The two faces of congressional roll-call voting

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Abstract
Most analyses of congressional voting, whether theoretical or empirical, treat all roll-call votes in the same way. We argue that such approaches mask considerable variation in voting behaviour across different types of votes. In examining all roll-call votes in the U.S. House of Representatives from the 93rd to the 110th Congresses (1973–2008), we find that the forces affecting legislators' voting on procedural and final passage matters have exhibited important changes over time, with differences between these two vote types becoming larger, particularly in recent congresses. These trends have important implications not only on how we study congressional voting behaviour, but also in how we evaluate representation and polarization in the modern Congress.

Introduction

Not all roll-call votes are the same. They not only involve different public policies, but also different stages in the legislative process.[1] Indeed, in a dataset that is becoming the standard for classifying votes, Rohde (2008) develops a list of 70 different kinds of votes from the familiar (e.g. final passage and veto override votes) to the obscure (e.g. perfecting amendment to a substitute and a motion to approve the House Journal). While congressional scholars recognize the differences among these votes, they have sparingly used them analytically to gain insight into the legislative process.

Statistical analyses of congressional voting often employ scaling techniques to estimate legislators' ideologies. These analyses typically pool all roll-calls together, implicitly assuming that the same underlying preferences dictate members' choices on both procedural matters and final passage votes (e.g. Poole and Rosenthal's (1997) widely used NOMINATE scores). While this practice provides a reasonable summary of the overall ideology expressed by members' complete voting records in a given congress, it also masks important variation in the nature of legislators' ideological preferences as well as the strength of various influences on these ideologies.

Although this approach has resulted in major contributions to our understanding of the legislative process in the United States, we believe that it rests on a questionable assumption that legislators' voting behaviour is structured by the same preferences across all types of votes. While we are not the first scholars to recognize the differences among votes, we do so for a different purpose. We show that the difference between these votes is not just a matter of degree, but rather members are casting these votes with increasingly different considerations in mind. These different considerations have resulted in members accruing increasingly distinct voting records on these two types of votes.

This article argues that distinctions across different categories of roll-call votes reveal insights into legislator behaviour that have important consequences on how American democracy could be evaluated and on how party polarization is understood. We make these arguments in a series of steps. In the first section, we discuss the conventional wisdom surrounding the differences between procedural and final passage votes. We build on this literature in two ways: by pinpointing the underlying causes of this differentiation and by discussing the differentiation over time.

In the second section, we describe the data and statistical techniques we use to test these hypotheses. The third section describes our findings and explains the underlying dynamics that give rise to the differences between procedural and final passage voting. In analysing all roll-call votes in the U.S. House of Representatives from 1973 to 2008, we find that the factors influencing the voting decisions of legislators have exhibited clear changes in relative strength over time. In the early 1970s, the effects of constituency on both procedural and final passage voting were significantly larger than those of party. Over time, however, the effects of party have grown sharply relative to those of constituency. Party and constituency now exert influences of roughly comparable size on final passage votes. On procedural votes, these changes have been even more dramatic, with party now having roughly twice as much influence on voting as constituency in recent congresses.

In the fourth section, we explain the implications of our findings for the debate about party polarization in Congress. Put simply, a great deal of the increasing divide between the parties in Congress is a consequence of how members vote on procedures. Finally, in the fifth section, we conclude.

The determinants of congressional voting

To varying degrees, scholars such as Rohde (1991), Cox and McCubbins (1993, 2005), Snyder and Groseclose (2000), Ansolabehere et al. (2001), Cox and Poole (2002), Roberts and Smith (2003), Jenkins et al. (2005), Roberts (2007) and Theriault (2008) find that members' voting on procedural matters (among other types of votes that vary among the scholars) looks different from member voting on the final passage of legislation. They all find that members typically vote with their party on procedural votes, which is consistent with their arguments about the power of political parties in the process; a conclusion at odds with Krehbiel (1993). While that debate is important, we use this variation in the voting behaviour for a different purpose.

Consistent with the results from the party effects literature, we argue that members view voting on procedures and final passage as two (almost) entirely different activities with different audiences, different influences and different goals. Our argument is consistent with aspects of this literature's main variants. First, we agree with Cox and McCubbins (1993, 2005), who argue under their party cartel theory that majority party members need not worry about the outcome on final passage if they have properly structured the procedures. Majority party members are required to vote with their leadership on procedural matters, but can usually vote with their 'conscience' or 'constituency' without repercussion from the leadership on final passage. Under the party cartel argument, negative agenda control as

exercised in procedural votes in constant, positive control is contingent.

We argue that legislators' voting on procedural and final passage matters are affected by different pressures, resulting in systematically different ideologies being expressed by members across these two types of roll-calls. Votes early in the legislative process satisfy a much different audience than votes at a later stage. In our conceptualization, supporting the substance of the bill does not necessarily imply that the member supports the procedural machinations occurring prior to the final passage vote. Similarly, voting against a proposed set of procedures does not necessarily imply that a member opposes the substance of the bill under consideration. We, therefore, hypothesize that the ideologies underlying member voting on procedures will look different from those for final passage because members view these two votes differently.

Second, we agree with Aldrich and Rohde (2001), who argue that the pressures members face from their parties is variable over time. Dodd (1979), Loomis (1984), Rohde (1991), Aldrich (1995) and Sinclair (2006) demonstrate that party leaders have dominated the legislative process in the Textbook Congress more than they did during the committees (Shepsle, 1989). Party leaders have increasingly acquired power over the committee assignment process, the elevation of committee leaders, campaign resources and the dynamics of floor procedures. But, at the end of the day, members are not dependent upon their party leaders for their continued congressional careers. Members, by virtue of the constitutional mandate, must stand for election in their constituencies every two years.

Party leaders are reluctant to push members so far that their party loyal votes cause them grief in their next election. Because they are usually discarded as 'mere procedural votes', party leaders can have more leeway and more influence on them (Ansolabehere et al., 2001; Cox and McCubbins, 1993, 2005; Cox and Poole, 2002; Finocchiaro and Rohde, 2008; Nokken, 2009; Snyder and Groseclose, 2000). Furthermore, properly structured procedural votes can often ensure leaders' preferred outcome on final passage votes, even when members' voting on final passage is cast with more of an eye toward the constituency. The time component transforms our argument from a static one to a dynamic one. We expect to see more party pressure on procedural votes than on final passage votes and we expect that pressure to grow as the party leaders have acquired more power.[2]

In today's Congress, procedural votes are often little more than an informal declaration of partisan identification. With few exceptions, a member, quite independently of their view of the substance of the legislation, will vote as though party leaders are the primary audience. Constituents tend to be less concerned with procedural votes. As various electoral contests and the research of Hibbing and Theiss-Morse (1995, 2002) can attest, members are on

shaky ground when they have to start explaining congressional procedures to their constituents.

Final passage votes, on the other hand, are less polarized along party lines and are more strongly influenced by constituency views than are procedural votes. While members may largely escape constituent scrutiny on procedural votes (Den Hartog and Monroe, 2008), or even amendments, they can be called on by their constituents to explain their final passage votes. Although members may fear the wrath of their party leaders, as famously pointed out by Mayhew (1974), they fear most the wrath of their constituents, and Kingdon (1973) shows how they suffer that wrath if they vote the wrong way too many times.

As a sign of the relative invisibility of procedural votes, in each congress we analyse (93rd–110th), the proportion of procedural votes classified as 'key votes' is lower than the corresponding proportion of final passage votes.[3] Although we do not analyse CQ's 'key votes' independently, they are a generally recognized as the most important votes of the session.[4] In most congresses, the proportion of procedural votes is less than half of what it is for final passage votes. Furthermore, procedural votes have become increasingly less likely to be classified as 'key votes' over this time period. Overall, procedural votes have accounted for only 10.3 percent of CQ's key vote from the 93rd to the 110th Congress, while half of these key votes have been on final passage. While this classification is admittedly rough, the evidence suggests that not only are procedural votes generally less visible than final passage votes, but also that their visibility is declining. Because procedural votes are so invisible, party leaders can exercise more control over their members. As they become more invisible and as party leaders accrue more power, procedural votes have simultaneously become more consequential and more party driven.

This dynamic among party leaders, procedural votes and members' constituencies is critical for understanding the underlying explanation for party polarization. Changes that have taken place in members' constituencies should have a similar effect on both procedural and final passage voting. Because the constituents have ideologically sorted (Fiorina, 2004), geographically sorted (Bishop, 2008) and/or been redistricted (Carson et al., 2007), members face less cross-pressure between their constituents or their parties than they once did (Fleisher and Bond, 2003). Increasingly, those two pressures go hand in hand. As procedural votes have become increasingly invisible, party leaders are better able to rally their rank and file in setting up the procedures that will govern debate on the House floor. As such, members face additional pressure to toe the party line on procedures than they do on final passage votes. In order to assess this argument, though, the set of roll-call votes must be broken down and analysed independently – a task that we take up in the following two sections.

Estimating legislator ideology

The assumption – usually implicit – in most statistical analyses of congressional voting is that each legislator has an ideological position, often called an ideal point, that dictates her voting behaviour, subject to some random error, across all vote types. In other words, whether she is voting on the final passage of a bill or on a narrow procedural motion, a legislator will cast her vote with the goal of moving policy as close as possible to her own preferred outcome. On final passage votes, for example, this choice will generally be clear – the member will vote for the new policy if it is closer to her ideal point than the status quo is and will vote against the bill otherwise.

On procedural voting, how members make such choices is not immediately clear. Most procedural votes do not, by themselves, represent any immediate change in policy. Instead, they set the parameters within which policy changes can be considered. It is possible that legislators vote on procedural matters with the same goal of ultimately moving policy toward their most preferred outcomes. According to the concept of *strategic equivalents* (McKelvey and Niemi, 1978), legislators will treat procedural votes as *de facto* policy votes on the ultimate policy outcomes that would be produced under various procedural arrangements.[5] Formally, if legislators vote strategically and with complete knowledge of both the voting agenda and the preferences of others, earlier votes will act as proxies for the policies that would ultimately result from these decisions.[6]

For example, legislators voting on a closed versus open rule for the consideration of a given bill will look ahead and consider what policies would ultimately result from each of these procedural arrangements. They would then vote for the procedural rule that would yield the outcome closest to their own ideal point in the end. Therefore, in members' minds, the choice of a procedure is in fact a *strategic equivalent* of some eventual policy decision that would be reached if the rule were adopted. The concept of strategic equivalents implies that if members of Congress cast their votes on procedural and final passage votes with the same policy goals in mind, we should estimate the same ideological positions for members in their procedural voting as in their final passage voting. This is because procedural votes should be *de facto* votes on policy outcomes.

If legislators' voting on procedural matters is directed solely at moving policies as close as possible to their ideal points, then voting on procedural matters should be based on their implications for eventual policy outcomes.[7] The strategic equivalence of the two should imply that members' votes on procedural matters are dictated by the same ideal points that determine their votes on substantive measures. If, as we argue, members are responding to different audiences in casting votes at different stages in the legislative process, we should see

a difference in their underlying systematic voting behaviour on procedures and final passage.

To test this hypothesis, we first divide each congress's roll-call dataset for the U.S. House of Representatives into one of three categories – procedural, amendment or final passage. We then estimate the members' ideologies based on their votes within each category. If procedural votes were only a mask for final passage votes, we would expect these summarized voting scores to be the same across vote type, aside from some random error. If members view these two stages differently, we should see different estimates for legislator ideology on procedural and final passage votes. Although we also estimate members' ideologies for voting on amendments, we do not discuss the results in the main body of the article because we think doing so would make the findings unnecessarily complex. Our analysis suggests that members treat amendment votes as something in between procedural and final passage votes.

Our dataset consists of all recorded votes in the House of Representatives from the 93rd to the 110th Congresses (1973–2008). We begin with the 93rd Congress (1973–1974) for two reasons. First, and most importantly for our purposes, for the first time the House began voting electronically, which fundamentally altered voting on the floor (Bach and Smith, 1988). Instead of roll-call votes taking up to an hour to complete, members could now go on record in as little as five minutes. Not surprisingly, electronic voting precipitated a dramatic increase in the number of roll-call votes – particularly on amendments and procedural measures (Bach and Smith, 1988). Second, the early 1970s also marked a low point in congressional party polarization in the modern era (Collie and Mason, 2000; Fiorina, 1999; Fleisher and Bond, 2000, 2003; Jacobson, 2000; Roberts and Smith, 2003; Stonecash et al., 2003). By examining congresses from this period until the highly polarized 110th Congress, we can evaluate procedural and final passage voting under comparable voting procedures throughout the polarizing era in the House.

Many different techniques can produce estimates of legislator ideology from roll-call votes. The most basic, often used by interest groups to produce legislator 'ratings', relies on selecting a number of relevant roll-calls and computing the proportion of votes on which each legislator voted in accordance with the group's preferred positions. Scores produced by Americans for Democratic Action, the American Conservative Union and others have been used by political scientists as measures of ideology, sometimes after applying various procedures designed to adjust or correct these scores (e.g. Groseclose et al., 1999). Other researchers have proposed more elaborate statistical models that produce ideology measures based on the full set of roll-call votes in a given congress (e.g. Clinton et al., 2004; Heckman and Snyder, 1997; Poole and Rosenthal, 1997). These approaches vary in their assumptions and estimation techniques, but generally produce similar results (see Clinton et al. 2004).

We code each recorded vote in each congress as an amendment, procedural or final passage vote using Rhode's (2008) dataset.[8] We estimate legislator ideology separately on each of these three types of votes as well as for the set of all votes together, using the W-NOMINATE technique developed by Poole and Rosenthal (1997) to estimate these ideologies.[9] While DW-NOMINATE scores are comparable across congresses, we have opted to use W-NOMINATE scores instead. The problem with DW-NOMINATE algorithm is that it relies on the strong assumption that members' ideological positions change only linearly over time. Our results, which are presented later, show that voting on procedures and final passage does vary across time and does not necessarily vary in a linear fashion. Because the W-NOMINATE procedure makes no assumptions about the nature of changes in legislator ideology, it provides a more flexible and less restrictive model.

The usual trade-off with using W-NOMINATE, rather than DW-NOMINATE, scores is that these measures cannot be compared across time. In our case, however, we employ measures that can be compared directly over time even when the ideology estimates on which they are based are not directly comparable. In particular, we use scale-invariant measures throughout our article's analyses. These measures have the property that applying any linear transformation (stretches, shifts or reflections) to members' procedural or final passage ideological scales will not alter the value of the measure, which ensures that the conclusions will not be dependent on unknown differences between ideal point scales across time periods or between procedural and final passage votes. For example, if we have separate sets of scores for members' ideologies times t and $t+1$ which are not directly comparable (i.e. the scale in time $t+1$ could be shifted, stretched or even flipped relative to that in time t), the measures used here will be unaffected. These measures will in fact be identical to those that would be obtained if we were somehow able to adjust the scores for the two time periods in order to place them on the same scale. Using these measures together with W-NOMINATE scores allows us to avoid the rigid assumptions of linear time trends in ideology that necessarily accompany DW-NOMINATE scores (and hence to avoid the biases that these assumptions would induce if they were not correct) while retaining the ability to make comparisons over time. To put it differently, the DW-NOMINATE model is actually a specific case of the W-NOMINATE model, but one that adds additional assumptions, and quite specific and strong ones at that. We avoid adding these (potentially false) assumptions by using W-NOMINATE but employ measures that still allow us to make inter-temporal comparisons.[10]
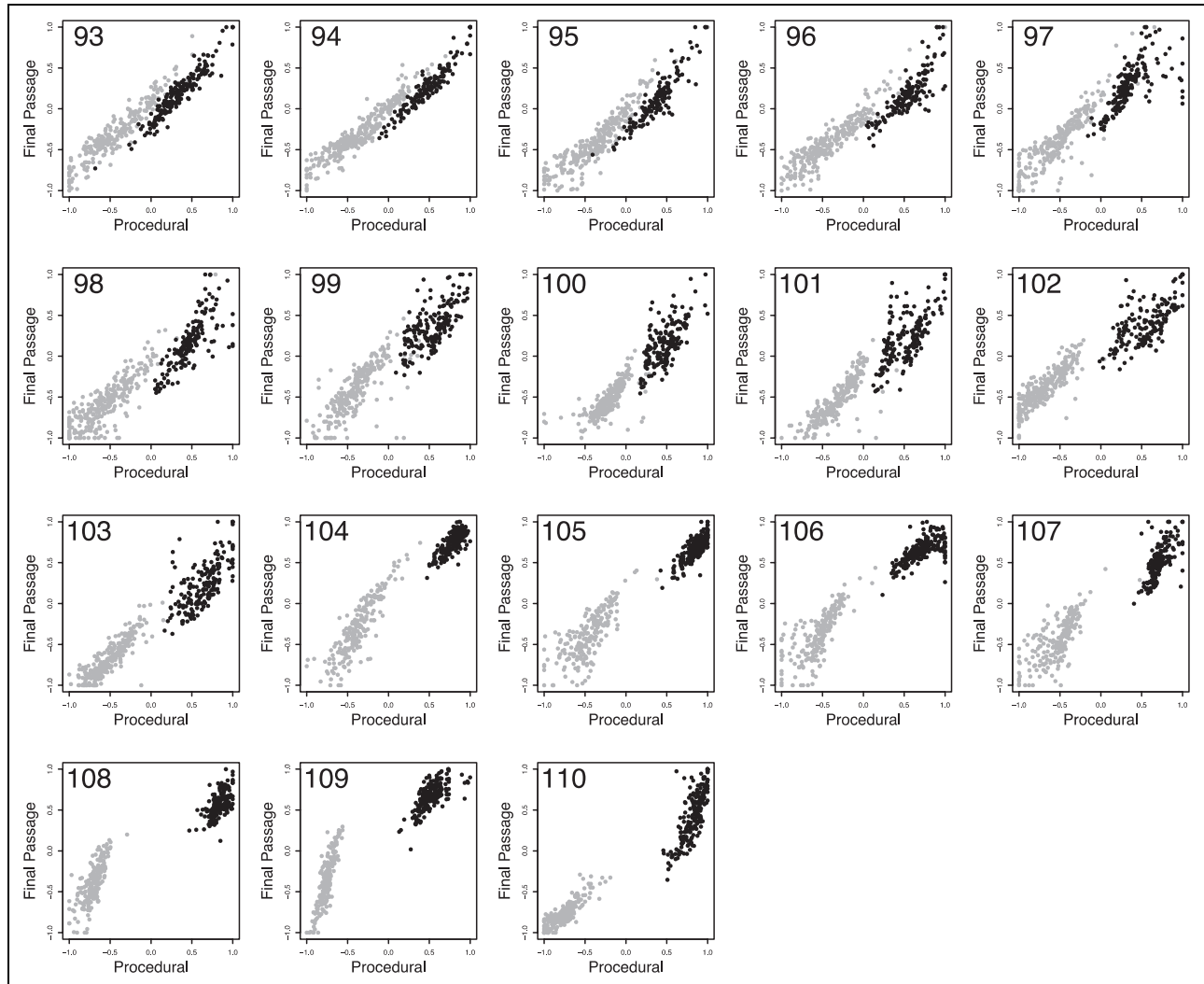
Figure 1. Scatterplots of procedural and final passage ideologies by congress, 93rd to 110th Congress (1973–2008).
Note. Estimated procedural and final passage ideology are plotted along the horizontal and vertical axes, respectively, for each congress from the 93rd to the 110th. Gray dots indicate Democratic legislators while black dots indicate Republicans. Estimates are produced using the W-NOMINATE procedure.

The difference between procedural and final passage voting

We display our congress-by-congress estimates for members' procedural and final passage ideologies in Figure 1. Democrats are represented as grey dots and Republicans as black dots. In each congress, strong positive associations exist between members' ideology on procedural and final passage votes. Members who exhibit liberal tendencies on procedural matters also tend to cast liberal votes on final passage. The same is true for conservative members.

Over time, members' voting behaviour on procedural and final passage votes changes. The consistency of voting on procedures and final passage begins to breakdown. While comparisons of procedural and final passage ideology are of interest, our focus is not on these raw scores

themselves, but rather on the influences of politics, parties and constituencies on these ideologies. We argue that important differences exist between the strength of these influences on the two types of vote arising primarily from the difference in the resources that party leaders have at their disposal and the relative visibilities of different types of votes. As visibility increases, constituency pressure likewise increases, and as visibility recedes the eyes of party leaders are increasingly felt (Den Hartog and Monroe, 2008). As such, we would expect that the member's partisanship is relatively more important on procedural votes and that the members' constituencies are relatively more important on final passage votes. Because of the accumulated power of party leaders since the 1970s and 1990s reforms, we would expect this distinction to get
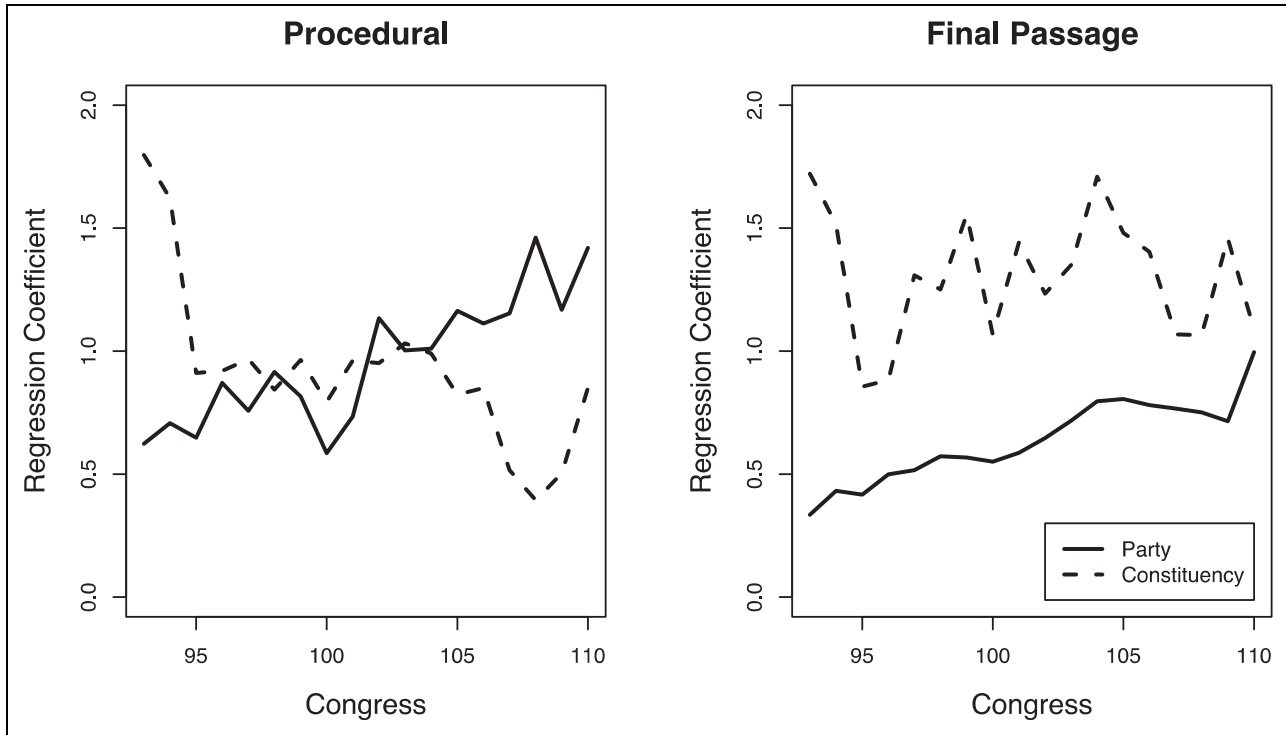
Figure 2. The effects of party and constituency on procedural and final passage ideologies, 93rd to 110th Congresses (1973–2008).
Note. Estimated coefficients for party and constituency are plotted for procedural and final passage votes in each congress. Solid lines indicate party coefficients and dashed lines indicate constituency coefficients.

increasingly crisp over time. In other words, the pressure to please constituents has remained constant across time, but the pressure to please party leadership has grown as party leaders have accrued more power and taken more responsibility for shepherding bills through the legislative process (Sinclair, 2006).

To examine the effects of party and constituency on congressional voting, we run a series of linear regressions predicting legislators' ideologies with their party affiliation (coded 1 for Republicans and 0 for Democrats) and the ideology of their constituencies (measured using the Republican share of the two-party vote in the previous presidential election.[11] In Figure 2, we plot the estimated coefficients on party and constituency for each congress separately for procedural and final passage ideology regressions.[12] It should be noted that the scale of ideology estimates is not strictly comparable across congresses or between procedural and final passage votes. Nonetheless, we can examine the basic trends in the coefficient estimates over time, keeping in mind that these comparisons are relatively rough.

On procedural matters, the party coefficient has increased over time, which suggests that House members' party affiliations have become more important in determining their voting behaviour on procedural measures. At the same time, the effect of constituency has markedly declined on procedural voting. On final passage votes, we

again observe a clear upward trend in party's effect on legislator ideology. Variation over time in the influence of constituency on final passage votes, by contrast, is more ambiguous.

To explore the same results from a different perspective, we compare the *relative* importance of party and constituency by examining the relative sizes of the coefficients for party and constituency. To do so, we compute coefficient ratios that measure the relative effects of party and constituency on legislators' procedural and final passage ideologies in each congress. Formally, for each congress t, we have

$$R_t^{proc} = \beta_{1,t}^{proc} / (\beta_{1,t}^{proc} + \beta_{2,t}^{proc})$$
$$R_t^{final} = \beta_{1,t}^{final} / (\beta_{1,t}^{final} + \beta_{2,t}^{final})$$

where $\beta_{1,t}$ indicates the coefficient on party and $\beta_{2,t}$ the coefficient on constituency estimated in time t for either procedural or final passage votes. These ratios describe the relative importance of party and constituency in determining legislators' ideology on procedural and final passage matters. While in theory, these ratios could vary between −1 and 1, they should fall somewhere between 0 and 1 assuming that the effects of both constituency and party are positive (which they are for every congress analysed here). Ratios above 0.5 indicate that the coefficient on party is larger than that on constituency, while ratios smaller than
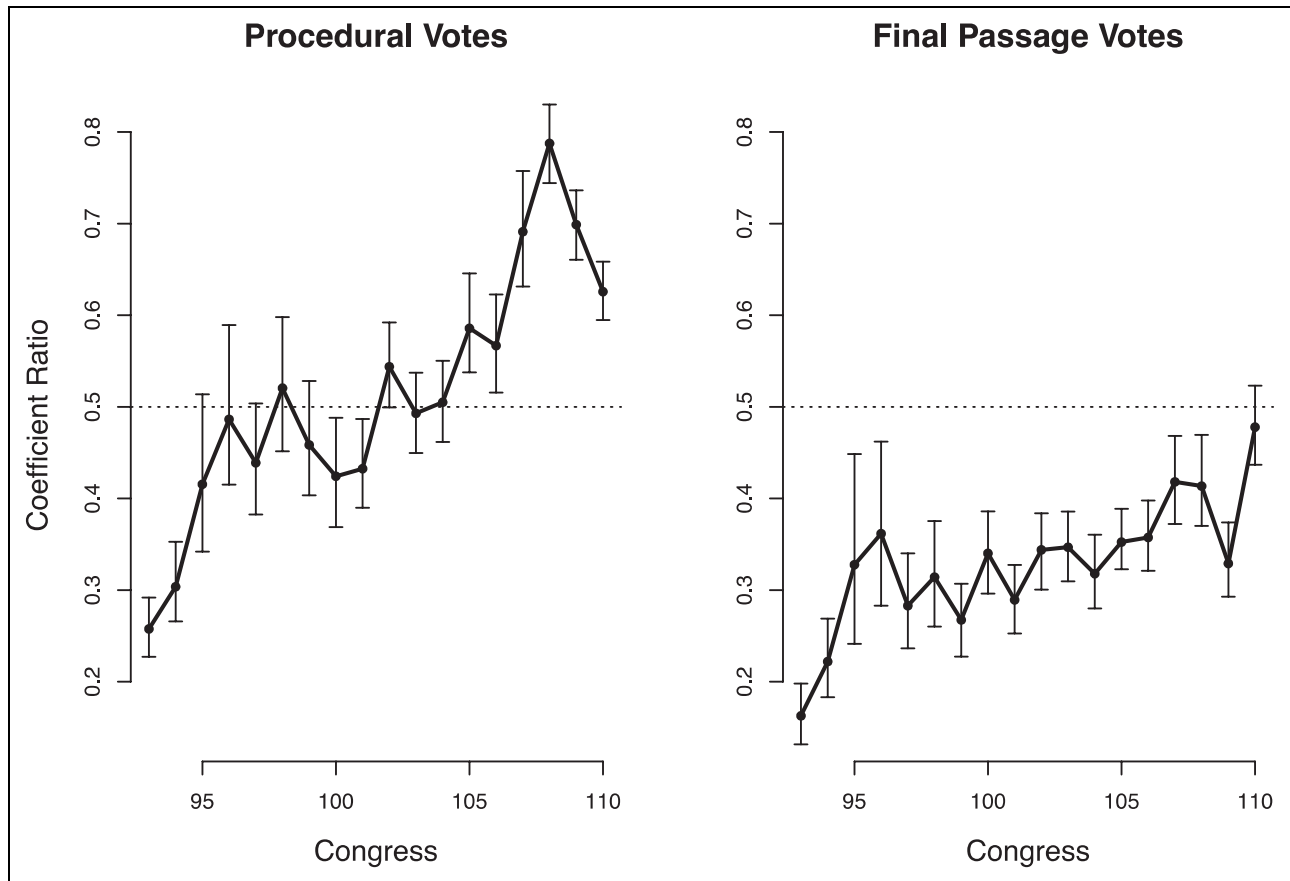
Figure 3. Ratio of party and constituency coefficients on procedural and final passage votes, 93rd to 110th Congresses (1973–2008).
Note. Estimated coefficient ratios for procedural votes (R_t^{proc}) and final passage votes (R_t^{final}) are plotted for each congress along with bootstrapped 95 percent confidence intervals indicated by vertical bars.

0.5 indicate that constituency coefficient is larger than that on party. Furthermore, R_t^{proc} and R_t^{final} can be interpreted loosely as the relative weight of party on members' procedural and final passage voting behaviour, respectively. We can then interpret, $1-R_t^{proc}$ and $1-R_t^{final}$ as the relative weights on constituency for each of these vote types.

Another desirable property of these ratios is that they are not affected by changes in the scale of the ideology measures. Applying any linear transformation to either ideology scale (stretching, shifting or flipping the scale in any way) will not change these coefficient ratios.[13] This property is extremely helpful given that the ideology estimates for procedural and final passage votes are fundamentally not comparable. Focusing on these ratios provides a method for directly comparing the relative importance of party and constituency in determining legislators' final passage and procedural ideologies over time. In this way, we gain the benefits of over-time comparability without imposing the relatively strong restrictions on ideal point movement that would be implied by the use of DW-NOMINATE scores.

Figure 3 displays these estimated coefficient ratios along with 95 percent confidence intervals for procedural and final passage in each congress.[14] The left pane plots the estimated coefficient ratios for legislators' procedural ideology. We see that in earlier congresses R_t^{proc} is clearly below 0.5, indicating that the influence of constituency is greater than that of party. Over time, though, we observe a strong increasing trend. Between the 95th and 104th Congresses (1978–2005), R_t^{proc} remains relatively close to 0.5, implying that the coefficients on party and constituency in predicting legislators' procedural votes are of roughly equal size. In each Congress from the 105th to the 110th (1997–2008), the ratio is estimated to be above 0.5 and we can reject the null hypothesis that the coefficients on party and constituency are of equal size. The estimated ratios R_t^{proc} during this period reach a maximum of 0.79 in the 108th Congress and finish at 0.63 in the 110th, suggesting that in the contemporary Congress the effect of party on legislators' procedural voting has grown significantly greater across time than that of constituency.

The right pane of Figure 3 also shows an upward trend in the influence of party relative to constituency on final passage votes, with R_t^{final} increasing over time. In earlier congresses the coefficient on constituency is more than twice as large as that on party and we can clearly reject the null

hypothesis that these two coefficients are of equal size ($R_t^{final} = .5$). Over time, however, R_t^{final} approaches 0.5, indicating that the effects of party and constituency on final passage voting are of roughly equal size. In fact, during the 110th Congress (2007–2008), when the coefficient ratio has increased to 0.48, we can no longer reject the null hypothesis that the coefficients are identical. Thus, while in earlier congresses the effect of constituency was clearly larger than that of party, we now observe relatively similar effects for these two factors on final passage votes. Although party has become a more powerful predictor of final passage votes, its relative importance has increased much more on procedural voting than on final passage voting.

It should be noted that while the variables we use to measure legislators' party affiliations and constituency ideology both theoretically vary between 0 and 1, their distributions are obviously quite different. Party, which can only take values of 0 or 1, has a standard deviation of 0.5, while constituency, which ranges from 0.04 to 0.97 in our sample but has most of its values concentrated between 0.3 and 0.7, has a standard deviation of 0.14. Because the variables have the same theoretical range, coefficient ratios were computed above for the actual (untransformed) variables. The ratios could also be calculated for standardized versions of these variables, forcing them to have the same standard deviation in any given session of Congress. These calculations, which are presented in the On-line Appendix, show similar trends to those presented here, but with a higher effect for party relative to that for constituency on both procedural and final passage votes. The ratios for both start relatively close to 0.5 and trend upwards over time. Estimates of R_t^{proc} reach their largest value of 0.93 in the 108th Congress and finish at 0.85 in the 110th, while R_t^{final} reaches a maximum of 0.76 in the 110th Congress.

Republican vote-share is not the only measure that could be used to tap congressional district ideology. In fact, several recent works have proposed alternative approaches. Although these measures are typically highly correlated with presidential vote-shares, we replicate the analyses of Figures 2 and 3 using the Bayesian district ideology estimates of Kernell (2009).[15] These results, presented in the Online Appendix, are not ideally suited for our purposes because they are only available for each decade, rather than for each two-year congressional cycle, but are used as a robustness check on our basic findings. Overall, the results are generally similar to those presented here.

These results provide a powerful explanation for members' voting behaviour on procedural and final passage voting. Members clearly respond to both party and constituency in choosing their ideological positions. Over time, though, the effects of party have dramatically increased both in absolute terms and, perhaps more importantly, relative to the effects of constituency views. The party to constituency coefficient ratios for both final passage and procedural votes clearly increase over time, but the steepness of the increase

for procedural votes is markedly larger than that for final passage, implying that legislators are much more likely on procedural than on final passage matters to vote with their party, even at the expense of their constituency. In the 1970s' congresses, the party and constituency coefficients were roughly similar across both procedural and final passage voting. It was during this time period that the strategic equivalency argument was being developed. Ample evidence exists validating its application to congressional voting. In the 21st-century congresses, the relative size of constituency and party effects is no longer similar on procedural and final passage voting.

Implications for party polarization

The debate about party polarization in Congress is one of the liveliest in American politics research (see Mann and Ornstein, 2006; McCarty et al., 2006; Sinclair, 2006; Theriault, 2008). In this section, we discuss how changes in members' voting patterns on procedural and final passage matters have affected the distribution of ideal points within and between the two political parties. While these changes have resulted in increasing party polarization on all types of votes, the increases in procedural polarization have been particularly stark and indicate a fundamental shift in the nature of partisan voting on procedures.

The scatterplots in Figure 1 offer another depiction of the ubiquitous evidence of this growing polarization. While these scores are not directly comparable across congresses, they are consistent with the party polarization story: the similarities within and the differences between the two major parties have generally been increasing since the 1970s. Scholars conclude from similar analyses that the parties are substantively farther apart than they have been in a long time. Journalist Ronald Brownstein (2007: 11) gives, perhaps, the most eloquent summary of the conventional wisdom: 'The central obstacle to more effective action against our most pressing problems is an unrelenting polarization of American politics that has divided Washington and the country into hostile, even irreconcilable camps.' While this assessment may be true, we think that making it requires an examination of polarization not just at the aggregate level, but also across different types of votes.

To formally analyse partisan polarization across procedural and final passage voting, we construct a measure of polarization that depends on both the average difference between the two parties as well as the level of homogeneity within the parties. Polarization is highest when there are large ideological differences *between* the parties and very small differences *within* each party. Conversely, polarization will be low when the differences *between* the two parties tend to be small or the differences *within* each party are large. At each time *t*, we calculate our polarization index as:
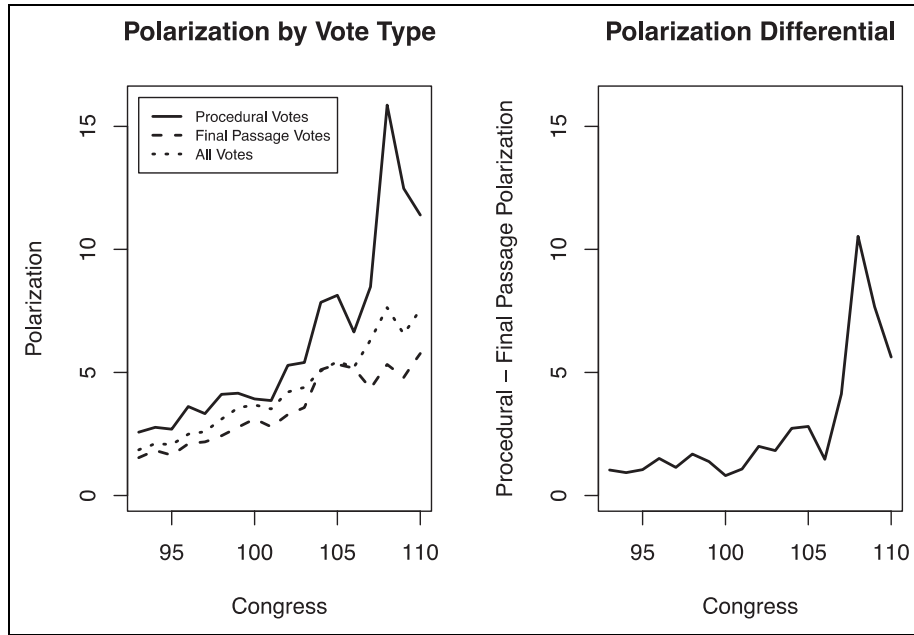
Figure 4. Polarization on all, procedural and final passage votes, 93rd to 110th Congresses (1973–2008).
Note. The left pane plots polarization levels (P_t) for each congress for procedural votes (solid line), final passage votes (dashed line) and all votes (dotted line) over time. The right pane plots the difference between procedural and final passage polarization levels over time.

$$p_t^{proc} = (\mu_{R,t}^{proc} - \mu_{D,t}^{proc})/\sqrt{\sigma_{R,t}^{proc} + \sigma_{D,t}^{proc}}$$

$$p_t^{final} = (\mu_{R,t}^{final} - \mu_{D,t}^{final})/\sqrt{\sigma_{R,t}^{final} + \sigma_{D,t}^{final}}$$

where for congress t, μ denotes a party's average ideology, either procedural or final passage, at a given time and σ gives the standard deviation of the distribution of ideal points within each party for a given vote type. The polarization measure depends on two factors – the average ideological difference between members of the two major parties, which is in the numerator, and the ideological spread within each of the two parties, which is found in the denominator.

This measure has the attractive property that it is invariant to changes in the scale of the ideology measures.[16] Applying any linear transformation to the ideology estimates will not change either of the polarization ratios, which is beneficial since W-NOMINATE scores are not directly comparable across congresses and, more importantly, because the procedural and final passage ideological scales are fundamentally incomparable. While the W-NOMINATE estimates are not comparable across congresses, our polarization measure is directly comparable across congresses as well as across vote types.

Because we are interested in analysing how polarization varies on different types of roll-call votes, the left pane of Figure 4 plots the estimated polarization measure in each congress from the 93rf through the 110th for procedural votes, final passage votes and all votes. While the polarization levels are increasing for all votes as well as on both procedural and final passage votes, the absolute polarization levels and the rate of that polarization have been higher on procedural votes than on final passage votes in each congress.

The right pane of Figure 4 plots the difference in the calculated polarization indices p_t for procedural and final passage votes. We clearly see an upward trend, with this difference increasing over time, particularly since the 106th Congress (1999–2000). While much of this increase comes shortly after the 106th Congress, we also see a less prominent increase occurring from the 93rd to 105th Congresses. This suggests that while polarization levels have clearly been increasing on both procedural and final passage votes, this increase has been particularly strong on procedural votes.

This analysis suggests that the conventional wisdom may mischaracterize the party polarization in Congress. While the parties have been polarizing across all types of votes, the rate of polarization on procedural matters has been drastic, particularly in recent congresses. Procedural votes have become *de facto* restatements of partisan identification. Polarization on final passage, while still increasing, is much smaller.

Conclusion

Great strides were made when Poole and Rosenthal (1985) first introduced their NOMINATE algorithm to estimate member ideology by simultaneously scaling all members' roll-call votes in each congress. Nothing that we advocate

in this article would have us abandon their approach. The results presented here, however, demonstrate that scholars should be mindful that roll-call voting is a combination of different forces acting on members of Congress and that the strength of these forces exhibits clear variation across vote types. In particular, party pressure exerts a significantly stronger influence on procedural voting than on final passage, meaning that estimates including procedural votes will tend to pull members' ideologies toward the poles of the scale.

In this article, we advocate for a broader interpretation of the legislative process and a broader reading of roll-call decisions in analysing member ideology. Over time, it seems with increasing frequency that procedural votes are merely *de facto* declarations of partisan identification quite unrelated to the underlying substance of the legislation. In the early 1970s, members voted with similar ideologies, and a similar mix of constituency and ideology influences, on both procedural and final passage votes. Today, it seems as if members of Congress vote with two different faces: one face for the less visible party-pressured procedural votes and the other for the highly visible constituency-pressured final passage votes.

We are not the first scholars to notice a distinction between procedural and final passage voting. Going beyond the existing literature, though, we show how distinct the differences are and how they have grown over time. In the 1970s, the distinction was miniscule. By the 2000s, however, the distinction had grown considerable. While members, even today, may not cast votes with two completely different faces, it is becoming increasingly less accurate to describe their decision on all votes as utilizing the same set of considerations. While party has become more important on all members' votes, the constituency is disappearing as a factor on procedural votes. Furthermore, we show the important consequences this distinction in member voting has on the current party polarization debate in the literature.

The results presented here clearly demonstrate that the primary forces influencing the voting behaviour of members of Congress show important differences across both vote type and time. In past congresses, the effects of constituency were significantly larger than those of party on both procedural and final passage voting. Over time, however, procedural votes have become increasingly dominated by party influence. While the effects of party have also increased on final passage votes, these two forces appear to be given roughly equal weight by legislators in recent congresses. It has also been shown that while party polarization has increased on all vote types, this increase has been particularly sharp on procedural matters. As a whole, these results demonstrate that, over time, the voting behaviour of members of Congress has become increasingly differentiated, with procedural votes being targeted primarily at a partisan constituency while final passage votes still show a substantial constituency influence. These two faces of congressional voting have evolved over time and have become particularly distinct.

Notes

1. The Policy Agendas Project breaks votes into 19 major categories and more than 200 minor categories (see Baumgartner and Jones, 2009). More than a generation ago, congressional scholars utilized votes on different policies to make important findings about representation and accountability in the American democratic system (see Clausen, 1973; Kingdon, 1973; Miller and Stokes, 1963; Poole and Rosenthal, 1991; see Lee (2009) for a more modern approach to using policy content).

2. An alternative view of the same observable distinction between procedural and final passage voting might argue that the difference does not result from party pressure, but rather from the members own preferences. It could be that members express their truest personal preferences on procedural votes when their constituents are not watching and only moderate their otherwise extreme ideological preferences on more visible final passage votes. In this article, we do not attempt to adjudicate these different plausible explanations. We merely argue, consistent with either interpretation, that members vote differently on procedures than they do on final passage votes.

3. At the end of every congressional session, Congressional Quarterly picks votes that it deems 'key' based on three criteria: 'a matter of major controversy, a matter of presidential or political power, and a matter of potentially great impact on the nation and lives of Americans' (*CQ 2006 Almanac Plus*, p. C-3).

4. The number of 'key votes' identified in a given congress is generally not large enough to permit separate ideal point estimations by vote type.

5. See also Farquharson (1969), Denzau et al. (1985), Riker (1986), Clinton and Mierowitz (2001), Krehbiel and Mierowitz (2002), and Groseclose and Milyo (2010).

6. Note that the complete knowledge assumption used here does not imply that ordinary observers (such as political scientists or journalists) can predict legislators' votes with certainty (or, perhaps equivalently, that statistical models of voting could be estimated without error), but rather that legislators have enough information about their colleagues to predict the outcome of various votes. While this is a strong assumption, it

seems reasonable to hold, at least approximately, in most cases.

7. Note that this will be true whether members' ideal points are determined solely by their own views (or those of their constituency) or whether members form ideal points as some combination of their own views, those of their constituents, their party leadership or other factors.

8. Using Rohde's VOTE variable, we coded 24, 52–64 and 66–99 as procedural; 21–23 and 25–29 as amendment and 1–19, 30–34 and 65 as final passage.

9. Throughout this article, we refer to member's 'ideology' on procedural, amendment and final passage votes. In doing so, we do not mean to invoke a high definition of ideology (see Converse, 1964). Rather, we use the term to mean the position suggested by a member's roll-call voting behaviour on a given set of votes.

10. Another benefit of DW-NOMINATE is that it can provide more precise estimates of legislator ideology in any given congress by learning about this ideological position based not only on votes in that specific session, but also votes before and after. This benefit, however, is typically quite small because of the large number of votes in each congressional session.

11. Party is coded based on party caucus membership. Therefore, all independents and third party members are coded as Democrats or Republicans. Republican share of the two-party presidential vote is based on the data reported in *The Almanac of American Politics* and *Politics in America* for the proportion of two-party vote that the Republican presidential candidate received in the member's district. In congresses where the congressional district lines no longer coincide with the previous presidential elections (such as the 2002 congressional elections, which were run in district lines composed in 2001), we use the updated presidential vote data based on the new district lines as reported by *The Almanac of American Politics* and *Politics in America*.

12. The correlation between party and Republican share of the two-party presidential vote is 0.45 for our full dataset and ranges between 0.25 and 0.71 in individual congresses.

13. To see this, note that any shift in the scale on which ideology is measured (adding a given constant to the scale) would not change the estimated coefficients on constituency or party, but would change the estimated intercept. Therefore, the coefficient ratio would not be changed. Furthermore, any stretching of the ideology scale by multiplying it by some arbitrary constant c would cause the estimated coefficients on party and constituency each to be multiplied by $1/c$. This would cancel out in computing the ratio (both the numerator and the denominator would be multiplied by the same value), producing the same coefficient ratio as calculated by the untransformed ideology scale.

14. Confidence intervals are estimated using the bootstrap procedure (Efron, 1979).

15. See also Ardoin and Garand (2003). Tausanovich and Warshaw (forthcoming) also construct district-level ideology estimates, but only for the 108th–111th Congresses. Levendusky et al. (2008) conduct a similar exercise for district-level partisanship.

16. Again, consider a scale for ideology on which legislator's ideal points are estimated. Adding any constant to this scale will simply shift both the Democratic and Republican party means by this amount. Therefore, their difference, found in the numerator of the polarization measures, will remain unchanged. Because adding a constant to all ideology values will not change the standard deviations of ideology within each party, the polarization measure will be unchanged. Stretching the scale, by multiplying it by some arbitrary constant c, would have the effect of multiplying both of the party means by c, causing their difference in the numerator of the polarization measure also to be multiplied by c. Each of the standard party standard deviations would also be multiplied by c, causing the square root of their product in the denominator of the polarization measure to be multiplied by c. Therefore, the value of c in the numerator and denominator would cancel out, resulting in the polarization measure being unchanged.

Supplemental material

The online appendices are available at http://ppq.sagepub.com/supplemental.

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