Center for Effective Lawmaking

The Concentration of Legislative Effectiveness in the American States

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Abstract: Since the creation of legislative effectiveness scores (Volden and Wiseman 2014), a substantial body of literature has emerged seeking to explain the individual, political, and behavioral factors that contribute to effective lawmaking. However, less attention has been paid to whether and how effective lawmaking is distributed among legislators within a chamber. In this paper, we argue that understanding how policymaking success is distributed across a legislature's membership is also important. Using data on legislative effectiveness in the states, we create novel measures that identify the concentration and dispersion of policymaking success in legislative chambers. Our findings reveal significant variation in the concentration of legislative effectiveness across American states. Smaller chambers and bill introduction limits are associated with more egalitarian patterns of effectiveness while centralizing powers are unrelated to the dispersion of effective lawmaking. Additionally, we find that policymaking success is highly concentrated on the most substantively important legislation, suggesting that while many legislators contribute to routine lawmaking, effectively legislating on the most consequential bills is limited to a narrower set of legislators.

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Prior work on state legislatures has documented the distribution of power and influence in legislatures, developing measures of leader power, committee autonomy, and minority party influence. But while rules and practices shape the distribution of power and influence in theory, it also matters *how many* and which members of a legislature can achieve legislative success. Having bills signed into law allows legislators to claim credit (Mayhew 1974) and signal that they have kept campaign promises (Sulkin 2009), while legislators with a general reputation for effectiveness also stand to benefit electorally (Butler et al. 2023). Even advancing legislation through *some* parts of the legislative process can be valuable, particularly when policy goals are achieved via incorporation into another bill (Casas et al. 2020; Eatough and Preece 2024).

The concept of legislative effectiveness, while typically used to identify which legislators are most effective, can also be utilized in the service of understanding the *distribution* of success in different legislatures. Most fundamentally, one can characterize a legislature as more or less egalitarian (see e.g., Volden and Wiseman 2018's contrast of the U.S. House and Senate). Extending that logic, we can place legislatures along a spectrum ranging from one where a single legislator has a monopoly on legislative success to one where all legislators are equally effective. In other words, drawing on the terminology from the party systems literature (Laakso and Taagepera 1979), what is the effective number of legislators in a legislature?

In this paper, we argue that the *concentration* of effectiveness in legislatures merits attention alongside questions about the traits of effective lawmakers. Time is a scarce resource in most legislatures, especially in less professionalized ones, so the distribution of successes (that is, whether they are concentrated or dispersed), has downstream implications with respect to constituent responsiveness and electoral benefits. Moreover, the internal function

and social environment of a legislature in which legislative successes are dispersed widely may be different from one in which a handful of members monopolize legislative successes. Finally, the distribution of effectiveness may provide clues as to the ways that skills and behaviors translate into effectiveness: in some chambers, skills may constitute a sufficient condition for effectiveness while in others it may be a necessary but not sufficient condition.

In this paper, we use recently developed data on legislative effectiveness in the states (Bucchianeri et al. 2024) to assess how concentrated or diffuse policymaking success is across a legislature's membership. We calculate a new metric, the effective legislator ratio (ELR), and examine how institutional traits and contextual factors predict patterns across chambers and across sessions within chambers. To discern the role that party plays in these patterns, we also consider an alternative version of this measure (MELR) that calculates ELR only among members of majority parties. While these metrics reveal significant variation in the distribution of legislative effectiveness across chambers, the concentration of effective lawmaking is quite stable across sessions.

We find three major patterns with respect to the concentration of legislative effectiveness. First, we find little evidence that the centralization of institutional powers is associated with the concentration of effectiveness. While chamber size and bill introduction limits are consistent predictors of the ELR, rules and practices regarding leadership powers and the prerogatives of individual actors offer negligible explanatory power. Second, we find that the concentration of effectiveness transcends the division between majority parties and minority parties. Whether we measure the ELR as a function of the whole legislative membership, or of the majority party membership only, our results remain remarkably similar. Third, we find that

policymaking success is more highly concentrated on the most substantively important pieces of legislation. We conclude by discussing the implications of our findings for state legislative lawmaking.

Effectiveness and Success in Legislatures

Legislative scholarship has long been interested in identifying the most successful and productive legislators in a body. While earlier work debated the merits of a variety of measures of success (e.g., Anderson et al. 2003; Kousser 2005; see Makse 2022 for a summary of this debate), the development of Legislative Effectiveness Scores (Volden and Wiseman 2014) has enhanced the ability for scholars to make comparisons across legislative sessions and across individuals with different positions.

Using these scores, recent scholarship has advanced our understanding of how individual traits, features of the political environment, and legislator behaviors map onto effectiveness. Lawmakers' identities (e.g., gender, class, sexuality) are related to their legislative performance in several ways. Volden et al. (2013) find that women lawmakers are more effective than men, particularly during consensus-building stages of the lawmaking process and when they are in the minority party. Lawmakers' professional backgrounds are also related to their ability to effectively legislate. Lollis (2023) finds that lawmakers who have previously been employed in working-class occupations are no less effective than white-collar lawmakers, while Makse (2022) demonstrates that lawmakers are highly successful when legislating in policy areas related to their professional expertise. Finally, Lollis and Dobson (2023) show that LGBTQ lawmakers are substantially more effective than non-LGBTQ lawmakers.

Various aspects of legislative service also shape effectiveness, including seniority (Miquel i Padró and Snyder 2006), electoral competition (Barber and Schmidt 2019), and membership in legislative factions (Clarke et al. 2022). Needless to say, however, legislative behavior is also a crucial predictor of effectiveness, with theoretical work confirming (Battaglini et al. 2020) an intuitive link between legislative connections and effectiveness. By a variety of metrics for both connections and success, evidence shows that legislators who collaborate (Craig 2020) and attract bipartisan cosponsors (Harbridge-Yong et al. 2023) achieve legislative successes, although much of this work focuses on Congress.

None of these findings, however, speak to the *distribution* of effectiveness in legislatures. To some degree, the mix of effective and ineffective legislators at a given moment in time may have a stochastic element, influenced by the outcomes of close contests, the timing of retirements and pursuits of higher offices, and the interplay between specific individual legislative pursuits and the party agenda of the moment. It is also plausible, however, that the concentration of effectiveness has a structural element. In legislatures where time is scarce, legislative success is likely to have elements of a zero-sum game,[1] where one legislator's advancement of a bill crowds out room on the agenda for other bills.[2] As such, in considering

[1] It is worth noting that due to the construction of the LES (i.e., scores having a session-level average of 1.0), scores *are* tantamount to being zero-sum. In other words, each additional degree of success for a single legislator reduces the scores of every other legislator.

[2] There are some partial exceptions. First, at the bill introduction stage, introducing a bill never precludes anyone else's bill introduction, even if there are individual bill introduction limits. Second, in chambers that require committee bill reporting or floor consideration, time spent on one bill may take *time* away from the consideration of other bills without taking *opportunity* away from other bills. We will discuss these rules in the sections that follow.

the distribution of effectiveness, we start with other strands of the literature that speak to the concentration and dispersion of power and influence in legislatures.

Concentration and Dispersion in Legislatures

Modern legislative organization must grapple with questions of concentration and dispersion, even if discussions are not always couched in those terms. Legislatures in which all members have equal powers are almost unimaginable. Large legislative agendas incentivize empowering actors who can winnow proposals, while specialization encourages the creation of committees, typically offering property rights as the reward for specializing. Many questions of legislative organization, then, are questions of the degree to which prerogatives are decentralized and the identities of the actors to whom powers are granted.

Early work by Francis (1985) identified three "loci of power" in state legislatures, classifying states by whether they concentrated power in the hands of leaders, committees, the caucus, or some combination thereof. More recent research has explored variance in the power of state speakers (Clucas 2001; Mooney 2013) and state senate leaders (Green 2022), and the autonomy of committees (Martorano 2006), confirming that substantial variation exists in the distribution of power. Other work has focused on the distribution of power across majority and minority parties. Gatekeeping powers are especially crucial in shaping the agenda and these are typically held by majority parties, although their potency varies across legislatures (Anzia and Jackman 2013). More broadly, states that provide more procedural rights to minority parties (e.g., committee proportionality, ability to control same-party committee assignments) produce different patterns of legislating. Minority party rights are also associated with more bill

successes among minority party members. Lastly, work on committee assignments has pondered the value of various committee assignments in legislators' portfolios (e.g., Broockman and Butler 2015). Put differently, the extent to which *inputs* in the legislative process are distributed evenly or unevenly is a frequent theme but distribution is perhaps under-explored in the context of legislative *outputs.*

Since legislative effectiveness reflects a set of individual skills, it is not something that is "distributed" per se[3]. Institutional rules may advantage certain members, but part of legislative effectiveness is overcoming obstacles. It is conceivable to some degree that the distribution of effectiveness has roots in elections and ambition. Some legislatures may attract individuals with traits associated with effectiveness, such as women, persons more open to bipartisan collaboration or persons with expertise in important policy domains. Legislatures, through term limits or ambition patterns, may also differently retain persons with those traits. In turn, the prevalence of such traits would influence the distribution of effectiveness. In other words, while an association between the centralization of powers and the concentration of effectiveness seems intuitive, the logic linking the two is hardly ironclad. In the next section, we explore this relationship alongside other plausible predictors of the concentration of effectiveness.

[3] That is, we don't assert that leaders consciously think about the distribution of legislative successes. They may contemplate members' successes in electoral contexts, but such episodic considerations are unlikely to systematically impact the distribution of effectiveness scores.

Data and Methods

Our dependent variable is constructed based on Bucchianeri et al. (2024), who introduce data on effectiveness across virtually all state legislative chambers in recent decades. As in previous work on legislative effectiveness in Congress (Volden and Wiseman 2014), these scores assess how each legislator's authored bills succeed in advancing through stages of the legislative process (e.g., bill introduction, passage from committee, becoming law), and compare these achievements to the average legislator in the session. We limit our analysis to the period from 1997 to 2018 (1996 to 2017 in states with odd-year elections) due to limitations of other variables collected for this paper. Figure A-1 in the Appendix shows the sessions covered in each state, summing to 914 total session observations across 94 chambers in 47 states.[4]

Our ultimate dependent variable is the **effective legislator ratio** (ELR), which is the effective number of legislators divided by the nominal size of the legislative membership. To arrive at this quantity, we first must calculate the numerator: the effective number of legislators (More clumsily, we might describe this as the "effective number of effective legislators"). As previously noted, we draw on Laakso and Taagepera's (1979) formula for calculating the effective number of parties in an electoral system based on the relative vote shares of those parties.[5] Just as a minor political party who receives a small share of the total vote might be

[4] We exclude Kansas because of its unavailability in the SLES data, New Hampshire because of additional missing data, and Nebraska due to its nonpartisan elections. However, recoding the majority status variable to treat Nebraska as a Republican chamber produces no changes to the model results. In addition, models which account for partisan majority status exclude sessions with tied chambers and the 2017-2018 Hawai'i Senate term in which no Republicans held office.
[5] The Laakso-Taagepera score is the inverse of the Herfindahl index, used to measure market concentration. However, just as it is more intuitive to discuss party systems in terms of the effective number of parties, we find it intuitive to discuss the effective number of legislators.

considered a “half party” or “quarter party” in the Laakso-Taagapera measure, a legislator whose successes are scant relative to prevailing patterns in the chambers might be thought of as a “half” or “quarter” legislator in terms of the chamber’s legislative output. Specifically, the effective number of legislators is calculated with the following formula, where $SLES_i$ is the legislative effectiveness score for member *i and* N is the number of legislators in the session.

$$ELR = \frac{1}{N} * \ inv \left(\sum \frac{SLES_i^2}{N} \right)$$

The ELR can thus be understood as a measure of the concentration of legislative effectiveness. For example, if a legislature with twenty members has four highly effective members (“full” legislators) and sixteen highly ineffective legislators (“quarter” legislators), its effective number of legislators would be eight, or 40% of the chamber’s nominal membership size. As we will see, that would constitute a chamber with a high level of concentration: larger proportions indicate more dispersion of effectiveness (or more egalitarianism) while smaller proportions indicate more concentration of effectiveness (or more inegalitarianism).

The mean ELR score across all chamber-sessions is 0.59, indicating that the number of effective legislators is 59% of the chamber’s total membership. Figures 1.1 and 1.2 illustrate values of the ELR by state over time in lower chambers and upper chambers, respectively. The West Virginia and Hawai’i House have the lowest scores (most concentration of effectiveness) while the two chambers of the California legislature have the highest average ELR scores.

Most chambers are relatively stable over time with a standard deviation of 0.06 across sessions. The Illinois House and Oklahoma House have the least stable ELR scores over time, while the Georgia House and Hawai’i Senate have the most stable ones. The level of stability does not appear to be affected by leadership change. Although the average change in chambers

with new leaders is slightly larger than chambers with stable leadership 5.7% v. 5.0%, p = 0.02), this difference is not substantively large.

Figure 1.1: Distribution of ELR in Lower Chambers

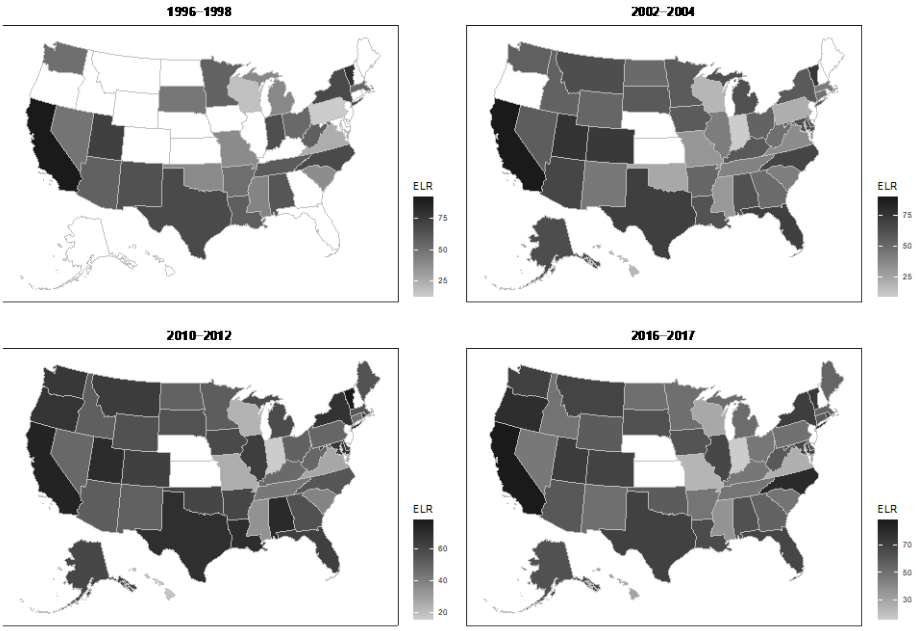


Figure 1.2: Distribution of ELR in Upper Chambers

Note: Figure 1 displays variation in the Effective Legislator Ratio (ELR) across legislatures and chambers. Kansas and Nebraska are omitted from both maps.

There is also a very strong relationship between the average ELR scores in the lower and upper chambers of the same state (r = 0.82), which is not surprising since achieving the highest legislative effectiveness scores (for bills that become law) requires navigating the legislative process through both chambers. However, a few states *do* exhibit substantial differences across chambers (Illinois, Pennsylvania, and especially Missouri). These deviances appear to be associated with bicameral distinctiveness (Makse 2022), as states with more distinct lower and upper chambers have greater differences in the ELR scores (r = 0.25) across chambers.

In addition to our main measure, we calculate a second version of the ELR, the **majority party effective legislator ratio** (MELR) to focus specifically on the concentration of effectiveness among majority party members. Given the often-large gaps between majority party and minority party effectiveness (Bucchianeri et al. 2024), the large number of conditioning factors that affect majority and minority members differently (see e.g., Clark 2015), and the increasing polarization of legislatures, it may be easy to mistake the concentration of effectiveness with the substantial disadvantages that minority party members face. By using the MELR, we can rule out that patterns observed are merely capturing majority-minority dynamics. The construction of this measure is identical, except that only SLES scores for members of the majority are used in calculating the numerator and the number of majority legislators is used for the denominator.

Finally, in the penultimate section we discuss an alternative set of dependent variables that distinguishes between the “substantive” and “substantive and significant” bills considered in a legislature. We discuss the construction and features of those measures at that time.

Independent Variables

Our first independent variable speaks to the discussion of power centralization discussed in the previous section. Given the large number of distinct but overlapping measures employed by various scholars, we take an ecumenical approach rather than focusing on a single measure. (Table 1 summarizes these existing measures.) Specifically, we employ factor analysis to identify a single dimension of **centralization.** Of these eight measures, three consistently load onto a single factor: Anzia and Jackman's (2013) calendar control measure, Clark's centralization index, and a measure of leadership power (Mooney's (2013) index for lower chambers[6] and Green's (2022) index for upper chambers). We retain predicted values from this single factor and use it as our measure of centralization. In the Appendix, we provide further details on these procedures and produce further tests that examine these measures individually.

Table 1: Measures of Power Centralization in State Legislatures

Variable	**Description**
Majority calendar control (Anzia and Jackman 2013)	Majority party's power to control the floor agenda
Loci of control (Francis 1985)	Classifies chambers by whether "significant decisions" are made by leaders, committees and/or caucuses (member survey data).
Centralization index (Clark 2015)	Powers of chamber leaders (committee appointment, calendar control, rules committee control)
Minority rights index (Clark 2015)	Majority control of floor agenda and minority party prerogatives (committee appointments, committee seat proportionality)
Committee power index (Jenkins 2016)	Autonomy of committees to hear, kill, and report bills
Speaker power index (Mooney 2013)	Appointment, committee, procedural powers of lower chamber leaders (time series)
Senate leader power index (Green 2022)	Appointment, committee, procedural powers of lower chamber leaders (time series)

[6] We also consider Clucas' (2011) speaker powers index, but it loads weakly onto the centralization dimension while producing no other substantive differences in the main models.

Next, we explore the relationship between the concentration of legislative effectiveness and a variety of other traits of state legislatures. We account for **chamber size,** as larger chambers have fundamentally different network characteristics in terms of both density and partisan division (Kirkland 2014). With fewer ties between members and between party caucuses, we might expect greater disparities in effectiveness between those who possess strong collaborative skills and those who do not.

The linkage between state legislative **professionalism** and the distribution of effectiveness is somewhat ambiguous. Having more staff and less time scarcity could help level the playing field, allowing a broader spectrum of legislators to achieve legislative successes. Conversely, those same resources could also advantage those who know how to use them, producing greater disparities in effectiveness. In our main models, we primarily utilize Squire's index[7] (Squire 2017), but we also explore the separate components of salary, session length, and expenditures (Bowen and Greene 2014).[8]

We also include a dummy variable for whether the state has **term limits.** Term limits place a ceiling on how much experience, and by extensions, effectiveness due to "learning by

[7] We use the average score from the 1996, 2003, 2009, and 2015 versions of the index.
[8] Both salary and session length, when entered individually, produce the same curvilinear relationship with the ELR. The third component, expenditures, has no relationship with the ELR. This suggests that the concentration of effectiveness is more associated with time scarcity than it is with staff-related resource explanations.

doing" (Miquel i Padró and Snyder 2006) that members can have, potentially leveling the playing field and reducing disparities across members.[9]

A dummy variable for **Democratic control** allows us to ascertain whether Democratic- and Republican-led chambers are systematically different in terms of the concentration of effectiveness. Scholars have noted the differences between the Democratic and Republican party coalitions (Grossman and Hopkins 2016), with Republicans featuring a more ideology-driven coalition, while Democrats are fueled by competing group interests. If such patterns animate legislative parties too, Democrats may be more incentivized to allocate access to the floor agenda in a way that enhances the dispersion of effectiveness.

Finally, we measure the degree of **interparty polarization** in the chamber, using the difference of medians in Shor-McCarty (2011) scores. Once again, the expected direction of such a relationship is ambiguous. On the one hand, polarization might make building bipartisan coalitions harder, so effectiveness could be concentrated (especially among minority party members) in the hands of the few legislators with the skill and desire to make such efforts. On the other hand, polarization could make bridge-building almost prohibitively difficult for all legislators, dampening the advantage that natural bridge-builders would have in a less polarized legislature. In that case, polarization could produce more dispersion of effectiveness and higher ELR values. Table 2 provides summary statistics for all variables in the analyses to follow.

[9] A similar logic might deduce a relationship between legislative turnover and the ELR. Since term limits and turnover are highly correlated (r = 0.77), we test this variable in separate models, using Butcher's (2022) measure of turnover. Results are similar.

Table 2: Summary Statistics

Variable	Mean	Standard Deviation	Range
Dependent Variables			
Effective Legislator Ratio (ELR)	58.9	15.8	[8.9 – 92.5]
Majority Effective Legislator Ratio (MELR)	66.2	16.9	[9.7 – 97.7]
Effective Legislator Ratio for Substantive Bills (ELR: S)	57.9	15.9	[7.93 – 92.3]
Effective Legislator Ratio for Substantive & Significant Bills (ELR: SS)	30.6	18.5	[.82 – 77.1]
Majority Effective Legislator Ratio for Substantive Bills (MELR: S)	64.8	17.1	[8.8 – 97.4]
Majority Effective Legislator Ratio for Substantive & Significant Bills (MELR: SS)	36.7	20.9	[1.4 – 89.7]
Independent Variables			
Number of legislators in session	72.4	43.1	[20 – 208]
Centralization Score	0	0.77	[-1.9 – 1.5]
Legislative professionalism (Squire 2017)	0.20	0.11	[0.04 – 0.60]
Term limits (Dummy: 1 = legislature has term limits)	0.32	0.47	[0 – 1]
Democratic majority in chamber	0. 46	0.49	[0 – 1]
Interparty polarization (Shor and McCarty 2011)	0.66	0.25	[0.14 – 2.08]
Substantive & Significant Bill Introductions	1.28	1.50	[0 – 9.38]

Note: Table 2 displays the mean, standard deviation, and range for all dependent and independent variables.

Results

To explore the relationships between these measures and the concentration of legislative effectiveness, we produce a series of linear regression models in Table 3, using both versions of our dependent variable: the **ELR**, which includes all legislators, and the **MELR**, which limits the analysis to majority party members only. All models use standard errors clustered by chamber. The relationship between professionalism and the ELR exhibits signs of nonlinearity, so we model professionalism using a polynomial term.

The first column of Table 3 reports a model where the overall concentration of effectiveness (ELR) as the outcome of interest. One conspicuous finding is that there is no relationship between our measure of centralization and the concentration of effectiveness. As can be seen in the Appendix, this is not a consequence of our choice of measure: none of the individual measures have a statistically significant association with the ELR.

Table 3: Linear Regression Models of the ELR and MELR

	1 **ELR**	2 **MELR**
Chamber Size	-0.15***	-0.17***
	(-5.25)	(-5.93)
Introduction Limits	4.74*	4.98*
	(2.15)	(2.13)
Centralization Score	0.04	1.15
	(0.02)	(0.64)
Democratic Majority	-2.19	-3.82
	(-1.18)	(-1.91)
Interparty Polarization	13.61**	20.43***
	(2.72)	(4.09)
Professionalism (Squire)	-110.60**	-46.20
	(-3.34)	(-1.33)
Professionalism Squared (Squire)	181.79***	99.82
	(3.59)	(1.91)
Term Limits	2.38	0.51
	(1.05)	(0.22)
Intercept	72.02***	69.44***
	(12.75)	(12.29)
N	914	906
Adj. R^2	0.32	0.35

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Chambers with bill introduction limits are associated with *less* concentrated effective lawmaking, while large chambers are associated with *more* concentrated effective lawmaking. Standard errors are clustered by state-chamber.

Among the remaining variables, four have a statistically significant relationship with ELR. Bill introduction limits are associated with higher dispersion of effectiveness, suggesting that

effective lawmaking is less concentrated when individual legislators cannot numerically dominate the agenda. The effect size of 5% implied by the coefficient is equivalent to roughly one-third of a standard deviation of the ELR. There is also a negative relationship between chamber size[10] and the concentration of effective lawmaking, with more concentrated effective lawmaking in larger chambers.[11] Further, the magnitude of this association is meaningful. For every standard deviation change in chamber size (43 members), the ELR increases by 6%, which is slightly larger than the magnitude of the introduction limit coefficient.

The third significant predictor of the ELR is interparty polarization with the positive coefficient implying that more polarized chambers have more dispersed effectiveness scores. These results, however, should be interpreted with caution. Insofar as polarization varies by session, we also consider models with state fixed effects to explore whether sessions in the same legislative chamber with greater polarization produce more egalitarian patterns of effectiveness. We do not find this; in fact, the sign reverses, indicating that polarization is associated with more concentration (see Table A.3 in the appendix). As such, the positive coefficient in Table 3 likely indicates that the kinds of states which are more polarized are also those which have more egalitarian patterns of effectiveness, not that polarization itself causes egalitarianism.

Finally, there is a curvilinear relationship between professionalism and the ELR, implying more dispersion of effectiveness at the extremes of professionalism. It appears at first glance

[10] We also tried controlling for workload (number of bills introduced per legislator; see also Clark 2015) but found no relationship with ELR or MELR.

[11] We also consider whether chamber size is proxying for chamber, since lower chambers are also larger. We find no evidence of this; adding a dummy for upper chamber does not produce a significant difference, nor does it meaningfully affect the estimate for chamber size.

that this curvilinear relationship is mostly due to California being an outlier; the 19 most extreme values of Cook's D in a bivariate regression of the Squire index on the ELR are all cases from California. However, in the multivariate model, the California cases are no longer outliers, and the polynomial term remains significant both with and without the California cases. The remaining two variables are not significant: we observe no differences between states depending on whether they have term limits or the identity of the legislative majority party.

Next, we estimate a similar model using the MELR scores that only capture patterns of effectiveness within the majority party.[12] These results can be found in the second column of Table 3. Most of the results here remain very similar. First, there is no observed relationship between institutional centralization and the concentration of effectiveness. Second, there is a positive, significant relationship between introduction limits and the concentration of effective lawmaking among the majority party, with a very similar coefficient size to the previous model. Chamber size is negatively related to the MELR, indicating that effective lawmaking is also more concentrated among the majority party in larger chambers. Once again, the magnitude of the coefficient is similar. We also observe the same positive relationship between the MELR and polarization, and a similar curvilinear relationship with professionalism. Lastly, we see evidence of a marginally significant ($p = 0.06$) difference between Democratic and Republican chambers, with Democratic chambers featuring slightly *higher* levels of concentration.

[12] We also consider a measure of *intraparty polarization* in the majority party, as deeply divided parties might be more likely to concentrate effectiveness in the dominant faction. We find a substantively large association with the MELR without affecting other conclusions.

Bill Importance and the Concentration of Effectiveness

Next, we consider whether the content of bills influences the distribution of effectiveness. An even distribution of success in bill passage, after all, does not equate to equal influence over the policy agenda. While 95% of bills in the dataset are "substantive" bills, the 4% of "substantive and significant" bills have an outsize effect on public policy.[13] Moreover, Bucchianeri et al. (2024) suggest that proven ability matters more for substantive and significant legislation. Painting a full picture of the distribution of legislative effectiveness, then, requires a comparison of more ordinary policy bills to those which have more substantial policy effects.

For these analyses, we take into consideration the fact that the number of bills identified as substantive and significant varies across states and chambers. For example, both chambers in Louisiana average more than 300 such bills per session, while an average of less than one such bill per session is identified in West Virginia. Most of this variance is surely a feature of heterogeneous media coverage patterns rather than a propensity for some states to pursue or avoid impactful legislation.[14] Nonetheless, we consider it important to account for this variance, as states with too few substantive and significant bills cannot exhibit meaningful levels of dispersion in effectiveness. Put simply, if a session features the passage of only one substantive and significant bill, credit for effectiveness can only accrue to one bill author, guaranteeing a score of perfect concentration.

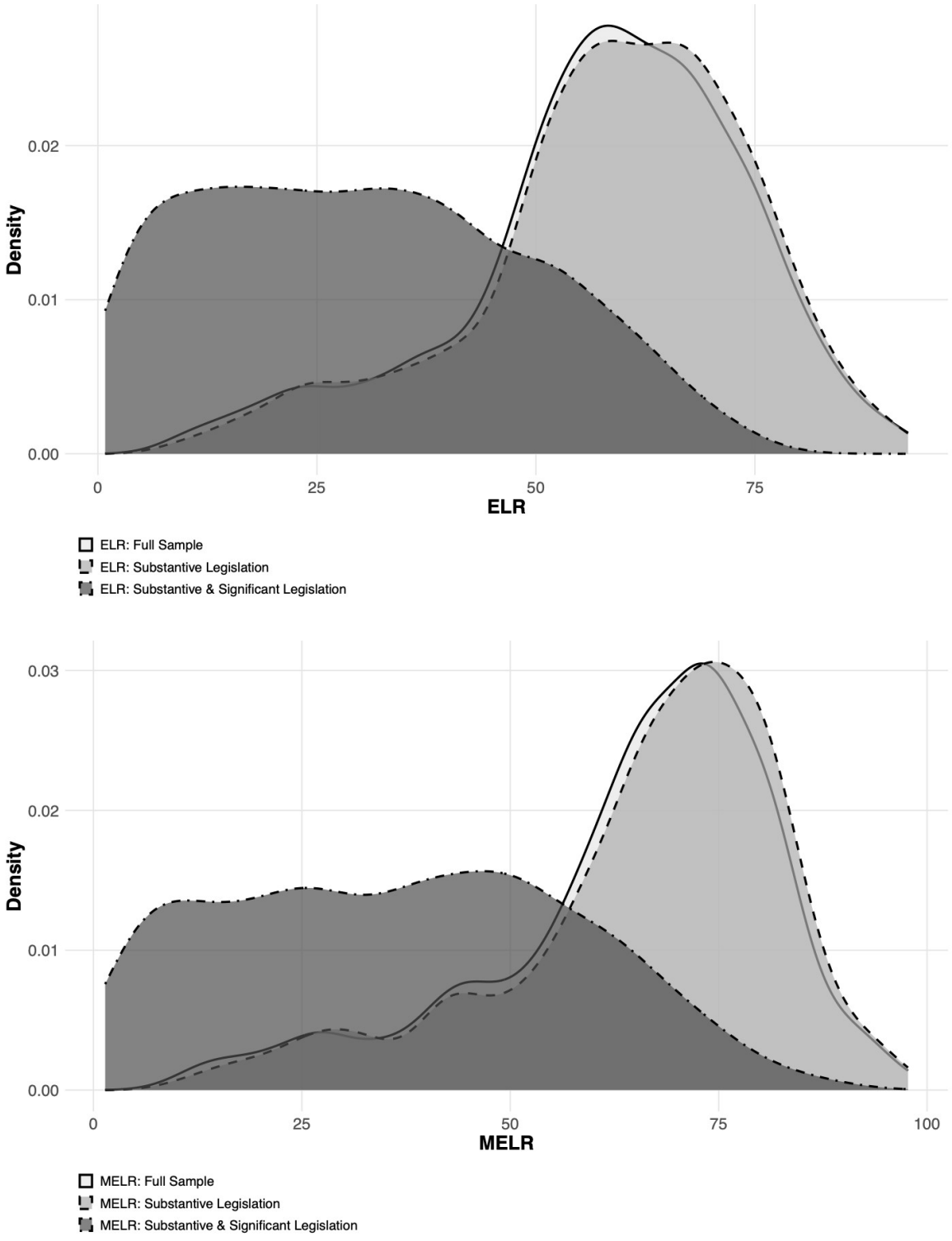
[13] The third category of "commemorative" bills constitutes only about 1% of bills in the dataset because most state legislatures have bill designations that separate those bills and they are not used in calculating SLES scores.

[14] Bucchianeri et al. (2024) identify substantive and significant bills as those which receive coverage in a selected set of newspapers that cover state legislative actions.

To incorporate this feature into our models, we first calculate the number of substantive and significant bills per member for each chamber-year in the dataset. Sessions with zero substantive and significant bills (5% of cases) and sessions where a single member authored all substantive and significant bills (7%) are excluded from these analyses. The remaining 818 chamber-sessions have a mean of 1.3 substantive and significant bills per member with a standard deviation of 1.5 bills per member.

Next, we calculate two new versions of our dependent variables, using legislative effectiveness scores only based on (a) substantive and (b) substantive and significant bills, respectively. Since substantive bills comprise 95% of all bills, the legislative effectiveness scores (and in turn, the concentration scores) based on these bills does not look terribly different from the versions incorporating all bills. The degree of concentration of effectiveness for substantive and significant bills, however, does differ meaningfully from the overall pattern. As can be seen in Figure 2, the effective legislator ratio for substantive and significant bills (hereafter, **ELR: SS**), is typically much smaller than the effective legislator ratio for substantive bills (**ELR: S**). The latter quantity has a mean value of 58%, very similar to the mean of 59% for all bills. For the most important bills, though, this value is only 31%, indicating that a far narrower cadre of legislators succeeds in authoring and advancing significant pieces of legislation. The same pattern emerges for the majority-only version of the variable. The measure capturing all bills produces a mean of 66%, the version using only substantive bills (**MELR: S**) produces a mean of 65%, and the version limited to substantive and significant bills (**MELR: SS**) has a mean of 36%.

Figure 2: Distribution of ELR and MELR by Importance of Legislation



Note: Figure 2 displays the density in ELR, ELR: S, and ELR: SS (first pane) and MELR, MELR:S, and MELR: SS (second pane). Effective lawmaking is considerably more concentrated for substantive and significant legislation.

Turning to multivariate analyses, we produce results in Table 4 mirroring those from the previous section but with separate models representing the concentration of effectiveness on substantive bills (Column 1) and substantive and significant bills (Column 2). Because the results in Column 1 are very similar to those presented previously, we focus on the ways that the findings in Column 2 are distinct, with three notable differences emerging. First, the relationship between bill introduction limits and the dispersion of effectiveness disappears. This makes intuitive sense, as the number of significant bills one might hope to author and pass in a session is probably of a similar magnitude to most introduction limits. Second, term limits are associated with higher ELR-SS scores, indicating that in term limited states, success on important pieces of legislation is spread across more members than in non-term limited states. Third, we observe a partisan difference: for significant legislation, Democratic-controlled chambers exhibit more concentration of effectiveness than their Republican counterparts.

The remaining predictors (chamber size, polarization, and professionalism) exhibit the same patterns for both the **ELR-S** and **ELR-SS**. Lastly, we note that the average number of substantive and significant bills authored per member is a very strong predictor of the dispersion of effectiveness. We presume that this is partially a function of unorthodox lawmaking. In states where fewer bills are identified as substantive and significant, one possible reason is that important policy changes are combined into omnibus legislation, resulting in fewer bills authored to whom can be credited a piece of substantive and significant legislation. This pattern does not extend to the full universe of legislation (i.e., there is no relationship between all bills introduced per member and the ELR).

Table 4: Linear Regression Models of the ELR and MELR, by Bill Importance

	1 **ELR: S**	2 **ELR: SS**	3 **MELR: S**	4 **MELR: SS**
Chamber Size	-0.14***	-0.08***	-0.16***	-0.11***
	(-4.90)	(-3.79)	(-5.46)	(-4.45)
Introduction Limits	4.69*	0.29	4.53	0.34
	(2.01)	(0.16)	(1.75)	(0.17)
Centralization	-0.10	-0.75	1.13	-0.75
	(-0.06)	(-0.69)	(0.62)	(-0.56)
Democratic Majority	-1.90	-3.46**	-3.37	-5.07**
	(-1.00)	(-2.67)	(-1.64)	(-3.21)
Interparty Polarization	13.44*	9.46*	19.56***	16.33***
	(2.57)	(2.62)	(3.58)	(4.21)
Professionalism (Squire)	-121.35***	-48.84*	-65.78	7.47
	(-3.55)	(-2.13)	(-1.80)	(0.29)
Professionalism Squared (Squire)	200.88***	71.58*	133.90*	-5.62
	(3.82)	(2.05)	(2.41)	(-0.15)
Term Limits	1.17	3.81*	-1.12	3.49
	(0.50)	(2.01)	(-0.46)	(1.61)
SS Bill Introductions	—	8.81***	—	9.45***
		(8.83)		(7.70)
Intercept	72.09***	23.08***	70.54***	19.39***
	(12.32)	(6.34)	(11.63)	(5.07)
N	914	801	906	793
Adj. R^2	0.30	0.70	0.30	0.68

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: While ELR: S findings are similar to those of ELR, ELR: SS is associated with dispersed effective lawmaking in term limited states and more concentrated effective lawmaking in Democratic-controlled legislatures. MELR: SS is associated with concentrated effective lawmaking in Democratic-controlled legislatures. Standard errors are clustered by state-chamber.

Concerning the final two columns of Table 4, we next see how the results shift when we focus on the concentration of effectiveness within the majority party alone. The changes here (compared to Table 3) are mostly the same as for the full sample of legislators: the effect of bill

introduction limits disappears, and a partisan difference emerges, while most other findings remain the same. The sole difference is that we do not observe a positive effect of term limits among majority party members only.

Notwithstanding these subtle differences, two major takeaways remain the same: larger chambers tend to concentrate legislative effectiveness in fewer hands, and concentration of effectiveness appears unrelated to rules and institutions that centralize power. While it does appear that substantive and significant legislation is more concentrated in the hands of fewer legislators, the factors associated with variation across chambers is consistent with overall patterns in the larger corpus of legislation.

Conclusion

In this paper, we develop a measure—the effective legislator ratio (ELR)—that conceptualizes legislative effectiveness in a novel way. Since the creation of legislative effectiveness scores (Volden and Wiseman 2014), a large literature has emerged seeking to explain the individual, political, and behavioral factors that contribute to effective lawmaking. We add to this literature by shifting the focus from which individual lawmakers are effective to the distribution of legislative effectiveness in a chamber. In doing so, we uncover significant variation in the concentration of effectiveness across American legislatures, as well as a slightly higher degree of concentration when it comes to the most substantively important legislation.

We find that two institutional traits are associated with the concentration of legislative effectiveness (chamber size and bill introduction limits) but find no evidence of a relationship between centralization and the concentration of effectiveness. These null findings are

nonetheless interesting insofar as they illuminate what centralization of powers does and does not do. Consolidating power in the hands of leaders and committee chairs may influence individual bill outcomes such as majority rolls (Richman and Roberts 2020; but see Kistner and Shor 2023), but it hardly seems to concentrate legislative successes in the hands of a few.

Rather, more subtle idiosyncrasies of state legislative processes may be responsible for variance in the ELR. Some recent scholarship has sought to enhance the measurement of legislative effectiveness by accounting for unorthodox lawmaking (Casas et al. 2020; Eatough and Preece 2024). Relatedly, state legislatures vary in terms of a plethora of procedural factors (e.g., companion bills, committee substitutes) that influence how SLES scores count bills that cross each hurdle. At the same time, a symptom of polarization is the prevalence of legislators who eschew productivity in favor of "messaging legislation" (Lee 2016); the assumption that all, or even most, legislators are seeking to be effective legislators may be increasingly misguided.

We must also acknowledge that lawmaking is a bicameral process and through this lens, it is telling that nearly every state lacks the contrast between an inegalitarian U.S. House and an egalitarian U.S. Senate of conventional wisdom, confirmed in Volden and Wiseman (2018). The requirement of population-based districting in both chambers may be one explanation for these small inter-chamber disparities, although recent work (Brown and Garlick 2023; Makse 2022) shows that there is variance in other aspects of state legislative bicameralism.

Future work should more explicitly consider the role of leaders. Although we find a fairly small amount of variance in the concentration of effectiveness across sessions, that does not preclude the possibility that leaders, especially long-serving leaders, help create and maintain a legislative culture. Changes in leadership, especially those accompanied by changes in partisan

majorities, present opportunities to reinforce or reverse norms that may be associated with the concentration or dispersion of legislative effectiveness, even if no leader ever explicitly comments on, or even thinks about, this feature of legislatures.

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Online Supplemental Appendix

Table A-1: Rules measures are not related to the ELR

	1 **ELR**	2 **ELR**	3 **ELR**	4 **ELR**	5 **ELR**	6 **ELR**
Centralization (Clark)	-0.893 (-0.56)					
Minority Rights (Clark)		-0.0201 (-0.01)				
Committee Powers (Jenkins)			-0.372 (-0.30)			
House Leader Power (Clucas)				-0.605 (-0.73)		
Speaker Power (Mooney)					-3.313 (-1.07)	
Senate Leader Powers (Green)						-1.656 (-1.08)
Democratic Majority	-2.797 (-1.30)	-2.715 (-1.28)	-2.673 (-1.25)	-2.533 (-0.81)	-2.736 (-0.88)	-1.892 (-0.80)
Interparty Polarization	12.45* (2.43)	11.95* (2.44)	11.93* (2.44)	18.00* (2.61)	18.30** (2.70)	7.550 (1.29)
Professionalism (Squire)	-131.8*** (-3.50)	-135.8*** (-3.67)	-131.2** (-3.18)	-131.3* (-2.25)	-143.0** (-2.78)	-111.1** (-2.70)
Professionalism Squared (Squire)	209.6*** (3.63)	215.8*** (3.72)	209.6*** (3.41)	211.5* (2.39)	232.1** (2.99)	169.4* (2.54)
Term Limits	4.681 (1.62)	4.691 (1.62)	4.547 (1.48)	3.550 (0.87)	3.729 (0.93)	6.462* (2.19)
Intercept	68.34*** (11.53)	66.43*** (11.98)	67.21*** (11.70)	67.83*** (5.78)	66.69*** (7.56)	73.88*** (11.82)
N	914	914	914	457	457	457
Adj. R^2	0.15	0.15	0.15	0.17	0.18	0.19

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Standard errors are clustered by state and chamber.

Table A-2: Rules measures are not related to the MELR

	1 **MELR**	2 **MELR**	3 **MELR**	4 **MELR**	5 **MELR**	6 **MELR**
Centralization (Clark)	-0.417 (-0.26)					
Minority Rights (Clark)		-1.271 (-0.97)				
Committee Powers (Jenkins)			-0.0466 (-0.03)			
House Leader Power (Clucas)				-0.526 (-0.61)		
Senate Power (Mooney)					-3.511 (-1.07)	
Senate Leader Powers (Green)						-0.862 (-0.61)
Democratic Majority	-4.622 (-1.98)	-4.864* (-2.16)	-4.577 (-1.98)	-5.079 (-1.46)	-5.279 (-1.52)	-2.830 (-1.18)
Interparty Polarization	18.99*** (3.70)	19.43*** (3.95)	18.74*** (3.82)	24.72*** (3.66)	25.57*** (3.84)	15.51* (2.60)
Professionalism (Squire)	-67.09 (-1.70)	-64.04 (-1.65)	-68.39 (-1.55)	-64.94 (-1.03)	-74.82 (-1.31)	-52.43 (-1.44)
Professionalism Squared (Squire)	126.1* (2.16)	117.2* (2.00)	128.3* (2.04)	118.2 (1.26)	135.7 (1.63)	103.9 (1.91)
Term Limits	3.064 (1.04)	2.767 (0.95)	3.055 (0.99)	2.361 (0.57)	2.498 (0.63)	4.083 (1.39)
Intercept	62.81*** (10.67)	64.44*** (11.65)	62.00*** (10.98)	61.95*** (4.85)	62.20*** (6.47)	68.26*** (12.25)
N	906	906	906	454	454	452
Adj. R^2	0.15	0.16	0.15	0.18	0.19	0.19

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Standard errors are clustered by state and chamber.

Table A-3: Main Model with State and Chamber Fixed Effects

	1 **ELR**	2 **MELR**
Democratic Majority	-1.595*	-2.877***
	(-2.25)	(-3.51)
Interparty Polarization	-6.978**	2.195
	(-2.71)	(0.74)
Intercept	66.70***	73.74***
	(27.70)	(26.71)
Chamber Fixed Effects	✓	✓
State Fixed Effects	✓	✓
N	914	906
Adj. R^2	0.81	0.79

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note*:* Polarization finding is inconsistent when state and chamber fixed effects are added.

Table A-4: Factor Analysis for Measures of Centralization

Variable	Mean (S.D.)	Range	Factor Loading
Centralization index (Clark 2015) [Less than 1 = 1; 1 to 1.99 = 2; 2 to 2.99 = 3; 3 to 3.99 = 4]	3.04 (0.84)	[1,4]	0.70
Leadership powers [Z-scores based on Mooney 2013 for lower chambers and Green 2022 for upper chambers]	0.00 (1.00)	[-2.61, 1.80]	0.57
Majority calendar control (Anzia and Jackman 2013)	0.59 (0.49)	[0, 1]	0.37
Minority rights index (Clark 2015) [Less than 2 = 1; 2 to 2.99 = 2; 3 to 3.99 = 3; 4 to 4.99 = 4; 5 or more = 5]	2.46 (1.20)	[0,5]	0.06
Locus of control (Francis 1985) [Dummy: 1 = leaders/leaders and committees]	0.34 (0.47)	[0, 1]	0.02
Committee power index (Jenkins 2016)	3.68 (1.22)	[0, 5]	0.01

Note: Factor loading refers to first factor only. Eigenvalue of first factor is 0.95; second factor eigenvalue is 0.14.

Table A-5: Rules measures are not related to the ELR for Substantive Bills

	1 **ELR: S**	2 **ELR: S**	3 **ELR: S**	4 **ELR: S**	5 **ELR: S**	6 **ELR: S**
Centralization (Clark)	-0.942 (-0.59)					
Minority Rights (Clark)		-0.297 (-0.22)				
Committee Power (Jenkins)			-0.338 (-0.27)			
House Leader Power (Clucas)				-0.467 (-0.56)		
Speaker Power (Mooney)					-3.327 (-1.07)	
Senate Leader Powers (Green)						-1.589 (-1.04)
Democratic Majority	-2.479 (-1.14)	-2.453 (-1.15)	-2.353 (-1.09)	-1.928 (-0.60)	-2.119 (-0.66)	-1.893 (-0.79)
Interparty Polarization	12.37* (2.39)	12.00* (2.43)	11.83* (2.40)	17.39* (2.41)	18.29* (2.63)	7.333 (1.18)
Professionalism (Squire)	-142.4*** (-3.76)	-145.6*** (-3.89)	-142.5*** (-3.41)	-144.7* (-2.45)	-153.6** (-2.91)	-122.7** (-2.96)
Professionalism Squared (Squire)	228.7*** (3.95)	232.8*** (3.97)	229.8*** (3.69)	233.7* (2.60)	249.5** (3.15)	192.0** (2.83)
Term Limits	3.380 (1.16)	3.325 (1.14)	3.260 (1.06)	2.570 (0.61)	2.710 (0.67)	4.835 (1.57)
Intercept	69.02*** (11.46)	67.56*** (12.08)	67.71*** (11.82)	66.58*** (5.60)	67.26*** (7.44)	74.46*** (11.84)
N	914	914	914	457	457	457
Adj. R^2	0.14	0.14	0.14	0.16	0.17	0.17

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A-6: Rules measures are not related to the ELR for Substantive and Significant Bills

	1 **ELR: SS**	2 **ELR: SS**	3 **ELR: SS**	4 **ELR: SS**	5 **ELR: SS**	6 **ELR: SS**
Centralization (Clark)	-1.452 (-1.51)					
Minority Rights (Clark)		1.157 (1.62)				
Committee Power (Jenkins)			-0.832 (-1.25)			
House Leader Power (Clucas)				-0.273 (-0.60)		
Speaker Power (Mooney)					-2.379 (-1.33)	
Senate Leader Powers (Green)						-0.121 (-0.11)
Democratic Majority	-3.825** (-2.73)	-3.394* (-2.34)	-3.540* (-2.44)	-2.571 (-1.36)	-2.775 (-1.54)	-4.602* (-2.30)
Interparty Polarization	9.350* (2.56)	7.736* (2.06)	8.216* (2.21)	9.964* (2.50)	11.03** (2.82)	8.455 (1.38)
Professionalism (Squire)	-60.28* (-2.37)	-71.05** (-3.23)	-57.19** (-2.63)	-52.85 (-1.52)	-57.16* (-2.11)	-65.52 (-1.99)
Professionalism Squared (Squire)	90.99* (2.35)	112.3** (3.24)	91.77** (2.84)	75.07 (1.47)	81.01* (2.09)	104.0* (2.07)
Term Limits	3.418 (1.57)	3.635 (1.66)	2.734 (1.22)	2.691 (1.00)	3.061 (1.10)	4.116 (1.38)
SS Bill Introductions	9.645*** (9.44)	9.750*** (9.62)	9.851*** (9.62)	11.38*** (6.38)	11.25*** (6.22)	8.559*** (7.73)
Intercept	22.48*** (5.69)	16.88*** (4.88)	21.10*** (5.95)	17.78** (2.87)	18.94*** (3.79)	23.27*** (4.11)
N	801	801	801	401	401	400
Adj. R^2	0.68	0.68	0.68	0.67	0.67	0.66

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A-7: Rules measures are not related to the MELR for Substantive Bills

	1 **MELR: S**	2 **MELR: S**	3 **MELR: S**	4 **MELR: S**	5 **MELR: S**	6 **MELR: S**
Centralization (Clark)	-0.296 (-0.18)					
Minority Rights (Clark)		-1.631 (-1.24)				
Committee Power (Jenkins)			-0.0116 (-0.01)			
House Leader Power (Clucas)				-0.335 (-0.39)		
Speaker Power (Mooney)					-3.145 (-0.96)	
Senate Leader Power (Green)						-0.839 (-0.60)
Democratic Majority	-4.122 (-1.75)	-4.456 (-1.97)	-4.093 (-1.75)	-4.365 (-1.24)	-4.532 (-1.29)	-2.632 (-1.06)
Interparty Polarization	18.14** (3.38)	18.85*** (3.71)	17.97*** (3.51)	22.96** (3.09)	24.31** (3.39)	14.76* (2.20)
Professionalism (Squire)	-85.22* (-2.14)	-80.22* (-2.04)	-86.42 (-1.92)	-87.12 (-1.35)	-93.13 (-1.58)	-69.54 (-1.83)
Professionalism Squared (Squire)	158.3** (2.68)	145.1* (2.43)	160.2* (2.48)	155.6 (1.62)	166.4 (1.94)	136.2* (2.38)
Term Limits	1.259 (0.42)	0.873 (0.30)	1.262 (0.41)	1.106 (0.26)	1.190 (0.29)	1.762 (0.56)
Intercept	63.94*** (10.36)	66.55*** (11.61)	63.32*** (10.95)	61.03*** (4.76)	63.04*** (6.28)	69.54*** (11.83)
N	906	906	906	454	454	452
Adj. R^2	0.14	0.15	0.14	0.15	0.16	0.16

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A-8: Rules measures are not related to the MELR for Substantive and Significant Bills

	1 **MELR: SS**	2 **MELR: SS**	3 **MELR: SS**	4 **MELR: SS**	5 **MELR: SS**	6 **MELR: SS**
Centralization (Clark)	-1.912 (-1.74)					
Minority Rights (Clark)		0.630 (0.71)				
Committee Power (Jenkins)			-0.787 (-0.99)			
House Leader Power (Clucas)				-0.330 (-0.63)		
Speaker Power (Mooney)					-3.855 (-1.76)	
Senate Leader Power (Green)						0.685 (0.60)
Democratic Majority	-5.599** (-3.28)	-5.286** (-3.02)	-5.287** (-3.00)	-4.256 (-1.85)	-4.617* (-2.15)	-6.316* (-2.65)
Interparty Polarization	16.24*** (3.98)	14.68** (3.38)	14.85*** (3.57)	16.79*** (3.77)	19.09*** (4.34)	16.03* (2.53)
Professionalism (Squire)	-6.688 (-0.23)	-18.40 (-0.71)	-6.471 (-0.24)	-3.828 (-0.10)	-7.278 (-0.24)	-16.22 (-0.47)
Professionalism Squared (Squire)	18.31 (0.41)	40.29 (0.99)	23.88 (0.62)	5.880 (0.10)	9.066 (0.21)	42.31 (0.81)
Term Limits	2.988 (1.16)	2.952 (1.15)	2.279 (0.87)	2.216 (0.74)	2.884 (0.93)	3.391 (0.96)
SS Bill Introductions	10.58*** (8.32)	10.75*** (8.54)	10.83*** (8.48)	12.67*** (5.78)	12.41*** (5.51)	9.163*** (6.58)
Intercept	18.15*** (4.44)	12.64** (3.29)	15.63*** (4.25)	12.74 (1.79)	15.93** (2.83)	17.32** (3.24)
N	793	793	793	398	398	395
Adj. R^2	0.64	0.63	0.63	0.63	0.65	0.62

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure A-1: Sample Inclusion by State and Year