

# The Dynamics of State Policy Liberalism, 1936–2014

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**Abstract:** Applying a dynamic latent-variable model to data on 148 policies collected over eight decades (1936–2014), we produce the first yearly measure of the policy liberalism of U.S. states. Our dynamic measure of state policy liberalism marks an important advance over existing measures, almost all of which are purely cross-sectional and thus cannot be used to study policy change. We find that, in the aggregate, the policy liberalism of U.S. states steadily increased between the 1930s and 1970s and then largely plateaued. The policy liberalism of most states has remained stable in relative terms, though several states have shifted considerably over time. We also find surprisingly little evidence of multidimensionality in state policy outputs. Our new estimates of state policy liberalism have broad application to the study of political development, representation, accountability, and other important issues in political science.

**Replication Materials:** The data, code, and any additional materials required to replicate all analyses in this article are available on the *American Journal of Political Science* Dataverse within the Harvard Dataverse Network, at: <http://dx.doi.org/10.7910/DVN/ZXZMJB>.

Change,” Chandler, Chandler, and Vogler (1974, 108) noted four decades ago, “is both methodologically and substantively critical for any theory of policy.” This is true both of the determinants of government policies, such as shifts in public mood or changes in the eligible electorate (e.g., Husted and Kenny 1997; Stimson, MacKuen, and Erikson 1995), and of policy feedback on political and social outcomes (e.g., Campbell 2012; Wlezien 1995). Theories of all these phenomena rely explicitly or implicitly on models of policy change. Moreover, many of the most ambitious theories focus not on individual policies or policy domains, but on the character of government policy as a whole. In short, most theories of policymaking are both *dynamic* and *holistic*: they are concerned with changes in the general orientation of government policy.

Unfortunately, the literature on U.S. state politics, perhaps the most vibrant field for testing theories of

policymaking, relies almost exclusively on policy indicators that are either measured at a single point in time (e.g., Wright, Erikson, and McIver 1987) or else cover only a partial subset of state policy outputs (e.g., Besley and Case 2003).<sup>2</sup> Static measures are poorly suited to studying causes of policy change over time (Jacoby and Schneider 2009; Lowery, Gray, and Hager 1989; Ringquist and Garand 1999). And while domain-specific measures may provide useful summaries of some aspects of state policy, such as welfare spending (Moffitt 2002) or gay rights (Lax and Phillips 2009), they are at best imperfect proxies for what is often the outcome of interest, the overall orientation of state policy.

In this article, we develop a holistic yearly summary of the ideological orientation of state policies, which we refer to as state *policy liberalism*. This measure is based on a unique data set of 148 policies, which covers nearly eight decades (1936–2014) and includes policy domains

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<sup>1</sup>To our knowledge, the only existing holistic yearly summary of state policies is Jacoby and Schneider’s (2009) measure of particularistic versus collective state spending priorities between 1982 and 2005. As we discuss below, our measures differ substantially in time coverage, conceptual interpretation, and the data used to construct them.

<sup>2</sup>Both the policy data and our policy liberalism estimates will be made available to the public upon publication of this article.

ranging from social welfare to abortion to civil rights.<sup>2</sup> Based on these data, we estimate policy liberalism in each year using a dynamic Bayesian latent-variable model designed for a mix of continuous, ordinal, and dichotomous policy indicators. This measurement model enables us to make use of many indicators of policy liberalism, thus substantially reducing measurement error on the estimates of our construct of interest.

Despite the disparate policy domains covered by our data set, allowing for additional latent policy dimensions does little to improve the predictive accuracy of the model. This suggests that contrary to previous claims (e.g., Sorens, Muedini, and Ruger 2008), a single latent dimension suffices to capture the systematic variation in state policies. Consistent with this conclusion, our dynamic measure is highly correlated with existing cross-sectional measures of state policy liberalism as well as with issue-specific ideological scales.

Substantively, we find that while U.S. states as a whole have drifted to the left (i.e., they have increasingly adopted liberal policies), most have remained ideologically stable in relative terms. Across our entire time series, the most conservative states are in the South, whereas California, New York, Massachusetts, and New Jersey are always among the most liberal. The relative policy liberalism of a few states, however, has changed substantially. Several Midwestern and Mountain states have become considerably more conservative relative to the rest of the nation, whereas most of the Northeast has become more liberal.

Our new dynamic estimates can be used to study a wide variety of possible questions, many of which are not easily investigated using cross-sectional measures. Potential topics of study include the short- and long-term determinants of policy outputs, such as economic development, political institutions, mass policy preferences, and electoral outcomes. Our policy liberalism scores can also be used as an independent variable, as a means of examining policy feedback or other consequences of policy change. Our measure thus opens new avenues of research on representation, accountability, political development, and other important issues in political science.

The remainder of the article is organized as follows. We begin by defining the concept of policy liberalism and situating it in the literature on U.S. state politics and policy. Next, we describe our policy data set, our measurement model, and our yearly estimates of state policy liberalism. We then provide evidence for the validity of our measure. We show that it is highly correlated with existing measures of policy liberalism and related concepts. In the online supporting information, we also show that a one-dimensional scale adequately accounts for systematic policy variation across states. The penultimate section

discusses potential applications of our measure, and the final section concludes.

## Measuring State Policies

Studies of state policy generally employ one of two measurement strategies: They either consider policy separately using policy-specific indicators, or they construct composite measures intended to summarize the general orientation of state policies within or across domains (Jacoby and Schneider 2014, 568). Among studies in the first camp, some have focused on whether or not states have particular policies. Lax and Phillips (2009), for example, examine the representational congruence between a series of dichotomous state gay rights policies and state opinion majorities. Other studies have employed continuous policy-specific indicators, such as welfare expenditures (Husted and Kenny 1997), tax rates (Besley and Case 2003), or minimum wages (Leigh 2008), which potentially have greater sensitivity to differences between states. Whether dichotomous or continuous, policy-specific measures are appropriate when the research question is limited to a particular policy area. However, they are sub-optimal as summary measures of the general orientation of state policies, though this is how they are often used.<sup>3</sup>

For this reason, a number of scholars have sought to combine information from multiple policies, using factor analysis or other dimension reduction methods to summarize them in terms of one or more dimensions of variation. Dimension reduction has several advantages over policy-specific measures. First, from a statistical point of view, using multiple indicators for a latent trait usually reduces measurement error on the construct of interest, often substantially (Ansolabehere, Rodden, and Snyder 2008; Hofferbert 1966). Second, many concepts require multiple indicators to adequately represent the full content or empirical domain of the concept. For example, the concept of liberalism, in its contemporary American meaning, encompasses policy domains ranging from social welfare to environmental protection to civil rights. A measure of liberalism based on only a subset of these domains would thus fare poorly

<sup>3</sup>Lax and Phillips (2009, 369) claim that “using...policy-specific estimates” allows them to “avoid problems of inference that arise when policy and opinion lack a common metric.” On a policy-by-policy basis, this is probably true. But evaluating congruence on state policy in general, or even just in the domain of gay rights, requires that the policy-specific estimates of congruence be weighted or otherwise mapped onto a single dimension. Thus, dimension reduction must occur at some point, whether at the measurement stage or later in the analysis.

in terms of content validation (Adcock and Collier 2001, 538–40). A final benefit is parsimony. If a single measure can predict variation in disparate domains, then we have achieved an important desideratum of social science: “explaining as much as possible with as little as possible” (King, Keohane, and Verba 1994, 29).

Different works have identified different traits or dimensions underlying state policies. Walker (1969), for example, creates an “innovation score” that captures the speed with which states adopt new programs. Sharkansky and Hofferbert (1969) identify two latent factors that structure variation in state policies, as do Sorens, Muedini, and Ruger (2008). Hopkins and Weber (1976) uncover a total of five. But primarily, the state politics literature has focused on a single left–right policy dimension (e.g., Gray et al. 2004; Hofferbert 1966; Klingman and Lammers 1984; Wright, Erikson, and McIver 1987). As a number of studies have confirmed, states with minimal restrictions on abortion tend to ban the death penalty, regulate guns more tightly, offer generous welfare benefits, and have progressive tax systems, and vice versa for states with more restrictive abortion laws. Following Wright, Erikson, and McIver (1987), we label this dimension *policy liberalism*.

What is policy liberalism? We conceptualize liberalism not as a logically coherent ideology, but as a set of ideas and issue positions that, in the context of American politics, “go together” (Converse 1964). Relative to conservatism, liberalism involves greater government regulation and welfare provision to promote equality and protect collective goods, and less government effort to uphold traditional morality and social order at the expense of personal autonomy. Conversely, conservatism places greater emphasis on the values of economic freedom and cultural traditionalism (e.g., Ellis and Stimson 2012, 3–6). Although the definitions of liberalism and conservatism have evolved over time, with civil rights and then social issues becoming more salient relative to economics (Ladd 1976, 589–93), these ideological cleavages have existed in identifiable form since at least the mid-20th century (Noel 2014; Schickler 2013).

There are several things to note about this definition of policy liberalism. First, it is comprehensive, in that it covers most if not all domains of salient policy conflict in American domestic politics.<sup>4</sup> This is not to say that policy liberalism explains all variation in state policy, or that all policies are equally structured by this latent dimension. But it is a concept that attempts to summarize, holistically, all the policy outputs of a state. Second, we define policy liberalism solely in terms of state policies themselves.

By contrast, some previous measures (e.g., Hopkins and Weber 1976; Sharkansky and Hofferbert 1969) incorporate societal outcomes like infant mortality rates and high school graduation rates, muddying the distinction between government policies and socioeconomic conditions (Sorens, Muedini, and Ruger 2008).

A final characteristic of our conceptualization of policy liberalism, which is particularly crucial for our purposes, is that it is dynamic. Unlike, say, state political culture (Elazar 1966), which changes slowly if at all, policy liberalism can and does vary across time in response to changes in public opinion, partisan control, and social conditions. Defining policy liberalism as a time-varying concept is hardly controversial, but it does conflict with previous operationalizations of this concept, all of which are cross-sectional. Cross-sectional measures are problematic for two reasons. First, many are based on data from a long time span—over a decade, in the case of Wright, Erikson, and McIver (1987)—averaging over possibly large year-to-year changes in state policy (Jacoby and Schneider 2001). More importantly, cross-sectional measures preclude the analysis of policy change, which not only is theoretically limiting, but also is inimical to strong causal inference since the temporal order of the variables cannot be established (Lowery, Gray, and Hager 1989; Ringquist and Garand 1999).

To our knowledge, the only existing time-varying measure that provides a holistic summary of state policy outputs is the measure of policy spending priorities developed by Jacoby and Schneider (2009).<sup>5</sup> This measure, available annually between 1982 and 2005, is estimated with a spatial proximity model using data on the proportions of state budgets allocated to each of nine broad policy domains (e.g., corrections, education, welfare). Jacoby and Schneider interpret their measure as capturing the relative priority that states place on collective goods versus particularized benefits, an important concept in the theoretical literature on political economy (e.g., Persson and Tabellini 2006) as well as in empirical work on state politics (e.g., Gamm and Kousser 2010).

Despite both being holistic yearly policy measures, policy liberalism and policy priorities differ in important ways. As Jacoby and Schneider emphasize, policy liberalism and policy priorities are conceptually distinct; indices of policy liberalism “simply do not measure the same thing” as their policy priorities scale (2009, 19). For example, the policy priorities scale is not intended to capture “*how much* states spend” but rather “*how* states divide up their yearly pools of available resources” (Jacoby and Schneider 2009, 4). Consequently, variation in the size

<sup>4</sup>We do not include foreign policy in the domain of policy liberalism because states typically do not make foreign policy.

<sup>5</sup>For a cross-sectional implementation of this measure, see Jacoby and Schneider (2001).

of government, which lies at the heart of most liberal-conservative conflict (e.g., Meltzer and Richard 1981; Stimson 1991), is orthogonal to their measure. Another salient difference is that the policy priorities scale is based solely on state spending data. This endows their measure with a direct and intuitive interpretation, but at the cost of excluding taxes, mandates, prohibitions, and other non-spending policies that shape the lives of citizens in equally important ways. Our policy liberalism measure resolves this trade-off differently, emphasizing broad policy coverage at the possible expense of intuitive interpretation.

In summary, there is no existing time-varying measure of state policy liberalism, one of the central concepts of state politics. Nearly all existing summaries of state policy orientations are cross-sectional. Those that are dynamic either examine policy liberalism in a particular policy area or, in the case of Jacoby and Schneider's (2009) policy priorities scale, measure a different concept entirely. Thus, what is required is a measurement strategy that summarizes the global ideological orientation of state policies using time-varying data that capture the full empirical domain of policy liberalism.

## Policy Data

As Jacoby and Schneider (2014) observe, composite measures of policy liberalism risk tautology if they are derived from policy indicators selected for their ideological character. Although the resulting scale may be a valid measure of policy liberalism, selection bias in the component indicators undermines any claim that state policies vary along a single dimension. For this reason, we sought to make our data set of state policies as comprehensive as possible, so as to allow ideological structure to emerge from the data rather than imposing it a priori. Given resource constraints and data limitations, we cannot claim to have constructed a random sample of the universe of state policies (if such a thing is even possible). We are confident, however, that our data set is broadly representative of the policy outputs of states across a wide range of domains. (For complete details on the policies in our data set, see the supporting information.)

Our data set consists of 148 distinct policies, and at least 43 policies are available in every year. To be included, a policy had to meet the following criteria. First, it had to be a policy *output* rather than a policy *outcome* (i.e., an aspect of the social environment affected by policy) or a government *institution* (i.e., one of the basic structures or rules of the government). For example, we excluded state

incarceration and infant mortality rates, which we considered outcomes. We also excluded indicators for whether states had particular legislative rules or government agencies, which we classified as institutions.<sup>6</sup> Second, the policy had to be politically salient.<sup>7</sup> To identify salient policies, we canvassed books and articles on state politics, legal surveys of state policies, state party platforms, governors' biographies, state-specific political histories, and government and interest-group websites. Third, the policies had to be comparable across all states. Many environmental, parks, and farm policies, for example, are not comparable across states due to fundamental differences in state geography (e.g., coastal versus noncoastal). Some policies we normalized by an appropriate baseline to make them more comparable.<sup>8</sup> Finally, in keeping with our focus on dynamics, data on a given policy had to be available in comparable form in at least five different years.

The actual policy data themselves were obtained from many different sources, including government documents, the *Book of the States*, interest-group publications, and various secondary sources.<sup>9</sup> Over four-fifths of the policies are ordinal (primarily dichotomous), but the 26 continuous variables provide disproportionate information because they differentiate more finely between states.<sup>10</sup> The policy domains covered by the data set include

- abortion (e.g., parental notification requirements for minors)
- criminal justice (e.g., the death penalty)
- drugs and alcohol (e.g., marijuana decriminalization)

<sup>6</sup>The data set used in this article excludes electoral policies as well. We do this for the pragmatic reason that scholars may want to use our measure to examine the effect of such policies.

<sup>7</sup>This salience criterion is partly pragmatic since it is easier to obtain data on salient policies. Notwithstanding this emphasis, our data set still contains significant variation in the level of salience across policies. Our measurement model does not directly take this variation in salience into account, but rather weights policies according to how well they discriminate on the latent dimension. Empirically, variation in lower-salience policies such as firework bans and bicycle helmet laws does tend to be more idiosyncratic (i.e., less discriminating), and thus these policies contribute less to our scale.

<sup>8</sup>We converted all monetary expenditure and welfare benefit policies into 2012 dollars. We also adjusted for cost-of-living differences between states (Berry, Fording, and Hanson 2000).

<sup>9</sup>In general, we tried to obtain primary sources for each policy indicator. When this proved impossible, we obtained multiple secondary sources to corroborate the information about each policy in our database.

<sup>10</sup>We standardized each continuous policy to ensure that the scales were comparable across policy areas.

- education (e.g., per-pupil education spending, ban on corporal punishment)
- the environment (e.g., protections for endangered species)
- civil rights (e.g., fair employment laws, gay marriage)
- gun control (e.g., handgun registration)
- labor (e.g., right-to-work laws)
- social welfare (e.g., AFDC/TANF benefits)
- taxation (e.g., income tax rates)

and miscellaneous other regulations, such as fireworks bans and bicycle helmet laws.<sup>11</sup>

To validate the comprehensiveness of our data set, we can compare its coverage to other data sets that were constructed for different purposes. For example, our policies cover 17 of the 20 non-electoral policy areas contained in Sorens, Muedini, and Ruger's (2008) state policy database. Similarly, seven of the eight policy categories in the *National Survey of State Laws*, a lengthy legal compendium of "the most-asked about and controversial" state statutes, are represented in our data set (Leiter 2008, xii).<sup>12</sup> Our data also include 40 of the 56 policy outputs in Walker's (1969) policy innovation data set and 21 of the 34 non-electoral policies examined by Lax and Phillips (2011).<sup>13</sup> The overlap between these last three data sets and ours is particularly significant because none of the three were constructed for the purpose of studying the ideological structure of state policies. Even Sorens, Muedini, and Ruger (2008), who do analyze policy in ideological terms, conceive of state policies as varying along two dimensions. In sum, our data set, while not a random sample of the universe of policies, is broadly representative of available data on the salient policy activities of U.S. states.

<sup>11</sup>A reviewer raised the concern that taxation levels and other fiscal policies might reflect states' fiscal centralization in addition to their policy liberalism. In the South, for example, taxing and spending have historically been centralized at the state level, whereas, relatively speaking, local governments in New England have been more fiscally active. Since fiscal centralization is negatively correlated with policy liberalism, the influence of centralization attenuates policy liberalism differences across states. In light of this concern, it is important to interpret our policy liberalism scores as measuring the liberalism of *state government policies*, not of all policy outputs produced in a state (i.e., by local as well as state governments).

<sup>12</sup>The categories are business and consumer, criminal, education, employment, family, general civil, real estate, and tax. There are no real estate laws in our data set because we could not locate comparable time-varying data on these laws.

<sup>13</sup>The remaining policies are missing either because time-varying data were not available or because the policies are not sufficiently comparable across states.

## Measurement Model

We use the policy data set described above to construct yearly measures of state policy liberalism. Like most previous work on the subject, we treat policy liberalism as a latent variable whose values can be inferred from observed policy indicators. Our latent-variable model (LVM), however, offers several improvements over previous measurement strategies, most of which have relied on factor analysis applied to cross-sectional data. First, we use a Bayesian LVM, which, unlike classical factor analysis, provides straightforward means of characterizing the uncertainty of the latent scores and also easily handles missing data by imputing estimates on the fly (Jackman 2009, 237–8). Second, most of our policy indicators are dichotomous variables, a poor fit for a factor-analytic model, which assumes that the observed indicators are continuous. We therefore follow Quinn (2004) and specify a mixed LVM that models continuous indicators with a factor-analytic model and ordinal (including dichotomous) variables with an item response model. Third, our measurement model is dynamic, both in that it allows policy liberalism to vary by year and in that it specifies a dynamic linear model that links the measurement model between periods.<sup>14</sup>

We parameterize policy liberalism as a latent trait  $\theta_{st}$  that varies across states and years. For each state  $s$  and year  $t$ , we observe a mix of  $J$  continuous and ordinal policies, denoted  $\mathbf{y}_{st} = (y_{1st}, \dots, y_{jst}, \dots, y_{Jst})$ , whose distribution is governed by a corresponding vector of latent variables  $\mathbf{y}_{st}^*$ . We model  $\mathbf{y}_{st}^*$  as a function of policy liberalism ( $\theta_{st}$ ) and item specific parameters  $\boldsymbol{\alpha}_t = (\alpha_{1t}, \dots, \alpha_{jt}, \dots, \alpha_{Jt})$  and  $\boldsymbol{\beta} = (\beta_1, \dots, \beta_j, \dots, \beta_J)$ ,

$$\mathbf{y}_{st}^* \sim N_J(\boldsymbol{\beta}\theta_{st} - \boldsymbol{\alpha}_t, \boldsymbol{\Psi}), \quad (1)$$

where  $N_J$  indicates a  $J$ -dimensional multivariate normal distribution and  $\boldsymbol{\Psi}$  is a  $J \times J$  covariance matrix. In

<sup>14</sup>All of the policies in our model are available in multiple years, which helps bridge the model over time. A potential concern, however, is whether we have enough policies to adequately bridge the model across periods with large disjunctures in our sample of state policies. There is a particularly large disjunction in our sample of policies in the late 1960s and early 1970s due to the federalization of a variety of antidiscrimination policies, as well as changes to federal social security law. To evaluate the plausibility of our bridging assumption during this time period, we estimated our scale separately before and after 1970, and we compare each set of estimates with the pooled estimates that we present in the article. The correlation between our separately scaled estimates from the 1930–69 period and our pooled estimates of policy liberalism is 0.95. The separately scaled estimates from 1970 to 2014 are correlated with our pooled estimates at 0.98. This analysis suggests that the pooled model is accurately capturing the ramifications of any disjunctures in state policies during the 1960s and 1970s.

this application, we assume  $\Psi$  to be diagonal, but this assumption could be relaxed to allow for correlated measurement error across variables. Note that  $\alpha_{jt}$ , which is analogous to the “difficulty” parameter in the language of item response theory, varies by year  $t$ , whereas the “discrimination”  $\beta_j$  is assumed to be constant across time.

We accommodate data of mixed type via the function linking latent and observed variables. If policy  $j$  is continuous, we assume  $y_{jst}^*$  is directly observed (i.e.,  $y_{jst} = y_{jst}^*$ ), just as in the conventional factor analysis model. If policy  $j$  is ordinal, we treat the observed  $y_{jst}$  as a coarsened realization of  $y_{jst}^*$  whose distribution across  $K_j > 1$  ordered categories is determined by a set of  $K_j + 1$  thresholds  $\tau_j = (\tau_{j0}, \dots, \tau_{jk}, \dots, \tau_{jK_j})$ . Following convention, we define  $\tau_{j0} \equiv -\infty$ ,  $\tau_{j1} \equiv 0$ , and  $\tau_{jK_j} \equiv \infty$ , and we set the diagonal elements of  $\Psi$  that correspond to ordinal variables equal to 1. As in an ordered probit model,  $y_{jst}$  falls into category  $k$  if and only if  $\tau_{j,k-1} < y_{jst}^* \leq \tau_{jk}$ . Thus, for ordinal variable  $j$ , the conditional probability that  $y_{jst}^* \sim N(\beta_j \theta_{st} - \alpha_{jt}, 1)$  is observed as  $y_{jst} = k$  is

$$\begin{aligned} & \Pr(\tau_{j,k-1} < y_{jst}^* \leq \tau_{jk} \mid \beta_j \theta_{st} - \alpha_{jt}) \\ &= \Pr(y_{jst}^* \leq \tau_{jk} \mid \beta_j \theta_{st} - \alpha_{jt}) \\ &\quad - \Pr(y_{jst}^* \leq \tau_{j,k-1} \mid \beta_j \theta_{st} - \alpha_{jt}) \\ &= \Phi(\tau_{jk} - [\beta_j \theta_{st} - \alpha_{jt}]) \\ &\quad - \Phi(\tau_{j,k-1} - [\beta_j \theta_{st} - \alpha_{jt}]), \end{aligned} \tag{2}$$

where  $\Phi$  is the standard normal cumulative distribution function (CDF) (Fahrmeir and Raach 2007, 329). In the dichotomous case, where there are  $K_j = 2$  categories (“0” and “1”), the conditional probability that  $y_{jst}$  falls in the second category (i.e., “1”) is

$$\begin{aligned} & \Pr(\tau_{j1} < y_{jst}^* \leq \tau_{j2} \mid \beta_j \theta_{st} - \alpha_{jt}) \\ &= \Phi(\tau_{j2} - [\beta_j \theta_{st} - \alpha_{jt}]) - \Phi(\tau_{j1} - [\beta_j \theta_{st} - \alpha_{jt}]) \\ &= \Phi(\beta_j \theta_{st} - \alpha_{jt}), \end{aligned} \tag{3}$$

which is identical to the conventional probit item response model (Quinn 2004, 341).

We allow  $\alpha_{jt}$  to vary by year to account for the fact that many policies, such as segregation laws, trend over time toward universal adoption or nonadoption. The simplest way to deal with this problem is to estimate the difficulty parameters anew in each year. A more general approach, however, which pools information about  $\alpha_{jt}$  over time, is to model the evolution of  $\alpha_{jt}$  with a dynamic linear model (DLM; Jackman 2009, 471–74). In this application, we use a local-level DLM, which models  $\alpha_{jt}$  using a “random walk” prior centered on  $\alpha_{j,t-1}$ :

$$\alpha_{jt} \sim N(\alpha_{j,t-1}, \sigma_\alpha^2). \tag{4}$$

If there are no new data for an item in period  $t$ , then the transition model in Equation (4) acts as a predictive model, imputing a value for  $\alpha_{jt}$ . The transition variance  $\sigma_\alpha^2$  controls the degree of smoothing over time. Setting  $\sigma_\alpha^2 = \infty$  is equivalent to estimating  $\alpha_{jt}$  separately each year, and  $\sigma_\alpha^2 = 0$  is the same as assuming no change over time. We take the more agnostic approach of estimating  $\sigma_\alpha^2$  from the data, while also allowing it to differ between continuous and ordinal variables.

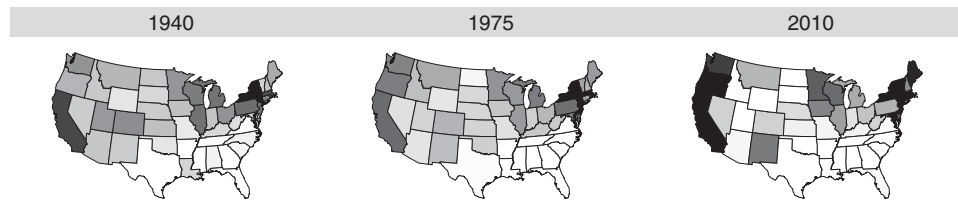
The parameters in an LVM cannot be identified without restrictions on the parameter space (e.g., Clinton, Jackman, and Rivers 2004). In the case of a one-dimensional model, the direction, location, and scale of the latent dimension must be fixed a priori. We identify the location and scale of the model by postprocessing the latent measure of state policy liberalism to be standard normal. We fix the direction of the model by constraining the sign of a small number of the item parameters (Bafumi et al. 2005).<sup>15</sup> We further constrain the polarity by assigning an informed prior to the policy measure for four states in year  $t = 0$  (Martin and Quinn 2002).<sup>16</sup> For the prior on the innovation parameter  $\sigma_\alpha$ , we use a half-Cauchy distribution with a mean of 0 and a scale of 2.5 (Gelman 2006). The difficulty and discrimination parameters are drawn from normal distributions with a mean of 0 and a standard deviation of 10. We estimated the model using the program Stan, as called from R (R Core Team 2013; Stan Development Team 2013).<sup>17</sup> Running the model for 1,000 iterations (the first 500 used for adaptation) in each of four parallel chains proved sufficient to obtain satisfactory samples from the posterior distribution.

<sup>15</sup>Specifically, we constrain continuous measures of state spending to have a positive discrimination parameter, which implies that more liberal states spend more money. We also constrain the polarity of seven dichotomous items. The discrimination of Equal Rights Amendment ratification, minimum wage for women, anti-injunction, fair employment and prevailing wage laws are constrained to be positive, whereas the discrimination of right-to-work laws and bans on interracial marriage are constrained to be negative.

<sup>16</sup>Note that we started the model in 1935 ( $t = 0$ ) and discarded the first year of estimates. As a result, the informed priors on  $\theta$  for four states in year  $t = 0$  have little effect on the estimates of state policy liberalism that we report in our analysis. We assign a  $N(1, 0.2^2)$  prior on  $\theta_{s0}$  to New York, a  $N(1.5, 0.2^2)$  prior on  $\theta_{s0}$  to Massachusetts, and a  $N(-1.5, 0.2^2)$  prior for Georgia and South Carolina. Other states are given diffuse priors for  $\theta_{s0}$ .

<sup>17</sup>Stan is a C++ library that implements the No-U-Turn sampler (Hoffman and Gelman n.d.), a variant of Hamiltonian Monte Carlo that estimates complicated hierarchical Bayesian models more efficiently than alternatives such as BUGS.

**FIGURE 1 Geographic Distribution of Government Policy Liberalism in 1940, 1975, and 2010**



*Note.* Darker shading indicates liberalism; lighter shading indicates conservatism. The estimates have been centered and standardized in each year to accentuate the shading contrasts.

### Estimates of State Policy Liberalism

Estimating our measurement model using the policy data described earlier produces a measure of the policy liberalism of each state in each year 1936–2014. When interpreting these estimates, one should bear in mind that the model allows the difficulty parameters  $\alpha_t$  to evolve over time. As a result, aggregate ideological shifts common to all states will be partially assigned to the policy difficulties. Since states did adopt increasingly liberal policies over this period, the model partially attributes this trend to the increasing difficulty of conservative policies (and increasing “easiness” of liberal ones). If we modify the model so as to hold the item difficulties constant over time, the policies of all U.S. states are estimated to have become substantially more liberal, especially between the 1930s and 1970s.<sup>18</sup> We use a time-varying model instead because it helps avoid the interpretational difficulties of assuming that policies have the same substantive meaning across long stretches of time. The price of this flexibility is that states’ policy liberalism scores are comparable over time primarily in a relative sense.

Figure 1 maps state policy liberalism in 1940, 1975, and 2010. As is clear from this figure, the geographic distribution of policy liberalism has remained remarkably stable, despite huge changes in the distribution of mass partisanship, congressional ideology, and other political variables over the past seven decades. Throughout the period, southern states such as Mississippi have had the most conservative policies. This holds not only on civil rights, but also on taxes, welfare, and a host of social issues. By contrast, the most liberal states have consistently

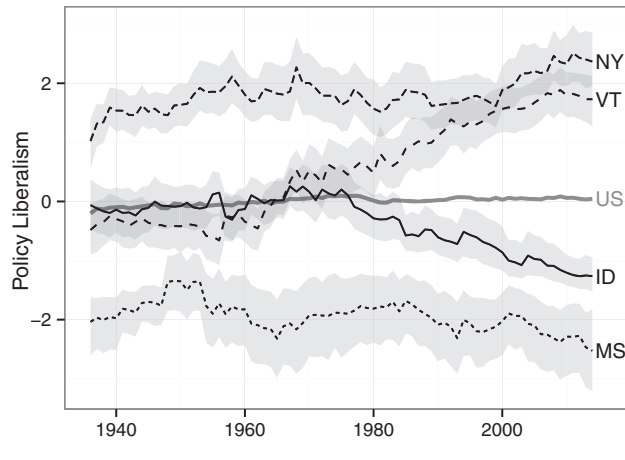
been in the Northeast, Pacific, and Great Lakes regions. New York, for example, has long had among the most liberal tax and welfare policies in the nation, and it was also one of the first states to adopt liberal policies on cultural issues such as abortion, gun control, and gay rights.

The overall picture of aggregate stability, however, masks considerable year-to-year fluctuation in policy liberalism as well as major long-term trends in certain states. These details can be discerned more easily in Figure 2, which plots the yearly time series of four states—Mississippi, Idaho, Vermont, and New York—along with the average policy liberalism across all states. As this figure illustrates, states’ policy liberalism can change substantially between years. Such changes are a product of explicit policy revisions as well as of policy “drift” relative to other states (cf. Hacker 2004). In general, these changes tend to be fluctuations around a stable mean, but the policy liberalism of some states has trended consistently in one direction or another.

For example, until the mid-1960s, Vermont’s policies were a bit more conservative than the average state, but since then, Vermont’s policies have become steadily more liberal relative to the nation. Whereas it had been a laggard in passing racial antidiscrimination laws in the 1950s and 1960s, in more recent decades, Vermont has been at the forefront of adopting gay marriage and other rights for homosexuals. Its welfare benefits and regulatory policies exhibited a similar evolution. The liberalizing trajectory of Vermont and other Northeastern states, such as Delaware and Maryland, has made the region’s policies much more uniformly liberal than they once were. By contrast, several Midwestern, Mountain, and Southern states have followed the opposite trajectory. Idaho, for example, became much more conservative over this period. During the 1930s to 1950s, Idaho actually had some of the most generous welfare benefits in the nation, but by the early 2000s it was among the least generous.

<sup>18</sup>In these years, U.S. states expanded their welfare responsibilities and tax bases while loosening a variety of social restrictions. This aggregate trend toward more liberal policies largely ceased after 1980.

**FIGURE 2 Policy Liberalism of Selected States, 1936–2014**



These states' shifts in policy liberalism have tracked the evolution of their presidential partisanship. For instance, in the presidential election of 1936, the first year in our data set, Maine and Vermont were the only two states carried by the Republican candidate Alf Landon. By the 2012 election, both states were substantially more Democratic than average. The opposite is true of the Mountain West, which transformed from Democratic-leaning to solidly Republican. On the whole, the 2010 map in Figure 1 matches contemporaneous state partisanship much better than the earlier maps do, primarily because the South's shift to the Republicans finally aligned its partisanship to match its consistently conservative state policies.<sup>19</sup>

## Measurement Validity

Having illustrated the face validity of the policy liberalism estimates, we now conduct a more systematic validation of our measure. We begin with convergent validation (Adcock and Collier 2001), documenting the very strong cross-sectional relationships between our estimates and existing measures of policy liberalism. We then turn to construct validation, demonstrating that our policy liberalism scale is also highly correlated with measures

<sup>19</sup>Though the South has always been the most conservative region, it has become more uniformly so over time. In the 1930s, for example, Louisiana's welfare benefits were roughly equivalent to those of several northern states, but they gradually became less generous over the next few decades. Louisiana also waited longer than any other southern state to pass a durable right-to-work law, but it finally did so in 1976 (Louisiana passed a right-to-work law in 1954 but repealed it in 1956; Canak and Miller 1990).

of theoretically related concepts, such as presidential partisanship.<sup>20</sup>

## Convergent Validation

If our estimates provide a valid measure of policy liberalism, they should be strongly related to other (valid) measures of the same concept. Since ours is the first time-varying measure of state policy liberalism, we must content ourselves with examining the cross-sectional relationship between our measure and ones developed by other scholars at various points in time. Figure 3 plots the cross-sectional relationships between our measure of policy liberalism and six existing measures:

- “liberalness”/“welfare orientation” rank circa 1957 (Hofferbert 1966)<sup>21</sup>
- welfare-education liberalism in 1962 (Sharkan-sky and Hofferbert 1969)<sup>22</sup>
- policy liberalism circa 1973 (Klingman and Lam-mers 1984)<sup>23</sup>
- policy liberalism circa 1980 (Wright, Erikson, and McIver 1987)<sup>24</sup>

<sup>20</sup>In the supporting information, we also show that our policy liberalism scale is strongly related to domain-specific policy measures, and that the predictive fit of the model barely increases if a second dimension is added to the measurement model. Overall, this evidence corroborates our claim that a one-dimensional model adequately captures the systematic variation in state policies, and that this dimension is properly interpreted as policy liberalism.

<sup>21</sup>This index is based on mean per-recipient expenditures for 1952–61 for aid to the blind, old age assistance, unemployment compensation, expenditure for elementary and secondary education, and aid to dependent children. We compare Hofferbert's (1966) scale with our measure of state policy liberalism in 1957 since this is the midpoint of the years he includes in his index.

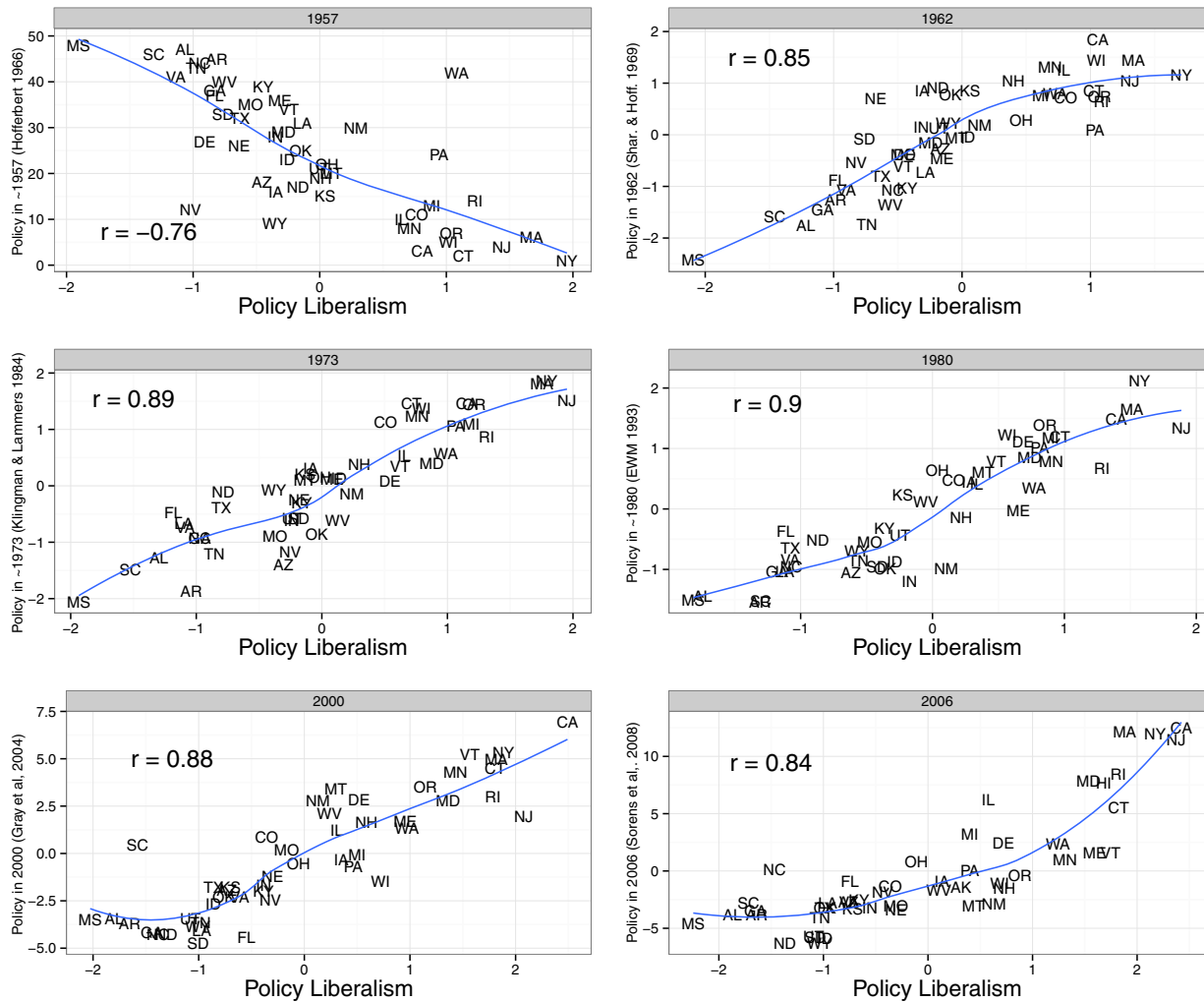
<sup>22</sup>This index is based on about 20 education and welfare policies. Note, however, that this index also includes several social outcomes, such as school graduation rates.

<sup>23</sup>This index is based on data measured at a variety of points between 1961 and 1980 on state innovativeness, antidiscrimination policies, monthly payments for Aid to Families with Dependent Children (AFDC), the number of years since ratification of the Equal Rights Amendment for Women, the number of consumer-oriented provisions, and the percentage of federal allotment to the state for Title XX social services programs actually spent by the state. We compare Klingman and Lammers's (1984) scale with our measure of state policy liberalism in 1973 since this is the midpoint of the years they include in their index.

<sup>24</sup>This measure is based on state education spending, the scope of state Medicaid programs, consumer protection laws, criminal justice provisions, whether states allowed legalized gambling, the number of years since ratification of the Equal Rights Amendment for Women, and the progressivity of state tax systems. We compare Wright, Erikson, and McIver's (1987) scale with our measure of state policy liberalism in 1980 since this is roughly the midpoint of the years they include in their index.



**FIGURE 3 Convergent Validation: Relationships between Our Policy Liberalism Estimates and Six Existing Measures.**



Note: Fitted lines indicate loess curves.

- policy liberalism in 2000 (Gray et al. 2004)<sup>25</sup>
- policy liberalism in 2006 (Sorens, Muedini, and Ruger 2008)<sup>26</sup>

Each panel plots the relationship between our policy liberalism estimates (horizontal axis) and one of the six existing measures listed above. A loess curve summarizes each relationship, and the bivariate correlation is given on the left side of each panel.

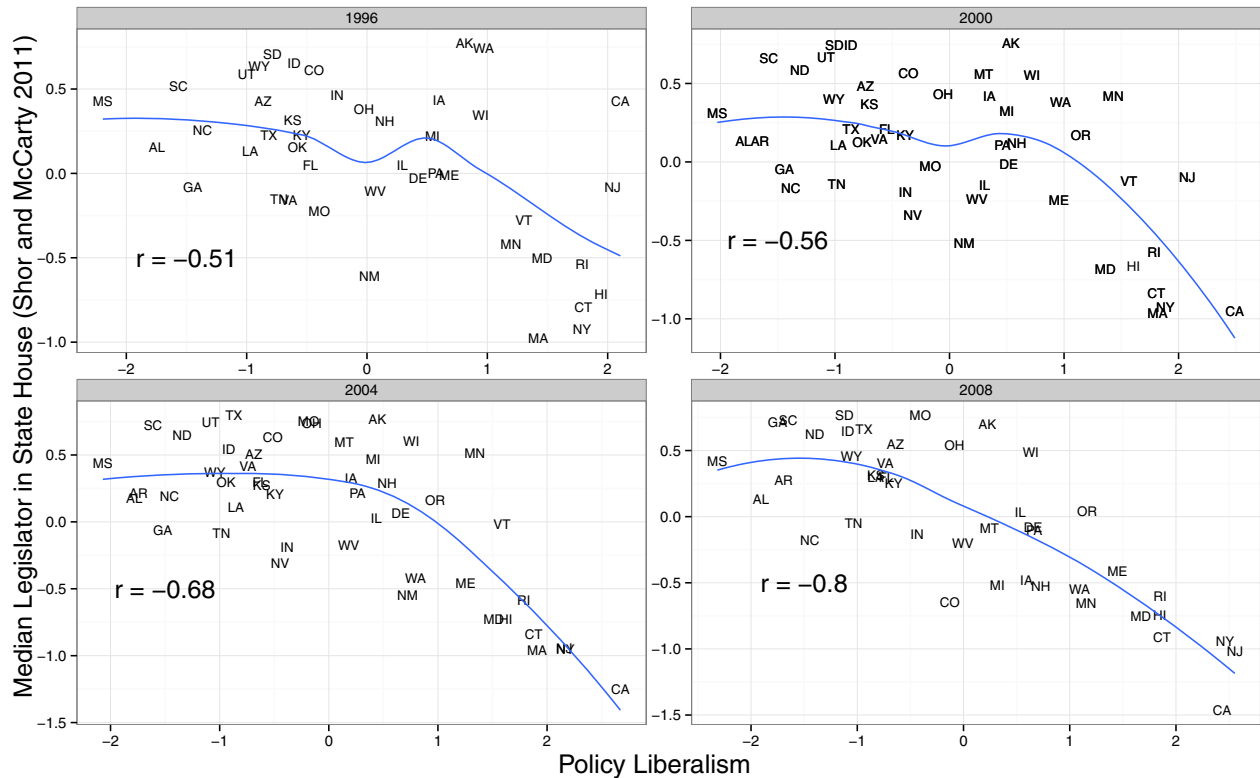
<sup>25</sup>This index is based on state firearms laws, state abortion laws, welfare stringency, state right-to-work laws, and the progressivity of state tax systems.

<sup>26</sup>This is the first principal component uncovered by Sorens, Muedini, and Ruger’s (2008) analysis of over 100 state policies. They label this dimension “policy liberalism” and give the label “policy urbanism” to the second principal component.

Notwithstanding measurement error and differences in data sources, our estimates are highly predictive of other measures of policy liberalism. The weakest correlation, 0.76 for Hofferbert (1966), is primarily the result of a few puzzling outliers (Washington, for example, is the seventh most conservative state on Hofferbert’s measure, whereas Wyoming is the ninth most liberal). In addition, all the relationships are highly linear. The only partial exception is for Sorens, Muedini, and Ruger (2008), whose measure of policy liberalism does not discriminate as much between southern states as our measure, resulting in a flat relationship at the conservative end of our scale.

In short, the very strong empirical relationships between our policy liberalism scale and existing measures of the same concept provide compelling evidence for the validity of our measure. It is worth noting that most of the

**FIGURE 4 The Relationship between State Policy Liberalism and the Conservatism of the Median Member of the Lower House of the State Legislature, 1996–2008**



existing scales were constructed explicitly with the goal of differentiating between liberal and conservative states. Thus, their tight relationship with our measure, which is based on a much more comprehensive policy data set and was estimated without regard to the ideological content of the policy indicators,<sup>27</sup> suggests in particular that we are on firm ground in calling our latent dimension “policy liberalism.”

### Construct Validation

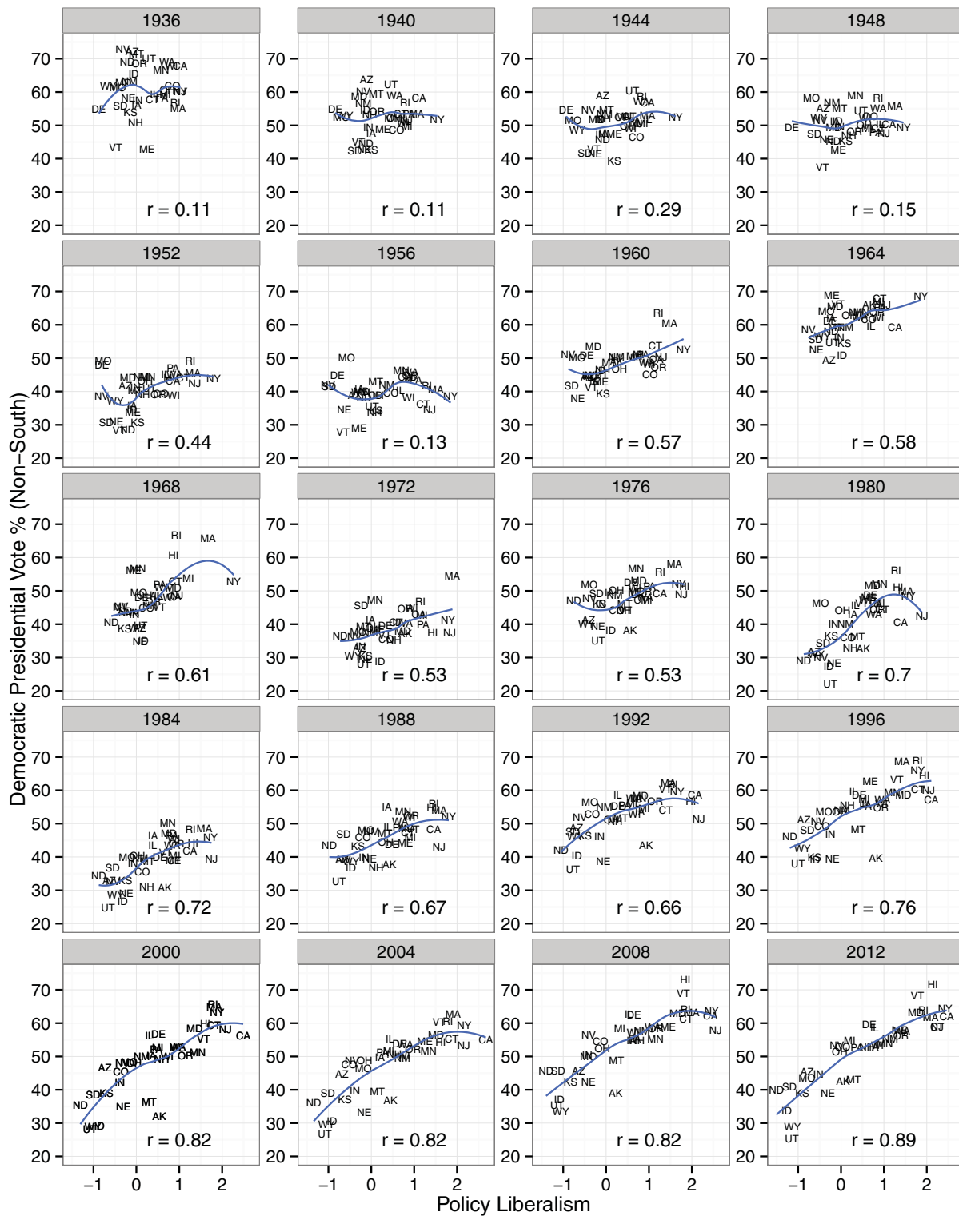
The purpose of construct validation is to demonstrate that a measure conforms to well-established hypotheses relating the concept being measured to other concepts (Adcock and Collier 2001, 542–43). One such hypothesis is that the liberalism of a state’s policies is strongly related to the liberalism of its state legislature, though due to factors such as legislative gridlock the relationship may not be perfect (e.g., Krehbiel 1998). To measure legislative liberalism on a common scale, we rely on Shor and McCarty’s (2011) estimates of the conservatism of mem-

bers of state legislative lower houses. As Figure 4 demonstrates for presidential years between 1996 and 2008, states with more liberal policies tend to have less conservative median legislators. Due possibly to the lingering Democratic advantage in southern state legislatures, the relationship at the conservative end of the policy spectrum is fairly flat, though by 2008 the relationship had become much more linear. The correlation between legislative conservatism and policy liberalism has also strengthened over time, from  $-0.51$  in 1996 to  $-0.80$  in 2008.

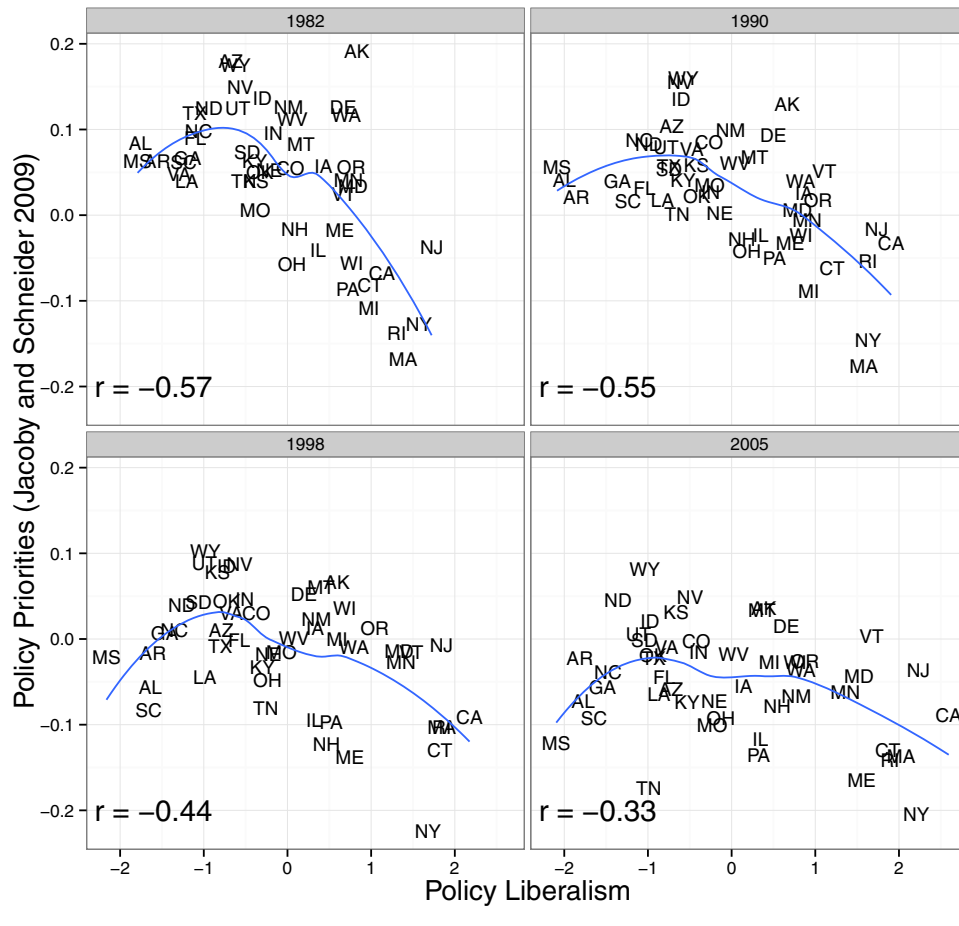
An analogous pattern of increasing association over time can be seen in an examination of the relationship between policy liberalism and Democratic presidential vote share. It is natural to hypothesize that both presidential vote and state policy liberalism are responsive to the party and policy preferences of mass publics and thus should be correlated at the state level. Since the anomalously Democratic partisanship of the “Solid South” would distort this relationship, we focus on the non-South only. Even without southern states, however, policy liberalism and presidential vote are only weakly related in the early part of the period, as Figure 5 shows. The correlation jumped to 0.57 in 1960 and continued to increase gradually through 2012, when it reached nearly 0.9. This increasing association

<sup>27</sup>This is true except for the hard coding required to identify the latent scale.

**FIGURE 5 The Relationship between State Policy Liberalism and Democratic Presidential Vote Share, 1936–2012 (Non-South Only)**



**FIGURE 6** The Relationship between Policy Liberalism and Policy Priorities in Selected Years, 1982–2005



between policy liberalism and presidential vote mirrors the growing alignment of party identification, policy preferences, and presidential vote at the mass level (Fiorina and Abrams 2008, 577–82). The analysis of presidential vote thus provides further evidence for the validity of our policy liberalism scale. At the same time, however, it suggests the limitations of presidential vote share as a proxy for mass preferences before the 1960s, even in the non-South (contra, e.g., Canes-Wrone, Brady, and Cogan 2002).

Finally, we examine the relationship between our policy liberalism measure and its closest analogue, Jacoby and Schneider's (2009) policy priorities scale. As we emphasize above, policy liberalism and policy priorities are different concepts. Moreover, the theoretical relationship between policy liberalism and preference for collective over particularistic spending is not self-evident. Nevertheless, Jacoby and Schneider convincingly argue that U.S. states tend to target particularized policies at needy

constituencies. Consistent with that expectation, they find a moderately negative cross-sectional correlation between policy liberalism and preference for collective goods.

Based on a similar analysis, we too find policy liberalism and policy priorities to be negatively correlated, on the order of  $-0.5$ . As Figure 6 shows, their relationship attenuated somewhat between 1982 and 2005. Also, like Jacoby and Schneider (2009, 18–20), we find that nonlinearity in the measures' relationship contributes to the weak correlation: Their association is much stronger among relatively liberal and particularistic states than on the conservative/collective-good end of the spectrum. This seems to be driven in part by southern states, which always anchor the conservative end of our scale but seem to favor particularistic spending. The sources of this discrepancy between the two measures—perhaps differences in political culture, budgetary decentralization, or economic need—could be an interesting topic for future research.

## Substantive Applications

Our dynamic measure of policy liberalism opens up multiple avenues of research not possible with cross-sectional measures. Most obviously, as we have shown, it permits descriptive analyses of the ideological evolution of state policies over long periods of time. But the availability of a dynamic measure also facilitates causal analyses that incorporate policy liberalism as an outcome, treatment, or control variable. In particular, because it is available for each state-year, our measure can be used in time-series–cross-sectional (TSCS) research designs, which leverage variation across both units and time. The fact that our estimates are available for nearly 80 years is especially valuable because TSCS estimators can perform poorly unless the number of time units is large (Nickell 1981).

For example, scholars could examine how the cross-sectional relationship between state public opinion and policy liberalism has evolved over time (Burstein 2003), estimate the state-level relationship between changes in opinion and changes in policy (cf. Stimson, MacKuen, and Erikson 1995), or analyze how interest groups or electoral institutions moderate the opinion–policy link (cf. Gray et al. 2004; Lax and Phillips 2011). Scholars could also evaluate the policy effects of electoral outcomes or the partisan composition of state government (cf. Besley and Case 2003; Erikson, Wright, and McIver 1989; Kousser 2002; Leigh 2008).

An alternative approach would be to analyze policy liberalism as a cause rather than an effect. For example, one prominent view is that citizens respond “thermostatically” to changes in policy by moving in the ideologically opposite direction (Wlezien 1995). A related perspective argues that voters compensate for partisan effects on policy through partisan balancing (e.g., Alesina, Londregan, and Rosenthal 1993; Erikson 1988). Other scholars, however, highlight the positive feedback effects of policy changes (e.g., Campbell 2012; Pierson 1993). Our policy liberalism estimates open up ways of adjudicating among these theories using state-level TSCS designs.

## Conclusion

This article has addressed a major gap in the state politics literature: the lack of a measure of state policy liberalism that varies across time. Using a data set covering 148 policies and a latent-variable model designed for a mix of ordinal and continuous data, we have generated estimates of the policy liberalism of every state in every year for the past three-quarters of a century. As indicated

by their high correlations with existing measures of state policy liberalism as well as with domain-specific indices, our estimates exhibit strong evidence of validity as a measure of policy liberalism.

Our yearly estimates of policy liberalism are illuminating for their own sake, revealing historical patterns in the development of state policymaking that would be hard to discern otherwise. But they also open up research designs that leverage temporal variation in state policies to explore questions involving the causes and effects of policy outcomes. These topics include the policy effects of public mood, electoral outcomes, interest groups, and institutions, as well as the consequences of policy change on political attitudes and behavior.

The relevance of this article extends well beyond the field of state politics. In addition to facilitating the study of topics of general significance, our measurement model could be applied to policymaking by local governments (cf. Tausanovitch and Warshaw 2014) as well as in cross-national studies.<sup>28</sup> Even more generally, our dynamic approach to measurement helps to illustrate the value of data-rich, time-varying measures of important political concepts like policy liberalism.

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<sup>28</sup>Of course, given the diversity of policy systems, political structures, and economic contexts, this kind of extension would be difficult. At the very least, it would be important to apply care to ensure that the substantive meaning of policies is similar in each country.

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## Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

- Description of State Policies
- Dimensionality