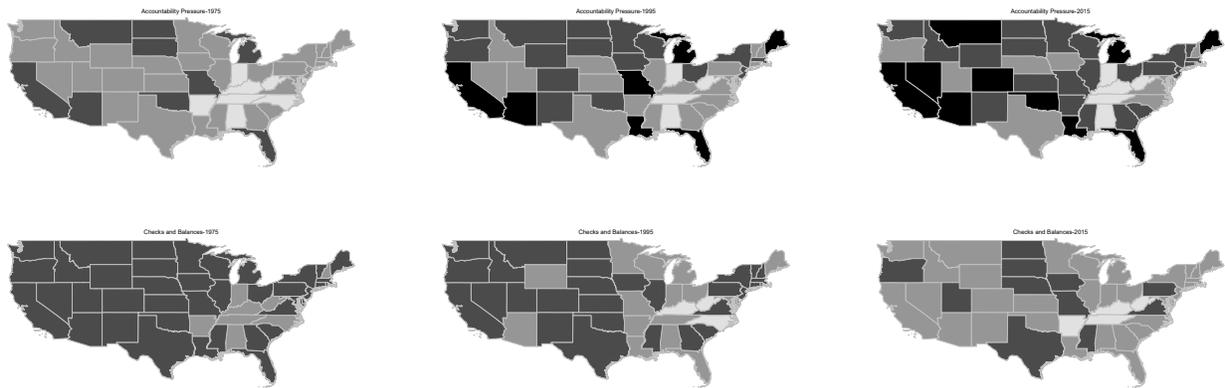


Figure 3: Geographic Trends in accountability pressure an checks and balances

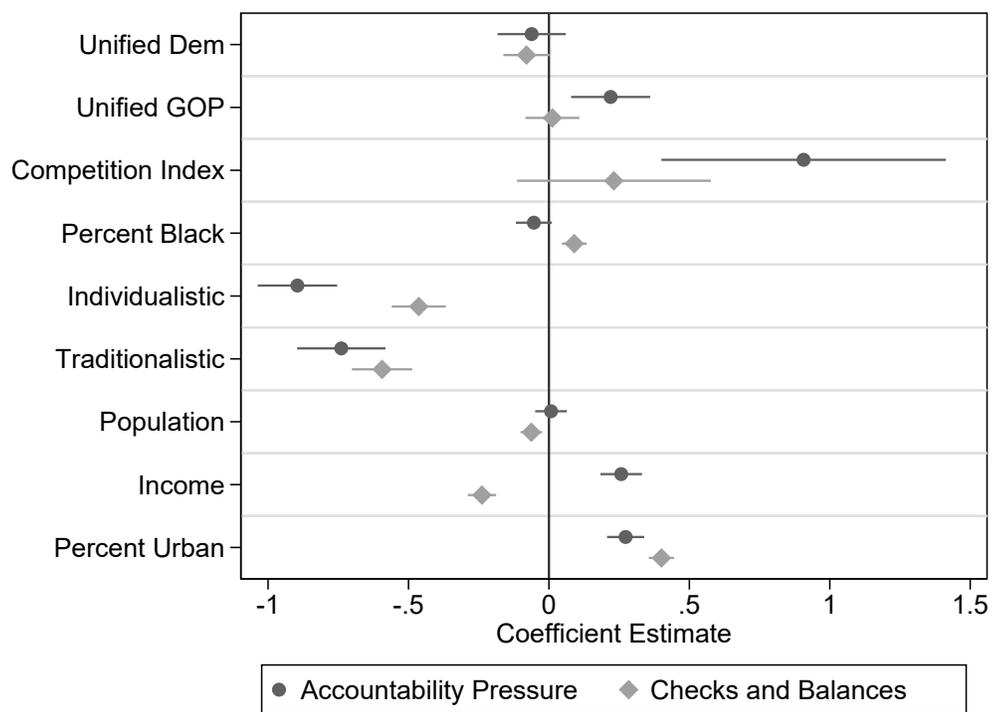


Figure 4: Predictors of accountability pressure and checks and balances N=1813

Table 1: Replication of Lax and Phillips (2012) Policy Congruence Models

	Median Estimates	97.5%	2.5%
Size of Opinion Majority	1.68*	1.66*	1.68*
	(0.42)	(0.42)	(0.42)
Accountability Pressure	0.19*	0.20*	0.19*
	(0.06)	(0.08)	(0.06)
Checks and Balances	-0.00	0.08	-0.00
	(0.10)	(0.10)	(0.10)
Salience	0.80	0.77	0.80
	(0.49)	(0.48)	(0.49)
Conservative Opinion Majority	1.04*	1.02*	1.04*
	(0.24)	(0.24)	(0.24)
Voter Ideological Opposition	-0.79*	-0.81*	-0.79*
	(0.16)	(0.16)	(0.16)
Govt. Ideological Opposition	-0.99*	-0.98*	-0.99*
	(0.30)	(0.30)	(0.30)
Legislative Partisan Opposition	0.82*	0.79*	0.82*
	(0.22)	(0.22)	(0.22)
Governor Partisan Opposition	0.30	0.27	0.30
	(0.17)	(0.17)	(0.17)
Interest Group Opposition	-0.70*	-0.70*	-0.70*
	(0.13)	(0.13)	(0.13)
Turnout	-0.21	-0.10	-0.21
	(0.14)	(0.14)	(0.14)
One-Party Dominance	-0.22	-0.16	-0.22
	(0.15)	(0.15)	(0.15)
Intercept	-0.88*	-1.40*	-0.88*
	(0.28)	(0.36)	(0.28)
Group Effects			
State Intercepts	0.06	0.06	0.06
State opinion slopes	0.07	0.05	0.07
Cov: State Intercept and State Opinion.	-0.06	-0.06	-0.06
Policy intercepts	1.85	1.83	1.85
Policy opinion slopes	2.96	2.91	2.96
Cov: Issue intercept and Opinion	0.27	0.27	0.27
AIC	2028.57	2030.79	2028.57
BIC	2134.12	2136.34	2134.12
Log Likelihood	-995.29	-996.39	-995.29
Num. obs.	1911	1911	1911

* $p < 0.05$