



Legislative Effectiveness in the United States Senate*

Craig Volden, University of Virginia
Alan E. Wiseman, Vanderbilt University

January 2018

Forthcoming, *Journal of Politics*

Abstract

Just like members of the House, U.S. Senators vary in how effective they are at lawmaking. We adapt the approach of Volden and Wiseman (2014) to create Legislative Effectiveness Scores for each Senator in each of the 93rd to 113th Congresses (1973-2015). We use these scores to explore common claims about institutional differences in lawmaking between the House and the Senate. Our analysis offers strong support for the claim that the Senate is a more egalitarian and individualistic lawmaking body, in comparison to the relatively hierarchical institutional structure of the House. The Scores developed here offer scholars numerous opportunities to explore important lawmaking phenomena.

CEL Working Paper 2018-001

* The authors thank the Madison Initiative of the William and Flora Hewlett Foundation for ongoing financial support of the Legislative Effectiveness Project and the Center for Effective Lawmaking (www.thelawmakers.org). Supplementary Materials will be available in an online appendix at the Journal of Politics website at: Replication files are available in the HOP Data Archive on Dataverse: (<http://thedata.harvard.edu/dvn/dv/jop>).

Sen. Edward Kennedy was long known as the “Lion of the Senate.” When he unexpectedly fell ill in 2008, Sen. Hillary Clinton (D-NY) called him the “most effective” Senator ever, and Sen. John McCain (R-AZ) said, “I have described Ted Kennedy as the last lion in the Senate.... I have held that view because he remains the single most effective member of the Senate.”² The fact that high-profile Democrats and Republicans alike take note of the lawmaking effectiveness of U.S. Senators is important.

Often portrayed as the “world’s greatest deliberative body,” the U.S. Senate is commonly considered to be far more egalitarian and individualistic than the hierarchical and institutionally driven House (i.e., MacNeil and Baker 2013). Given the various “prerogatives” (i.e., Sinclair 2017, 24) of individual Senators to move legislation forward or to gum up the works, it may be less crucial to be in the majority party or to serve as a committee or subcommittee chair in order to influence public policy, in comparison to the House. In contrast, knowing that someone holds a key chair position or serves in the majority party in the House goes a long way toward explaining whether she can achieve lawmaking success.

Following Volden and Wiseman’s (2014) work on the House, we create a Legislative Effectiveness Score (LES) for each Senator in each of the 93rd to 113th Congresses (1973-2015). In line with the view of a relatively egalitarian Senate, we show that these scores feature less variance than do those for the House. In line with the heightened importance of institutional structure in the House, we demonstrate that parties and committees in the Senate, while important, are less determinative of lawmaking effectiveness. Likewise, in line with the relatively individualistic nature of the Senate, we establish that legislators’ backgrounds and circumstances are more indicative of lawmaking effectiveness in the Senate than in the House.

² Quotations taken from CNN.com, May 20, 2008.

Creating Legislative Effectiveness Scores for U.S. Senators

While scholars and casual observers of the Senate can quickly point to examples of Senators whom they believe to be effective lawmakers, such claims are often justified by drawing on extensive biographical materials (e.g., Caro 2002) or illustrative case studies (e.g., Redman 1973). Despite Matthews' (1960) pioneering work, however, we have very little data-driven analysis about which Senators are effective lawmakers, what makes them effective, and how they became effective.³ This omission is notable in contrast to the broad attention given to other aspects of the Senate, such as its institutional rules (e.g., Binder and Smith 1997, Brady and Volden 1998, Koger 2010, Krehbiel 1998, Wawro and Schickler 2006), representational role (e.g., Bernhard and Sala 2006, Gailmard and Jenkins 2009), or distributional consequences (e.g., Lee and Oppenheimer 1999).

Volden and Wiseman (2014) score each lawmaker in the House through a weighted combination of fifteen indicators, based on the bills sponsored by lawmakers. Specifically, they focus on five stages of the lawmaking process (bill sponsorship, action in committee, action beyond committee, passing the House, and becoming law) across three levels of bill significance (commemorative, substantive, and substantive and significant). These fifteen indicators are appropriate also in the U.S. Senate, with some adaptation. Drawing on data from the Library of Congress website www.congress.gov, we identify how many bills a Senator sponsors, and how many of those receive action in committee (e.g., hearings, markups), action beyond committee (e.g., floor votes), pass the Senate, and become law. In contrast to the House, however, Senate Rule XIV allows Senators to bypass the committee system and place bills directly on the legislative calendar. To account for this rule, we do not credit Senators for “action in

³ Schiller (2000), however, produces foundational scholarship on the determinants of Senators' legislative agendas.

committee” in such cases; moreover, such bills are credited for “action beyond committee” only if they received additional attention (e.g., floor debate, amendment, votes). We use the Volden and Wiseman protocol for giving substantive and significant bills ten times the weight of commemoratives and twice the weight of substantive bills.⁴ This method gives a larger LES boost for actions that are rarer (later in the lawmaking process) and for more important bills. We normalize the scores to an average value of one within each Congress.

Additional characteristics of the U.S. Senate may also be important for understanding lawmaking and the effectiveness of individual Senators. For instance, Senate Rule XXII allows Senators to filibuster legislation within the limits imposed by a potential cloture vote. The LES, by construction, only captures positive lawmaking actions rather than negative (i.e., dilatory or obstructionist) actions. Therefore, we might expect (and indeed find) that contrarian Senators, such as Tom Coburn (R-OK) or Paul Wellstone (D-MN), score poorly on our metric despite their otherwise great influence. Other examples of Senate activities set aside by the LES include the extensive floor amendments offered on many important bills. In the Supplemental Appendix, we discuss three alternative scores that incorporate credit for successful amendments, how they are highly correlated with the more straightforward LES used here, and how our main results are robust to analyzing these metrics.⁵

In total, across the 93rd through the 113th Congresses, 69,398 S. bills (public bills sponsored by Senators) were introduced, 4,989 of which were commemorative, and 4,596 of which were substantive and significant. The LES measure based on these bills displays

⁴ The exact equation for these weights and the overall LES is given in Volden and Wiseman (2014, chapter 2). We use identical phrases to those of Volden and Wiseman to identify potential commemorative bills (naming of post offices, minting of coins, etc.), and then read the individual bill titles to code as substantive any bill that also dealt with substantive matters. We follow the earlier protocol to code as substantive and significant those bills that were mentioned in the end-of-year summaries of *Congressional Quarterly Almanac*.

⁵ That said, an interesting avenue for future research would be to explore whether amending activities and bill introductions are complementary or substitute strategies for certain legislators.

significant variation, ranging from the high-scoring Sen. Howard Cannon (D-NV), who had an LES of 10.2 in the 96th Congress (1979-80),⁶ to the two instances in which Senators have an LES equal to zero (Harlan Mathews, D-TN, who served a caretaker role in the 103rd Congress in Vice President Al Gore's Senate seat; and Jeff Sessions, R-AL, in the 113th Congress).⁷ Rather than focusing on single-Congress outliers, however, significant face validity for the measure can be established by examining Senators who consistently appear as high performers in the data. For example, consistent with our earlier discussion of Ted Kennedy, from the start of our measure in 1973 through his illness in 2008, when Democrats were the majority in the Senate, Kennedy scored among the top five lawmakers *in every single Senate*. He was the most effective Senator in the 101st, 102nd, and 110th Congresses, and in the top three on five other occasions.

Additionally, effectiveness can be detected from a Senator's earliest days in Congress, in ways that are indicative of later political success. Consider, for example, those scoring at the top of their party in their freshman class for their first two years in the Senate. Such lists include future party leaders Mitch McConnell (current Majority Leader) and Chuck Schumer (current Minority Leader) and numerous Senators who subsequently sought and/or obtained higher offices, including Barack Obama, Hillary Clinton, John McCain, Chris Dodd, and Ted Cruz.⁸

The Egalitarian and Individualistic Senate

The correlates of Legislative Effectiveness Scores illustrate the similarities and differences between the House and the Senate as lawmaking institutions. To make these comparisons as complete and current as possible, we also updated the House LES from Volden

⁶ Cannon shepherded four substantive and four substantive and significant bills that he sponsored into law during that Congress, including *Coastal Zone Management Improvement Act of 1980* (S. 2622) and *The Staggers Rail Act of 1980* (S. 1946).

⁷ Any Senator who served for only a portion of one Congress and did not introduce any bills was excluded from the dataset, both for the calculation of Legislative Effectiveness Scores and for subsequent analyses.

⁸ Supplemental Appendix C offers a complete list of top Freshmen.

and Wiseman (2014) to include the 111th-113th Congresses (2009-15). We use the resulting data to test *three hypotheses* about House-Senate differences. First, the Senate is perceived to be more egalitarian than the House. Second, parties and committees are more crucial to lawmaking in the much larger House than in the Senate. Third, the characteristics of individual legislators are more likely to influence lawmaking success in the Senate than in the House.

The first of these hypotheses can be assessed simply with a test of LES variance in the House versus that in the Senate (e.g., Brown and Forsythe 1974). While the LES is normalized to a mean of 1.0 in each Congress in each chamber, the standard deviations of these measures are quite different.⁹ As noted above, Senate scores range from zero to 10.2; they have a standard deviation of 1.02. The House LES ranges from zero to 18.7 (Charles Rangel, D-NY, 110th Congress), with a standard deviation of 1.58. This standard deviation in the House is both substantively and statistically ($p < 0.001$) larger, indicative of the Senate being a much more egalitarian institution wherein fewer lawmakers dramatically outperform their peers.

To explore our second and third hypotheses, we conduct a series of OLS regressions, regressing LES on several institutional and individualistic independent variables. Details and summary statistics for all variables are given in the Supplemental Appendix. We expect that being in the *Majority Party*, or serving as a *Committee Chair*, a *Subcommittee Chair*, or *Majority Party Leader* will all be more important to attaining a high LES in the House than in the Senate. Likewise, in line with Volden and Wiseman (2014), serving as *Minority Party Leader* or on a

⁹ Because of the normalization to a mean of one in each Congress and each chamber, scholars should be cautious about making cross-chamber comparisons. That said, the cross-chamber similarities in scores for lawmakers who moved from the House to the Senate lead us to believe that House-Senate scales are fairly comparable. Below we explore the extent to which effective lawmakers in the House become effective Senators. Future work placing different Congresses and chambers on a common scale – such as through a fuller use of “bridge observations” of Senators who also served in the House – would be welcome.

Power Committee will direct one's efforts away from personal lawmaking effectiveness, perhaps more so in the House than the Senate.

In contrast, we expect non-institutional characteristics, indicative of one's individual experiences and circumstances, to be more impactful in the Senate than in the House. Along these lines, we explore the role of *State Legislative Experience* both directly and interacted with *Legislative Professionalism* (e.g., Squire 1992). Anticipating those near the median to be more effective (e.g., Black 1948), we include *Distance from Median*. Expecting women (e.g., Anzia and Berry 2011), especially in the minority party (Volden, Wiseman, and Wittmer 2013), to be more effective, we include *Majority-Party Women* and *Minority-Party Women*. Pronounced seniority effects would be detected through the variables *Freshman*, *Seniority*, and *Seniority Squared*. Limits in coalition building around common causes by racial and ethnic minorities may come to light in *African American* and *Latino* variables. Responsiveness to one's electoral environment may be reflected in measures of *Vote Share* and *Vote Share Squared*.

In Table 1 we report regression results for all of these variables with side-by-side House-Senate comparisons. Even though the scores are not directly comparable across chambers, such analysis allows us to assess whether the marginal impact of a variable on the average Representative's LES is of the same direction and magnitude as it is for the average Senator's LES. As predicted, each of the six institutional variables features a coefficient that is larger in the House than in the Senate. Collectively, these differences are statistically significant ($p < 0.001$).¹⁰ Substantively, it is still the case that majority party members, and especially those

¹⁰ To conduct this test, we pooled together the Senate and House data, running a fully interactive model, featuring all of the independent variables in Table 1 independently as well as each interacted with a *Senate* indicator. An F-test of joint significance of the interactions on the six institutional variables yielded $F(6, 2073) = 23.0$ ($p < 0.001$).

Table 1: Determinants of Legislative Effectiveness (1973-2015)

	House	Senate
<hr/>		
Institution-Based Variables		
Majority Party	0.473*** (0.049)	0.408*** (0.081)
Committee Chair	3.122*** (0.241)	1.088*** (0.120)
Subcommittee Chair	0.760*** (0.075)	0.180** (0.080)
Majority Party Leadership	0.475*** (0.165)	-0.023 (0.166)
Minority Party Leadership	-0.134** (0.053)	-0.054 (0.067)
Power Committee	-0.201*** (0.053)	-0.163** (0.064)
<hr/>		
Individual-Based Variables		
State Legislative Experience	-0.046 (0.063)	-0.175 (0.107)
State Legislative Experience × Legislative Prof.	0.326* (0.195)	0.828* (0.473)
Distance from Median	0.037 (0.098)	-0.042 (0.128)
Majority-Party Women	0.030 (0.086)	0.001 (0.154)
Minority-Party Women	0.117*** (0.037)	0.188* (0.110)
Freshman	-0.055 (0.038)	-0.278*** (0.055)
Seniority	0.048** (0.019)	0.087*** (0.020)
Seniority ²	0.001 (0.001)	-0.004*** (0.001)
African-American	-0.348*** (0.081)	-0.138 (0.087)
Latino	0.0003 (0.107)	0.085 (0.178)
Vote Share	0.013 (0.010)	0.036* (0.021)
Vote Share ²	-0.0001 (0.0001)	-0.0003* (0.0002)
Constant	-0.323 (0.379)	-0.776 (0.687)
<hr/>		
N	8966	2086
Adjusted-R ²	0.42	0.41
<hr/>		

Notes: Dependent Variable is Lawmaker *i*'s *Legislative Effectiveness Score* in Congress *t*. Ordinary least squares estimation, robust standard errors in parentheses, observations clustered by member.

p* < 0.10 (two-tailed), *p* < 0.05 (two-tailed), ****p* < 0.01 (two-tailed).

in committee or subcommittee chair positions, are more effective as lawmakers in the Senate; but these effects are notably smaller (especially for chairs) than their dominant role in the House.

In contrast, the individual-oriented variables appear to be more important in the Senate. For example, the heightened effectiveness of those with professional state legislative experience is more pronounced in the Senate than in the House; and women in the minority party have approximately a 19% boost in effectiveness in the Senate compared to a 12% boost in the House, relative to the average lawmaker. The nonlinear variables are more difficult to interpret, but they reveal greater swings in effectiveness in the Senate over the House in terms of seniority and vote share, consistent with greater influence of these concerns in the Senate, in contrast to the import of institutional positions in the House. Collectively, there is strong statistical support for House-Senate differences in these variables ($p < 0.001$) based on a joint F-test.

Table 2: Further Determinants of Legislative Effectiveness in U.S. Senate (1973-2015)

	Model 2.1	Model 2.2	Model 2.3
Southern Democrat	-0.329*** (0.072)	-0.346*** (0.076)	-0.344*** (0.075)
House Service		-0.118 (0.077)	-0.118 (0.077)
House Service \times Average House LES		0.139** (0.063)	0.140** (0.062)
Up for Reelection			0.060** (0.027)
Retiree			-0.161** (0.067)
All Variables from Table 1?	YES	YES	YES
N	2086	2086	2086
Adjusted-R ²	0.42	0.42	0.42

Notes: Dependent Variable is Senator i 's *Legislative Effectiveness Score* in Congress t . Ordinary least squares estimation, robust standard errors in parentheses, observations clustered by member.

* $p < 0.10$ (two-tailed), ** $p < 0.05$ (two-tailed), *** $p < 0.01$ (two-tailed).

In Table 2, we show further evidence of individual considerations influencing the lawmaking effectiveness of Senators, upon controlling for all the variables from Table 1. Specifically, as in Volden and Wiseman (2014, chapter 4), *Southern Democrats* appear to be

particularly ineffective. *House Service* alone is not sufficient to produce effectiveness in the Senate, whereas those who were effective lawmakers during their House careers in turn excel in the Senate. Finally, effectiveness is further influenced by Senators' life cycles, as they burnish their resumes in the two years prior to reelection (consistent with Shepsle et al. 2009), but seem to turn to non-lawmaking activities upon deciding to retire from the Senate.

Summary and Next Steps

We produced Legislative Effectiveness Scores for Senators in each Congress for over four decades. They reveal ways in which egalitarianism and individualism undergird lawmaking activities in the Senate more so than in the House (where institutional structures dominate individual-level considerations). These scores also open up numerous possibilities for new insights into important questions about lawmaking in the U.S. Congress. For example, under what conditions do dilatory actions such as holds and filibusters substitute for (or complement) positive lawmaking (e.g., Wawro and Schickler 2006)? How has the role of partisanship and ideological policymaking changed across recent decades in the U.S. Senate (e.g., Lee 2009)? Under what conditions are behavioral norms transferred by lawmakers who move from the House to the Senate (e.g., Theriault 2013)? How do lawmakers employ bicameral coalition strategies to advance their policy goals (e.g., Treul 2017)? These questions become more approachable with the Legislative Effectiveness Scores put forth here.

Acknowledgements

The authors thank Robert Krebs and Joseph Nedland for outstanding research assistance, and Michael Xu and Nicholas Zeppos, Jr., for their programming efforts and expertise. This manuscript has benefited from helpful conversations, correspondence, and feedback from Richard Arenberg, Jean Bordewich, Jamie Carson, Daniel Diller, Linda Gustitus, Laurel Harbridge Yong, Dave Lewis, Eric Magar, Bruce Oppenheimer, Molly Reynolds, Wendy Schiller, Sarah Treul, Marianne Upton, and Ryan Vander Wielen,

as well as participants at the Vanderbilt Department of Political Science Faculty Brownbag Workshop, and attendees at the 2017 Midwest Political Science Association and 2017 American Political Science Association meetings. Please direct all questions and comments to Alan Wiseman (alan.wiseman@vanderbilt.edu).

References

- Anzia, Sarah, and Christopher R. Berry. 2011. "The Jackie (and Jill) Robinson Effect: Why Do Congresswomen Outperform Congressmen?" *American Journal of Political Science* 55(3): 478-493.
- Binder, Sarah A., and Steven S. Smith. 1997. *Politics or Principle? Filibustering in the United States Senate*. Washington, DC: Brookings Institution Press.
- Black, Duncan. 1948. "On the Rationale of Group Decision-Making." *Journal of Political Economy* 56(1): 23-34.
- Brown, Morton B., and Alan B. Forsythe. 1974. "Robust Tests for the Equality of Variances." *Journal of the American Statistical Association* 69: 364-367.
- Caro, Robert A. 2002. *Master of the Senate*. New York: Vintage Books.
- Gailmard, Sean, and Jeffery A. Jenkins. 2009. "Agency Problems, the 17th Amendment, and Representation in the Senate." *American Journal of Political Science* 53(2): 324-342.
- Krehbiel, Keith. 1998. *Pivotal Politics: A Theory of U.S. Lawmaking*. Chicago: University of Chicago Press.
- Lee, Frances E. 2009. *Beyond Ideology: Politics, Principles, and Partisanship in the U.S. Senate*. Chicago: University of Chicago Press.
- Lee, Frances E., and Bruce I. Oppenheimer. 1999. *Sizing Up the Senate: The Unequal Consequences of Equal Representation*. Chicago: University of Chicago Press.

- MacNeil, Neil, and Richard A. Baker. 2013. *The American Senate: An Insider's History*. New York: Oxford University Press.
- Matthews, Donald R. 1960. *U.S. Senators and Their World*. Chapel Hill: University of North Carolina Press.
- Redman, Eric. 1973. *The Dance of Legislation*. New York: Touchstone.
- Schiller, Wendy J. 2000. *Partners and Rivals: Representation in U.S. Senate Delegations*. Princeton, NJ: Princeton University Press.
- Shepsle, Kenneth A., Robert P. Van Houweling, Samuel J. Abrams, and Peter C. Hanson. 2009. "The Senate Electoral Cycle and Bicameral Appropriations Politics." *American Journal of Political Science* 53(2): 343-359.
- Sinclair, Barbara. 2017. "Patterns and Dynamics of Congressional Change." In Lawrence C. Dodd & Bruce I. Oppenheimer (eds.), *Congress Reconsidered, 11th Ed.* Washington, DC: CQ Press, pp. 1-28.
- Squire, Peverill. 1992. "Legislative Professionalism and Membership Diversity in State Legislatures." *Legislative Studies Quarterly* 17(1): 69-79.
- Therault, Sean M. 2013. *The Gingrich Senators: The Roots of Partisan Warfare in Congress*. New York: Oxford University Press.
- Treul, Sarah A. 2017. *Agenda Crossover: The Influence of State Delegations in Congress*. New York: Cambridge University Press.
- Volden, Craig, and Alan E. Wiseman. 2014. *Legislative Effectiveness in the United States Congress: The Lawmakers*. New York: Cambridge University Press.
- Volden, Craig, Alan E. Wiseman, and Dana E. Wittmer. 2013. "When are Women More Effective Lawmakers than Men?" *American Journal of Political Science* 57(2): 326-341.

Wawro, Gregory J., and Eric Schickler. 2006. *Filibuster: Obstruction and Lawmaking in the U.S. Senate*. Princeton, NJ: Princeton University Press.

Biographical Statement

Craig Volden is Associate Dean for Academic Affairs and Professor of Public Policy and Politics, with appointments in the Frank Batten School of Leadership and Public Policy and the Woodrow Wilson Department of Politics at the University of Virginia, Charlottesville, 22904-4893.

Alan E. Wiseman is the Cornelius Vanderbilt Professor of Political Economy and Professor of Political Science and Law (by courtesy) at Vanderbilt University, Nashville, TN, 37203-5721.

Supplemental Appendix A (Supplemental Appendices are to be made available online)

Table A1: Descriptive Statistics for Senate Analyses

Variable	Description	Mean	Std. Dev.
LES	Legislative Effectiveness Score, described in text	1.00	1.022
Majority Party	1 = Majority Party Member; 0 = otherwise	0.552	0.497
Committee Chair	1 = Committee chair; 0 = otherwise	0.161	0.367
Subcommittee Chair	1 = Subcommittee chair; 0 = otherwise	0.456	0.498
Majority-Party Leadership	1 = Majority Party Leader as identified in <i>Almanac of American Politics</i> ; 0 = otherwise ^a	0.053	0.223
Minority-Party Leadership	1 = Minority Party Leader as identified in <i>Almanac of American Politics</i> ; 0 = otherwise	0.045	0.208
Power Committee	1 = if Senator sits on one of the top four highest ranked committees according to Groseclose-Stewart Scores; 0 = otherwise ^b	0.720	0.449
State Legislative Experience	1 = Served in state legislature; 0 = otherwise	0.404	0.491
State Legislature × Professionalism	State legislative service times professionalism of state legislature upon entering Congress	0.080	0.114
Distance from Median	Absolute distance from Senator's first-dimension DW-NOMINATE Score to that of floor median	0.331	0.219
Majority-Party Women	1 = Woman in majority party; 0 = otherwise	0.045	0.208
Minority-Party Women	1 = Woman in minority party; 0 = otherwise	0.029	0.169
Freshman Seniority	1 = First two years in Senate; 0 = otherwise Count of number of 2-year Congresses that Senator served in	0.130 6.158	0.337 4.646
Seniority ²	Square of Seniority variable	59.57	86.90
African American	1 = Senator is African American; 0 = otherwise	0.006	0.075
Latino	1 = Senator is Latino/a; 0 = otherwise	0.006	0.075
Vote Share	Percent vote share in most recent election	59.80	9.442
Vote Share ²	Square of Vote Share variable	3664.9	1255.8
Southern Democrat	1 = Democrat from the one of the states of the historical confederacy or Oklahoma or Kentucky; 0 = otherwise	0.116	0.320
House Service	1 = Senator served in House; 0 = otherwise	0.312	0.463
House Service × Avg. House LES	House Service variable interacted with average LES attained by member during House service	0.236	0.526
Up for Reelection	1 = Two-year term prior to seeking reelection; 0 = otherwise	0.332	0.471
Retiree	1 = Senator decided to retire; 0 = otherwise ^c	0.061	0.240

Sources: *Almanac of American Politics*, various years; Volden and Wiseman (2014); www.thelawmakers.org; www.voteview.com unless otherwise noted.

^aMore specifically, all Senators who were identified as being part of the “congressional leadership” in the *Almanac of the American Politics*, with the exception of campaign committee chairmen and/or chairs of the party committee on rules were designated as being majority or minority party leaders.

^bMore specifically, for the purposes of our analysis, a Senator is coded as sitting on a power committee if he/she sits on one of the top-four highest ranked committees, according to Groseclose-Stewart Scores (i.e., Stewart and Groseclose 1999, Edwards and Stewart 2006). For the 93rd-95th Congresses, the top four committees are Appropriations, Armed Services, Finance, and Foreign Relations. For the 96th-102nd Congresses, the top four committees are Appropriations, Finance, Foreign Relations, and Rules and Administration. Finally, for the 103rd-113th Congresses, the top four committees are Appropriations, Armed Services, Finance, and Rules and Administration. The authors thank Ethan Hershberger and William Minozzi for these data.

^cThis variable was created by drawing on information from the Congressional Bioguides; any member who did not seek reelection was assigned a value of “1” for their final Congress in office. The authors thank Ethan Hershberger and William Minozzi for these data.

Supplemental Appendix B: Legislative Effectiveness and Amendment Activity

Of the 54,342 S. bills that were introduced into the Senate in the 97th-113th Congresses, 1,806 bills (3.32%) were successfully amended. Of the 2,463 commemorative bills that were introduced, 0.89% of them were successfully amended; of the 48,609 substantive bills that were introduced, 1.65% of them were successfully amended; finally, of the 3,270 substantive and significant bills that were introduced, 30.09% were successfully amended.

To explore the robustness of our findings to the influence of amendment activity, we alter our LES formula in the following three ways. First, we create a new measure of LES, which we denote *LES Amendment (1)* where a Senator receives 50% of the credit for any bill that she sponsors as it moves through the legislative process if it is subsequently amended; and every Senator who successfully offered an amendment to the bill splits the remaining 50% of the credit for the bill equally (regardless of how many successful amendments a Senator proposed). Second, we create another alternative measure of LES, which we denote *LES Amendment (2)*, where a Senator receives 50% of the credit for any bill that she sponsors that is subsequently amended; and every Senator who successfully offered an amendment to the bill splits the remaining 50% of the credit in direct proportion to the fraction of successful amendments that he proposed. Finally, we create a third alternative measure of LES, which we denote *LES Amendment (3)*, where a Senator receives no credit for any bill that she sponsors that is subsequently amended. Instead, every Senator who successfully offered an amendment to the bill splits 100% of the bill credit in direct proportion to the fraction of successful amendments that he proposed. For each of these measures, for all unamended bills, the original sponsor continues to receive full credit. All other aspects of the LES calculation remain unchanged. The correlation between the original LES measure and alternatives *LES Amendment (1)* and *LES*

Amendment (2) are both 0.99. The correlation between the original LES measure and LES Amendment (3) is 0.96. We see this last measure as presenting the upper bound on the effect of amendment activity on the original LES measure, because it removes from the original sponsor all credit for that bill's activities. This alternative behaves as if all amended bills are entirely stripped of their original content and filled with substitute language.

As illustrated in Table B1 below, we see that the core substantive findings that are presented in Table 1 of the body of the text hold when we alter the formula for calculating our Legislative Effectiveness Scores in these ways to account for amendment activity. Because data on Senators' amendment activity was not available on www.congress.gov (nor its predecessor, THOMAS) before the 97th Congress, we present analysis of the determinants of Senators' Legislative Effectiveness Scores for the 97th-113th Congresses (1981-2015) in Column 1, as a baseline for comparison with the models that account for amendment activity. Although some of the coefficients decline in statistical significance, the signs and magnitudes of the coefficients in Columns 2, 3, and 4 are largely consistent with the results in Column 1, and Table 1. The one notable exception is the declining effect for Subcommittee Chairs, consistent with the argument that institutional positions are less important for legislative effectiveness in the Senate than they are in the House.

Table B1: Determinants of Legislative Effectiveness in the U.S. Senate, 1981-2015

	Model 1: LES	Model 2: LES Amendment (1)	Model 3: LES Amendment (2)	Model 4: LES Amendment (3)
Institution-Based Variables				
Majority Party	0.443*** (0.088)	0.425*** (0.086)	0.429*** (0.086)	0.407*** (0.087)
Committee Chair	1.104*** (0.135)	1.091*** (0.134)	1.097*** (0.134)	1.078*** (0.134)
Subcommittee Chair	0.154* (0.083)	0.115 (0.081)	0.113 (0.082)	0.077 (0.082)
Majority Party Leadership	0.050 (0.172)	0.040 (0.165)	0.040 (0.165)	0.030 (0.160)
Minority Party Leadership	-0.003 (0.077)	0.019 (0.076)	0.018 (0.076)	0.042 (0.078)
Power Committee	-0.158*** (0.061)	-0.152** (0.060)	-0.153** (0.060)	-0.146** (0.060)
Individual-Based Variables				
State Legislative Experience	-0.186 (0.113)	-0.177 (0.114)	-0.177 (0.114)	-0.168 (0.116)
State Legislative Experience × Legislative Prof.	0.876 (0.540)	0.857 (0.542)	0.862 (0.543)	0.839 (0.548)
Distance from Median	-0.030 (0.131)	-0.007 (0.130)	-0.004 (0.130)	0.017 (0.131)
Majority Party Female	-0.004 (0.157)	-0.001 (0.154)	-0.001 (0.155)	0.002 (0.153)
Minority Party Female	0.188* (0.114)	0.173 (0.114)	0.173 (0.114)	0.158 (0.115)
Freshman	-0.272*** (0.060)	-0.274*** (0.059)	-0.275*** (0.059)	-0.276*** (0.059)
Seniority	0.085*** (0.026)	0.083*** (0.025)	0.083*** (0.025)	0.080*** (0.025)
Seniority ²	-0.003** (0.001)	-0.003** (0.001)	-0.003*** (0.001)	-0.003** (0.001)
African-American	-0.088 (0.130)	-0.105 (0.117)	-0.109 (0.117)	-0.121 (0.106)
Latino	0.170 (0.188)	0.135 (0.181)	0.135 (0.180)	0.100 (0.175)
Vote Share	0.016 (0.021)	0.019 (0.020)	0.019 (0.020)	0.023 (0.020)
Vote Share ²	-0.0001 (0.0002)	-0.0002 (0.0001)	-0.0002 (0.0001)	-0.0002 (0.0001)
Constant	-0.149 (0.693)	-0.226 (0.666)	-0.225 (0.667)	-0.304 (0.658)
N	1690	1690	1690	1690
Adjusted-R ²	0.43	0.42	0.42	0.39

Notes: Dependent Variable is Legislator i 's Legislative Effectiveness Score in Congress t , where Models 2, 3, and 4 account for amendment activity in the manner described above. Ordinary least squares estimation, robust standard errors in parentheses, observations clustered by member.

* $p < 0.10$ (two-tailed), ** $p < 0.05$ (two-tailed), *** $p < 0.01$ (two-tailed).

Table B2 presents similar analysis to replicate the findings in Table 2. On the whole, the findings reported throughout the paper are robust to inclusion of amendment activity in calculating the Senate LES.

Table B2: Further Determinants of Legislative Effectiveness in U.S. Senate (1981-2015)

	(1)	(2)	(3)	(4)
	LES	LES Amdt (1)	LES Amdt (2)	LES Amdt (3)
Southern Democrat	-0.256*** (0.073)	-0.266*** (0.073)	-0.267*** (0.074)	-0.276*** (0.075)
House Service	-0.096 (0.082)	-0.109 (0.081)	-0.109 (0.082)	-0.123 (0.082)
House Service × Average	0.126* (0.065)	0.128** (0.063)	0.127** (0.063)	0.129** (0.061)
House LES				
Up for Reelection	0.068** (0.027)	0.061** (0.027)	0.062** (0.027)	0.055* (0.029)
Retiree	-0.183** (0.073)	-0.178** (0.071)	-0.180** (0.072)	-0.174** (0.073)
All Variables from Table 1 Included?	YES	YES	YES	YES
N	1690	1690	1690	1690
Adjusted-R ²	0.44	0.43	0.43	0.40

Notes: Dependent Variable is Senator i 's *Legislative Effectiveness Score* in Congress t , where Models 2, 3, and 4 account for amendment activity in the manner described above. Ordinary least squares estimation, robust standard errors in parentheses, observations clustered by member.

* $p < 0.10$ (two-tailed), ** $p < 0.05$ (two-tailed), *** $p < 0.01$ (two-tailed).

Supplemental Appendix C: Top Freshman Senators, 1973-2015

Table C1: Top Freshman Senators in Majority Party, 1973-2015

Congress	Name	State	Party	LES	Relative to Average Majority-Party Member¹¹
93	J. Johnston	LA	Democrat	0.69	49.9%
94	Robert Morgan	NC	Democrat	1.21	96.2
95	Dennis DeConcini	AZ	Democrat	3.56	273.7
96	Howell Heflin	AL	Democrat	0.69	49.5
97	Slade Gorton	WA	Republican	2.11	147.1
98	Paul Trible	VA	Republican	0.97	67.5
99	Mitch McConnell	KY	Republican	0.20	14.3
100	John Breaux	LA	Democrat	0.98	70.1
101	Richard Bryan	NV	Democrat	1.19	88.5
102	Harris Wofford	PA	Democrat	0.08	5.8
103	Carol Moseley Braun	IL	Democrat	0.86	64.0
104	Spencer Abraham	MI	Republican	0.91	62.9
105	Michael Enzi	WY	Republican	1.12	77.9
106	George Voinovich	OH	Republican	1.19	87.1
107	Hillary Clinton	NY	Democrat	1.55	129.6
108	Lisa Murkowski	AK	Republican	1.49	107.8
109	Richard Burr	NC	Republican	1.20	90.2
110	Benjamin Cardin	MD	Democrat	1.05	69.4
111	Mark Udall	CO	Democrat	0.78	54.4
112	Richard Blumenthal	CT	Democrat	0.95	64.0
113	Mazie Hirono	HI	Democrat	0.56	43.0

¹¹ This column captures the relative comparison (in percentage terms) between this freshman’s score and the average score among all Senators in her party.

Table C2: Top Freshman Senators in Minority Party, 1973-2015

Congress	Name	State	Party	LES	Relative to Average Minority-Party Member
93	Dewey Bartlett	OK	Republican	0.66	130.3%
94	Paul Laxalt	NV	Republican	0.08	13.2
95	H. John Heinz III	PA	Republican	0.43	82.2
96	Nancy Kassebaum	KS	Republican	0.54	119.9
97	Christopher Dodd	CT	Democrat	0.30	58.1
98	Frank Lautenberg	NJ	Democrat	0.08	16.8
99	Paul Simon	IL	Democrat	0.44	80.5
100	John McCain	AZ	Republican	0.62	117.8
101	Jim Jeffords ¹²	VT	Republican	0.56	97.8
102	Hank Brown	CO	Republican	0.70	131.0
103	Kay Bailey Hutchison	TX	Republican	0.36	67.0
104	Ron Wyden	OR	Democrat	0.39	80.4
105	Tim Johnson	SD	Democrat	0.75	162.4
106	Chuck Schumer	NY	Democrat	0.60	109.1
107	George Allen	VA	Republican	0.45	55.6
108	Mark Pryor ¹³	AR	Democrat	0.04	6.28
109	Barack Obama	IL	Democrat	0.65	109.6
110	John Barrasso	WY	Republican	0.14	26.9
111	James Risch	ID	Republican	0.22	54.7
112	Mike Lee	UT	Republican	1.11	229.3
113	Ted Cruz	TX	Republican	0.87	134.6

¹² Slade Gordon (WA) was technically the highest scoring Freshman Senator in the Minority Party in the 101st Congress (with a score of 0.61). Given that the 101st Congress was the second time that he was a Freshman Senator (having been elected to the Senate for the first time in the 97th Congress), we instead identify Jeffords as the highest-scoring Freshman in the minority party in the 101st Congress.

¹³ Frank Lautenberg (NJ) was technically the highest scoring Freshman Senator in the Minority Party in the 108th Congress (with a score of 0.24). Given that the 108th Congress was the second time that he was a Freshman Senator (having been elected to the Senate for the first time in the 98th Congress), we instead identify Pryor as the highest-scoring Freshman in the minority party in the 108th Congress. (Pryor was actually the only other Freshman minority-party Senator in the 108th Congress.)

References for Supplemental Appendices

- Edwards, Keith M., and Charles Stewart, III. 2006. "The Value of Committee Assignments in Congress since 1994." Paper presented at the 2006 Annual Meetings of the Southern Political Science Association.
- Stewart, Charles, III, and Tim Groseclose. 1999. "The Value of Committee Seats in the United States Senate, 1947-1991." *American Journal of Political Science* 43(3): 963-973.