Coalition Size in the Senate and House of Representatives[*]

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Abstract

We explore the size of coalitions voting in favor of successful roll calls in Congress, across time and across the House and Senate. Departing from previous literature, we measure coalition size in a session of Congress by the average proportion of members of a chamber voting in favor of non-unanimous roll calls that won a majority of votes in that session. House coalitions so measured are larger than Senate coalitions on average, supermajority cloture requirements in the Senate notwithstanding. This finding is consistent with a pivots-based explanation with a one-dimensional policy space if the Senate lies between the House and President in the policy space, but other implications of a pivotal explanation receive mixed empirical support. Larger House coalitions are also consistent with stronger party institutions in the House, but existing theories of party influence in Congress are unable to explain why, or the variation over time in the margin between Senate and House coalition sizes. Somewhat in the spirit of a pivotal explanation, a more exploratory analysis suggests that coalition size within a chamber is in part determined by institutions and the ideological position of actors outside the chamber, and that explanations of chamber coalition size based only on internal chamber factors overlook important factors outside the chamber.

The size of groups supporting new measures passed by Congress is an important indicator of the spread of social benefits through the political process. Assuming Congress has addressed important policy issues (rather than feel-good "motherhood and apple pie" issues), large coalitions standing behind new legislation suggests that Congress has tapped into a useful solution with widespread appeal. Coalition size is also important theoretically in understanding how the institutional structure of the US legislative process affects the distribution of gains among representatives, and by implication, the electorate. Different theories of the process highlight different determinants of coalition membership, and therefore, when those determinants vary, make different predictions about coalition size.

Coalition size also provides an interesting point of comparison across chambers of Congress, and a signal about the effects of institutional arrangements within chambers on the legislative process more broadly. The evidence and argument in this paper suggests that coalition size within a chamber is a function not only of its own internal institutions and voting rules, but also institutions outside the chamber, as well as the chamber's ideological position relative to other actors and veto players in the legislative process. Thus, even if one chamber's internal rules require larger coalitions to pass a measure than the other chamber, it can nevertheless have smaller coalitions supporting a measure than the other chamber.

We provide a new measurement of chamber coalition size, based on a much broader selection of legislative activity in each chamber than previous literature. This measurement shows that House coalitions are significantly larger than Senate coalitions, by about a standard deviation on average. Given the difference in minority rights and supermajority requirements across chambers (especially since the passage of the Reed Rules in the House), larger House coalitions pose a challenge to conventional understanding of the effect of these rules. A pivots-

based explanation (Krehbiel 1998) is able to account for systematically larger coalitions in the House than the Senate under specific conditions we identify. However, a pivots-based account satisfying these specific conditions has other implications for coalition size across chambers that receive mixed empirical support. An explanation of coalition size based on strength of party organizations within a chamber could also obviously account for the difference in House-Senate coalition size, but such explanations are as yet not specified in sufficient detail to explain why the House has "stronger" parties than the Senate (in the sense of ability to hold a coalition together) or the variation over time in House or Senate coalition sizes. Lack of theoretical clarity notwithstanding, empirical evidence suggests that coalition size within a chamber is in part determined by institutions and ideological positions of actors outside that chamber. In that sense, explanations of coalition size based only on internal chamber factors are misspecified.

The rest of the paper proceeds as follows. In the next section we discuss the measurement of coalition size and present our measure and some baseline comparisons across chambers. In section 2 we address the ability of prevailing theories of legislative institutions, in particular pivots-based and partisan explanations, to account for the chamber differences reviewed in section 1. In section 3 we present statistical tests of two implications derived from a pivots explanation in section 2. Section 4 discusses some of the limitations of the analysis and concludes.

1. Coalition Size: Measurement and Comparisons

Like other work on coalition size and institutional arrangements (Krehbiel 1998, Wawro and Schickler 2006), the key premise in our conception of coalition membership is support for a bill or measure being considered by a chamber of Congress. Thus, a member of the chamber is a

member of a coalition supporting a measure if she or he simply votes in favor of it. This is a weak and encompassing notion of coalition membership. Others might be more restrictive, such as the set of sponsors of a bill or the set of principal authors. These conceptualizations of coalition membership would also be useful to explore, but not so immediately for the questions of direct interest in this paper.

Most previous work on coalition size in Congress has restricted attention to "landmark legislation." Coalition size in a session of Congress is the proportion of "yea" votes to all votes, averaged across landmark legislation that passed in that session. We opt instead for a broader sample of legislative business: all roll calls considered by a chamber in a given session of Congress. Within this set we focus on all roll calls that won majority support in a non-unanimous vote. There are several reasons for this departure. First, without a clearly superior operationalization of the concept to work from, it is best for the literature not to become too focused on any one specific measure. Rather it is useful to investigate several facets of the concept, so that any conclusions are not overly sensitive to idiosyncracies of a specific measurement scheme.

Second, not all the important business of Congress is limited to landmark bills. For example, annual appropriations votes usually would not count as "landmarks," but have obvious importance for both the distribution of political gains and the structure of coalitions. Moreover, landmark bills seem likely to cover measures on which roll calls are disproportionately likely to be known and discussed in campaigns. Therefore, votes on these measures may be disproportionately influenced by "position taking" motivations of legislators as distinct from actual policy preferences – particularly since so few of the votes on landmark bills present any chance that an individual legislator casts the pivotal vote. Thus, while scholars have occasionally

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defended a focus on major laws as a way to avoid "bias" due to the large number of trivial bills considered by Congress, the *a priori* bias from the influence of position taking on final passage votes on major bills does not seem clearly less severe.

Third, in a given session of Congress there are typically only a small handful of "major laws" passed, so averaging coalitions supporting them gives an imprecise, high-variance index of "typical" coalition size in that session, even on major bills. On the other hand there are several hundred successful non-unanimous roll calls in each chamber per session of Congress. Therefore their average allows a much more precise measure, which seems a worthwhile price to pay for measuring a slightly different, and not necessarily inferior, concept.

Figure 1 displays the average coalition size (so measured) in the Senate and House, by session of Congress, from the 47th (seated in 1881) to 108th (seated in 2003). There is a general upward drift in coalition size in each chamber, similar to findings with coalition size measured as the share of yea votes on major laws.

[Figure 1 here]

The figure reveals that House coalition size is typically greater than Senate coalition size. Indeed, the average across sessions of Congress 47-108 for the Senate is 69.2% voting yea, while for the House the average is 72.3%, a difference of about one standard deviation. Statistical tests confirm that the difference is significant: the test statistic in a matched pairs *t*-test (two tail, as are all tests in the remainder) is 7.65 (H_0: mean of [[HR coalition size] – [Senate coalition size]] = 0). Likewise, the proportion of sessions 47-108 in which the average Senate coalition is larger

than the average House coalition is only 0.127; the *z*-statistic in a test that this proportion equals 0.5 is –5.92.

Since the House passed the Reed Rules in the 1890's, protection of minority rights in that chamber has lagged behind the Senate. Nevertheless pre-Reed Rules observations do not affect the conclusion that House coalitions are significantly larger than Senate coalitions on a wide sample of chamber business. The test statistic in a matched pairs *t*-test based only on observations after 1895 is 7.46; substantively, again the difference in coalition size is about a standard deviation. Nor do observations before the Senate's 1917 cloture reform (which, as Wawro and Schickler argue, enhanced rather than eroded minority rights, despite the formal decrease in the supermajority required for cloture) drive the conclusion: the test statistic in a matched pairs *t*-test on post-1917 observations is 9.13. More impressionistically (and interestingly), Figure 1 shows that the margin of House over Senate coalition size began to grow roughly coincident with cloture reform in the Senate. In short, House coalitions on chamber business in general are larger than Senate coalitions on average, even in the period with relatively stable allocations of minority rights in each chamber.

This finding is somewhat surprising given a mechanistic view of supermajority cloture requirements in the Senate, requirements lacking in the House. Because of these requirements the conventional wisdom is that the Senate requires supermajorities to conduct any business but the House only requires bare majorities. Indeed, if that is so, a Rikerian analysis of the cost coalition members face by diluting their benefits to include a new member suggests House coalitions should be close to simple majorities. Even if cloture requirements in the Senate affect coalition membership in the House (because bills and joint resolutions must pass both chambers; cf. Wawro and Schickler 2006) should bring House coalitions up to the size of Senate coalitions,

but not above. The relative size of House and Senate coalitions is also somewhat surprising given that the Senate has come to resemble the House more in general since the 17th Amendment changed the basis of election of US Senators to statewide popular vote (Crook and Hibbing 1997). Yet conditioning on neither the adoption of the Amendment nor cloture reforms in the Senate negates the difference between House and Senate coalition size.

Notably, this pattern between House and Senate coalition size for all roll calls is not as clear with final passage votes on "landmark bills," and seems to depend on the specific time period considered. On one hand, Wawro and Schickler (2006, ch. 9) note that House coalitions supporting "major legislation" were slightly larger in the House than the Senate in the period from 1881 to 1946. On the other hand, Mayhew's (2005) data on major laws from 1947 to 1989 show that, in an average session of Congress, House coalitions contain 80.6% of the voting members, while Senate coalitions contain 83.6% of the voting members. This difference is significant at about the 0.0004 level in a matched pairs t-test. This may even understate the difference between chambers because the Senate also conducted voice votes about twice as often on these bills.

Overall, then, the evidence on comparative coalitions sizes in the Senate and House is somewhat mixed. However, since the conventional wisdom seems to be that Senate coalitions should be larger, even a mixed result presents a challenge.

2. Explanations of Coalition Size Differences across Chambers

The natural supposition that Senate coalitions should be larger than House coalitions, due to the former's supermajoritarian procedures combined with a logic of minimal winning coalitions, does not account for the position of each institution's members in a policy space.

Policy is not enacted by a single chamber of Congress. The strategic imperative for coalition builders in chamber requires not only securing passage in that chamber, but navigating the legislative process outside of that chamber as well. Successful bills must be packaged in such a way that they secure approval of a decisive coalition in the other chamber, as well as of the president. Moreover, a chamber may of course not even originate the measures on which it votes. In such cases the originating chamber may find that obtaining support in the non-originating chamber requires supermajority support in the originating chamber. Overall, the logic of minimal winning coalitions is not fundamentally flawed in a bicameral, presidential system, but it requires further specification. The coalition supporting a policy change will seek to dilute its favored measure as little as possible to achieve support from each veto player in the system. This may, in specific situations (depending on the configuration of preferences), require measures that secure support from larger coalitions in one chamber than the other, differences in the minimal hurdles of their formal voting rules notwithstanding. This logic is, of course, very much in the style laid out by Krehbiel in *Pivotal Politics* (1998).

To be specific, consider a configuration in which some pivotal actor in the Senate stands in a one dimensional policy space between a pivotal actor in the House on its left and the president on its right, *i.e.*, $H < S < P$. For simplicity suppose this pivotal actor in each chamber (as identified by its internal voting rule) is simply the median member of the chamber, *i.e.*, the member whose ideal point is the median of the set of all ideal points of chamber members. In such an arrangement it is possible that the coalition in the House supporting change from a status quo is larger than the coalition in the Senate. Suppose for example that a status quo policy to the right of the president is moved to the Senate median, and this point is a smaller distance from the president's ideal point than the status quo. Then if the Senate and House have roughly equal

range in their distributions of ideal points, the policy change will receive support in the House at least as great as its support in the Senate.

The reason is that all voters with ideal points left of the alternative policy must prefer it to the status quo, since the status quo is even further right than the alternative. By construction half of all Senators have ideal points left of the alternative policy in this example, while (barring pathological preference distributions with no House members between the House and Senate medians) strictly more than half of all Representatives have ideal points left of the alternative. Moreover, if ideal points to the right of the median in each chamber are similarly spaced in the House and Senate, House members to the right of the alternative policy are just as likely as Senators who lie to the right of the alternative to prefer it to the status quo.

This scenario implies several other relationships that are amendable to empirical testing. First, as the pivotal actor in the House diverges further from the president, and the rest of the spread of the distribution in the House (as well as the Senate) remains fixed, the difference between Senate and House coalition sizes should grow. The reason is that the House in general is pulled further from the Senate and president under such a change: it must as a result support the alternative policy (at the Senate median) over the status quo (right of the president) at least as much as it did before this movement.

Second, as the pivotal actor in the Senate diverges from the president and moves toward (but does not cross) the House pivot, the difference between House and Senate coalition sizes should shrink. In particular, such a change in the Senate should erode supermajority support *in the House*. The reason is simply that such a change puts the Senate and House pivots closer together. Thus there are fewer members of the House between the House and Senate pivots. Then when the status quo is right of both the Senate and House pivots, and the alternative policy

is set at some point between the Senate and House pivots, there are fewer House members beyond the House median to the left of the new policy. Since those members are exactly the ones that make House coalitions larger under such a policy change, this change in the Senate should shrink the difference between Senate and House coalitions. This is a cross-chamber effect that is not necessarily obvious, and not widely analyzed in the literature, so it makes for a good test of this explanation.

Unexplained in this scenario is why the alternative policy should be disproportionately pulled by the Senate's pivotal actor in the first place. The reason is that the pivotal politics model (and for that matter the US Constitution) does not specify an allocation of proposal power among chambers. In Krehbiel (1998) this is simply because there is only one chamber in the legislature, and its median, following Krehbiel's majoritarian logic, has proposal power to start the game. However, we can imagine altering the game so that either the House or Senate is randomly chosen to propose a bill, with its pivotal actor setting the content of the proposal. Given a status quo to the right of the president, each chamber will seek to exploit proposal power and extract rent by reflecting the status quo to its most preferred point left of the president that will win approval from the other chamber and president. Because the House pivot is further from the president than the Senate pivot, the former is more likely than the latter to have to accept a best feasible policy that is to the right of its ideal point. That is, a constraint on policy acceptance that the proposer must respect is that the alternative is no further from the president than the status quo. Since the House pivot's ideal point is further from the president than the Senate pivot's, by construction, the House pivot's ideal point is at greater risk of falling outside the set of points the president prefers to the status quo, and the House pivot is more likely to be forced to make a concession by proposing a policy right of its ideal point.

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What this reasoning shows is that even with somewhat more serious consideration of the proposal process across chambers, the proposed policy is likely to be to the right of the House pivot's ideal point than the Senate pivot's ideal point; it is instead more likely to be exactly at the Senate pivot's ideal point. Furthermore, when the alternative is to the right of the House pivot's ideal point, then the size of the House coalition in support of the bill is greater than minimal winning, given its own voting rule. Greater than minimal winning coalitions are less likely to occur in the Senate, given that its pivot's ideal point is more likely to fall in the range of points the president prefers to the status quo.

Of course, when the status quo lies in the interior of the set of ideal points *{H, S, P}*, no policy change is possible, and when it lies to the left of *H*'s ideal point, either House or Senate can move policy to their respective pivots' ideal points. If each chamber has some chance of obtaining proposal power, then in expectation the alternative policy lies between the House and Senate pivot ideal points.

Another natural explanation for the comparative size of House and Senate coalitions is the strength of party organizations within each chamber. House coalitions could be larger than Senate coalitions because House parties are stronger than Senate parties, in the sense of better able to induce rank and file members to join and stay in a party coalition. Moreover, such inducements may be easier to mete out on "everyday" legislation than landmark legislation, on which members are more likely to feel needs for position taking (see above discussion) or vote with constituency sentiment. This would nicely explain the difference in relative House and Senate coalition sizes on all roll calls vs. landmark bills.

This explanation requires a theory of positive party influence on individual members' votes, and such theories are generally not specified well enough to explain why House parties are

stronger than Senate parties,[1] or account for varying party strength over time. An important and recent exception is Patty's (2008) model of equilibrium party government, which endogenizes majority party strength. In Patty's model, party strength determines the majority party's ability to secure votes it prefers from party members.[2] It decreases with the size of the majority party and increases with the preference conflict between the majority and minority parties. However, while this model explains sources of *party strength*, it is not designed to explain the relationship between party strength and *coalition size*. In particular, as the majority party grows, its equilibrium strength may decline – yet empirically, the preference similarity of its members may increase. As a result, coalitions could grow with the size of the majority party because less party strength is necessary to hold them together.

Aside from Patty's model of positive party influence, one of the most clearly specified models of party influence is the party cartel model laid out by Cox and McCubbins in *Setting the Agenda* (2005). However, this is a model of negative party influence: it focuses on parties as gatekeepers in the agenda setting process within a chamber. Parties have an effect, in the cartel model, by preventing consideration of items the party majority does not favor. This negative agenda control is crucially related to the size of the *roll zone*, the distance between the chamber median and majority party median within a given chamber. The size or width of the roll zone is the key explanatory variable behind the empirical work in *Setting the Agenda*. It is not clear what

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[1] Of course, party-based theories (*e.g.*, Rohde 1991, Cox and McCubbins 1993, Aldrich 1995) have clearly explained how institutions within the House could work as tools of majority party strength, on the assumption that the majority party leadership has some autonomous power in the first place. This should not be confused with an explanation for why the House has adopted these institutions, which are endogenous, or as an *explanation* for greater party strength in the House than the Senate.

[2] Patty models party strength as the size of a "performance bond" for party members, a level of resources party members will forfeit by not voting with the party leadership.

effect, if any this variable, or another measure of partisan negative agenda control, should have on coalition sizes across chambers.

3. Empirical Tests of Explanations for Coalition Size Differences across Chambers

In this section we empirically evaluate determinants of chamber coalition size that are both internal and external to the chamber. We start with a brief test of the pivotal politics explanation concocted above and turn to a more general, exploratory analysis. The unit of observation in our tests is a session of Congress. As noted, a chamber's coalition size in a session is the mean of votes in favor divided by all votes on non-unanimous roll calls in the session that won majority support. The dependent variables are the average coalition sizes in the House and Senate. In all cases we use OLS regression to estimate the relationship between the dependent variable and the explanatory and control variables. Serial correlation is a natural concern given the time series data we use; for example, factors (such as chamber leaders that are very skilled coalition builders) that push House coalition sizes unusually high in one session (and therefore push the dependent variable above the regression line) may persist into future sessions as well. To mitigate the effect of this concern on hypothesis tests we use Newey-West standard errors with a 1 period lag in the autocorrelation.[3]

For the pivotal politics explanation, the key hypotheses pertaining to coalition size comparisons are, first, that House-Senate coalition size differences should grow when the House pivot gets further from the president (all else constant) because House coalitions grow; and second, that House-Senate coalition size differences should shrink when the Senate pivot gets

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[3] Unlike Prais-Winsten regression, OLS regression with Newey-West standard errors does not require a correct model of the serial correlation to preserve consistency of the parameter estimates, yet it provides standard errors that are robust to autocorrelation with a specified lag, 1 period in our model.

further from the president (all else constant) because House coalitions shrink. Note that neither hypothesis implicates Senate coalition size. The basic condition for this explanation to account for the coalition size difference is that the Senate lies between the House and president in a one dimensional policy space.

We measure proximity of the chambers to the president by the share of chamber membership in the same party as the president. This measure takes advantage of the preference cues provided by party labels and avoids difficulties in measuring presidents' ideal points in comparable terms with the House and Senate over our whole time series. In the Senate this variable ranges from 0.347 to 0.781, with a mean of 0.543 and standard deviation of 0.088. In the House it ranges from 0.264 to 0.766, with a mean of 0.521 and standard deviation of 0.106. Notably, the Senate share of the president's party is significantly greater than the House share of the president's party in the sessions we investigate (p-value in a matched pairs t-test is 0.02). The pivotal politics explanation we identify above explains larger House coalitions only when the Senate lies between the House and president ideologically. This test result shows that, just as House coalitions are larger than Senate coalitions on average, the Senate is indeed between the House and president on average.

We control for several other variables in estimating the relationship between chamber-president proximity and chamber coalition sizes. First, as a crude control for party-based explanations of coalition size, we control for the share of seats held by the majority in each chamber. Second, we include indicator variables for cloture reform in the Senate (one for the 1917 reform, one for 1975). Third, to avoid spurious relationships due to common trends in both the explanatory and dependent variables, we include a linear time trend.

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Regression results are in Table 1. The years of observations used for estimation are 1857-2003, considering only cases in which the share of the president's party in the Senate exceeds the share of the president's party in the House (to approximate the condition $H < S < P$ in a unidimensional policy space). For the Senate coalition size regression, neither of the key theoretical variables, chamber share of the president's party, should be statistically significant under the pivotal politics explanation, and indeed, neither one is. However, this treats the prediction of the theory as the null hypothesis, which gives it a presumptive level of support that is not customary and probably not desirable. In particular, in the Senate regression, the share of the president's party in the Senate has a p-value of 0.21 in a two-tailed test of the null hypothesis of no effect. While this does not compel rejection of the null, it does not give it a great deal of credence either.

For the House coalition size regression, both of the key theoretical variables have the predicted sign but only one is statistically significant at conventional levels. Specifically, the coefficient for the share of the president's party in the House is –0.124, and the p-value is 0.033. A one standard deviation increase in the share of the president's party in the House shrinks coalition size by almost 30% of a standard deviation. The coefficient on the share of the president's party in the Senate, while positive, is substantively modest (0.005, so a one standard deviation increase in the share of the president's party in the Senate increases coalition size in the House by only about 1% of a standard deviation) and statistically insignificant (p-value = 0.945). More troubling is that the results are not robust to changes in the time period. If the estimation is confined to years 1881 and later, the effects of both theoretical variables are statistically insignificant. Since the formation of the Republican party to the end of Reconstruction coincides is the period in which a one-dimensional model of ideology performs least well (Poole and

Rosenthal 2007), the fact that pre-Reconstruction observations are so important is especially discouraging for a one-dimensional pivotal politics explanation.

[Table 1 here]

The other variables in these regressions, chamber majority share and cloture dummies, suggest other interesting determinants of coalition size. First, for both House and Senate, increasing the share of the of the chamber's seats held by the majority party increases the chamber's coalition size on average.

Second, the 1917 and 1975 cloture reforms carry a statistically significant association with average coalition size in *only* the House, not the Senate. The 1917 cloture reform increased House coalition size on average, while the 1975 reform decreased House coalition size. Each of these effects is consistent with the change in size of coalitions required to move business through the Senate, assuming (as Wawro and Schickler argue) the de facto Senate voting rule before 1917 was majority rather than unanimity. In one sense it is reasonable that these Senate rules should have similar effects on the House: any legislation passing the Senate must be crafted to pass through coalitions of the requisite size, and malapportionment notwithstanding, when Senate voting rules require larger coalitions, approved bills should be favorable for more of the House. What this does not explain of course is why the voting rules changes would have insignificant effects in the Senate. In purely speculative terms it is possible that the Senate was only in a position to adopt institutional reform because the enacting coalition knew that nothing much would change; this could be exactly why the reform could pass in the first place, rather than elicit vetoes from Senate coalitions that might be disadvantaged by the change. In that case,

the institutional rules changes should matter *more* in the other chamber, but this explanation probably gets close to the wrong side of the "thin line between clever and stupid" (N. Tufnel 1984).

More important about these cloture effects for a pivotal politics explanation is the effect of Senate cloture reform on the location of the Senate pivot relative to the House pivot. Given the usual formulation of the filibuster pivot falling on the opposite side of the Senate median as the president, and given a configuration of the form $H < S < P$, the 1917 cloture reform ostensibly moved the Senate pivot closer to the House pivot – from the Senate median (cf. Wawro and Schickler 2006) to the 67th Senator from the right limit. This should shrink House coalitions relative to Senate coalitions because the relevant Senate pivot is less distinct from the House pivot as a result of the reform, but the empirical evidence shows the opposite effect.

We close this section with remarks on several more "exploratory" models we estimated using all observations from 1881 to 2003. These models for each chamber's average coalition size contained four general classes of explanatory variables: (1) facets of the chamber's internal structure and preference distribution: size of the majority party, distance between majority and minority party median first-dimension DW-NOMINATE scores, distance between chamber and majority part median DW-NOMINATE scores; (2) facets of the other chamber's internal structure; (3) cross-institutional comparisons: indicators for divided party control of Congress, divided government, share of the president's party in each chamber; (4) variables pertaining to timing: a linear time trend and indicators for each cloture reform in the Senate.

Given high intercorrelations among these variables and the small number of observations in the time series, one grand model parsing out descriptive associations for all variables is not possible. However, a few qualitative results appear robust across many different models in these

general classes, of which examples for both House and Senate are present in Table 2. First, the seat share of a chamber's own majority party has a positive and significant effect on its average coalition size. The substantive effects of a one standard deviation change in majority party seat share are typically about 20% to 30% of a standard deviation of coalition size. Second, other internal chamber factors (*e.g.* party polarization) have a significant effect on coalition size in some models, but significance for these variables is more fragile and affected by model specification. Third, divided party control of Congress tends not to have a statistically significant effect on average coalition size in either chamber. Fourth, the linear time trend is usually positively and significantly associated with average coalition size in each chamber, but the cloture reform dummies often are not. Finally, House variables tend to have a significant association with Senate coalition size more than Senate variables do with House coalition size.

4. Discussion

The analysis above suggests some possibly interesting relationships but it is still highly exploratory. A few more steps would make for a more convincing account of coalition size differences across chambers. On the measurement side, even if the broad selection of chamber business we use to measure coalition size adds value to the literature, it should, in order to match up with the conceptual discussion, only include roll calls that are considered across chambers. Presently the coalition size measures are based on all roll calls, but restricting attention to action on bills and joint resolutions, and possibly concurrent resolutions, would be an improvement. Considering only final passage votes on these resolutions may be an improvement as well.

On the theoretical side, more work is needed to flesh out a pivots explanation, perhaps along the lines of that in section 2, and also (especially) for distilling implications for coalition

size from party-based explanations (particularly along the lines of Patty's model of equilibrium party strength). In terms of a pivots explanation, the results, while mixed, are still somewhat promising. For example, with a better theoretical specification of the proposal process, better accounting for the effect of Senate supermajority requirements on the location of the Senate's pivotal actor, and more adequate measures of conflict between the respective chambers and the president (cf. Bailey 2007), the empirical problems noted above for a pivots explanation could dissipate.

The main points of this paper that seem to hold up notwithstanding these points are the following. First, for a broad selection of legislative activity, House coalitions are significantly larger than Senate coalitions on average, a difference of about a standard deviation. Second, coalition size is determined not only by internal chamber institutions (or the operation of parties within the chamber), but also by the location of the chamber's pivotal actors in a policy space, relative to other actors in the legislative process and the status quo.

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Figure 1. House and Senate Coalition Sizes, by session of Congress
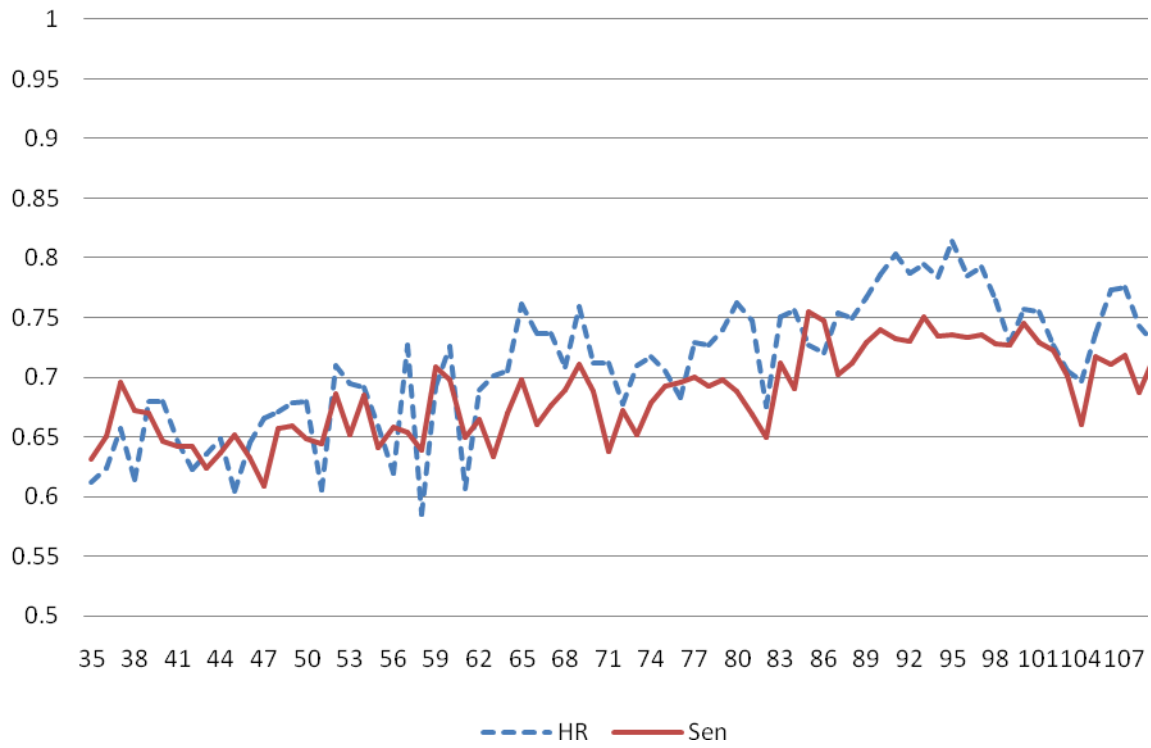
Table 1. Regression models of House and Senate coalition size. Entries are OLS coefficients with Newey-West standard errors in parentheses. Unit of observation is a session of Congress, 35-108 (1857-2003), for which Senate share of president's party exceeds House share of president's party. ***** indicates significance at α = 0.10, ****** at α = 0.05, ******* at α = 0.01.

Explanatory Variable	House coalition size model	Senate coalition size model
House share in president's party	−0.124** (0.056)	−0.066 (0.068)
Senate share in president's party	0.005 (0.077)	−0.084 (0.068)
Chamber majority seat share	0.002*** (0.001)	0.001** (0.0005)
1917 cloture indicator	0.046** (0.013)	0.017 (0.011)
1975 cloture indicator	−0.042*** (0.013)	−0.013 (0.016)
Congress (time trend)	0.002*** (0.0005)	0.001** (0.0004)
Constant	0.525*** (0.055)	0.601*** (0.035)
	N = 46, $F_{5,40}$ = 43.83	N = 46, $F_{5,40}$ = 19.95

Table 2. Regression models of House and Senate coalition size. Entries are OLS coefficients with Newey-West standard errors in parentheses. Unit of observation is a session of Congress, 47-108 (1881-2003). ***** indicates significance at α = 0.10, ****** at α = 0.05, ******* at α = 0.01.

Explanatory Variable	House coalition size model	Senate coalition size model
House share in president's party	0.004 (0.047)	−0.105*** (0.033)
Senate share in president's party	−0.077 (0.095)	−0.042 (0.032)
Senate majority seat share	−0.001 (0.001)	0.002*** (0.0006)
House majority seat share	0.002** (0.0001)	0.0005 (0.0004)
Chamber party polarization	−0.011 (0.049)	0.002 (0.028)
Divided party control of Congress	0.009 (0.133)	0.008 (0.005)
1917 cloture indicator	0.031 (0.021)	0.010 (0.014)
1975 cloture indicator	−0.022 (0.027)	−0.015 (0.016)
Congress (time trend)	0.002** (0.0007)	0.001** (0.0004)
Constant	0.570*** (0.085)	0.523*** (0.049)
	N = 63, $F_{5,40}$ = 9.67	N = 63, $F_{5,40}$ = 24.14