When Do Supermajority Rules Moderate?

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August 18, 2023

Abstract

Do supermajority voting requirements lead to more moderate legislation? Existing models imply they do; we present evidence rejecting the implicit assumption behind this. To account for this anomaly, we analyze a simple model showing two counteracting effects of supermajority rules, determined by within-party and between-party polarization respectively. The model provides a transparent estimation procedure given data on ideal points, which we apply to the filibuster in the US Senate. The filibuster generally moderates bills because between-party polarization – which makes supermajority requirements moderating – has been strong. But this moderating effect has faded over time due to a rise in extremist senators.

JEL Classification Numbers: D70, D71, D72, D78

1 Introduction

Political polarization is rising around the world. New parties and radical wings of traditional parties are rising to power and upending political consensus. Many seek to counterbalance extremism in policymaking, for instance by reforming legislative voting rules. An example that has received considerable attention is the filibuster in the United States Senate. By allowing 40 of 100 senators to block a final vote on a bill, the filibuster has created a *de facto* 60% threshold to pass legislation. Supermajority requirements like these reduce legislative productivity and cause gridlock, but are believed to moderate the legislation that does pass by forcing cross-party compromises.

But supermajority requirements not only require compromises with the opposite party. To reach a higher vote count, the majority party may also have to compromise with its own extremists who might otherwise have been excluded from the policymaking coalition. Thus, a supermajority requirement might backfire by empowering extremists and making legislation more extreme. The central question of this paper is whether and when supermajority requirements lead to more rather than less extreme legislation.

In a typical model used to analyze supermajority requirements (e.g., Krehbiel (1998)), these requirements *cannot* make new legislation more extreme. "The standard model" assumes that every legislator will vote for any bill that moves policy closer to their ideal point than the status quo is. This implies that majority party extremists will support any bill which moves policy in the direction of their party. Thus, a supermajority requirement must necessarily moderate legislation because all the additional votes required must come from moderates or the opposite party. But politics is filled with stories about extreme legislators opposing bills that do not go "far enough," either because compromises will undermine support for comprehensive overhaul or will be out of step with the legislators' base. We document empirically that extremist legislators regularly vote against their party's bills, rejecting the key assumption behind standard intuition on supermajority rules.

We then analyze a simple model in which legislators might not vote for a bill that is too far from their ideal point, even if it improves up the status quo. To win additional votes from more distant legislators, a bill's supporting coalition may either make substantive compromises on the content of the bill or can offer "transfers" (particularist policies, "pork," or future log rolls). Our deviation from the standard model is small, but it makes it *possible* for supermajority rules to either moderate legislation or make it more extreme. It also yields a straightforward empirical implementation given estimates of legislators' ideal points. We estimate the model using NOMINATE scores to measure senators' ideology and apply it to

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study the filibuster.[1]

We find that the filibuster generally has moderating effects, but this is conditional in two important ways. First, it depends on the seat share, and when the majority party holds a large number of seats, the filibuster can lead to more extreme legislation. Second, the effects depend on which *type* of polarization one aims to combat. "Between-party polarization" – the parties moving further apart – increases the moderating value of the filibuster. However, "within-party polarization" – extremists becoming more common within parties – can have the opposite effect: It can reduce the moderating value of the filibuster and even cause the filibuster to make legislation more extreme. We provide novel evidence that both parties have seen an increase in extremist senators in recent years. This growth is more recent and dramatic than the growth in the distance between the parties, and we show that this has caused the filibuster's moderating value to disappear in recent years, at least for large majorities.

While our evidence on US Senate extremists is new, a similar trend is observed globally. Pildes (2021) calls this "political fragmentation," reviews from across Western democracies, and illustrates how this induces government disfunction. We suspect this is what many observers have in mind when they discuss "political polarization." However, a key message of our paper is that the institutional remedies for this type of "polarization" are sometimes opposite the institutional remedies for "polarization" between major parties.

Section 2 reviews related research. Section 3 summarizes evidence for extremist defections from their party. Section 4 presents our model and Section 5 our estimation strategy. Section 6 presents results. Section 7 concludes.

2 Related literature

Our results apply generally to supermajority rules, but we focus on the filibuster as an important example. Binder and Smith (1997) and Koger (2010) provide book-length treatments of its history and effects. Filibuster research includes both theory and empirics. The two most closely related papers are Peress (2009) and Ramey (2017), both of whom structurally estimate the effects of the filibuster given NOMINATE estimates of senators' preference. Both papers (and to our knowledge the entire theoretical literature) follow Krehbiel (1998) in assuming that senators will vote for any bill closer to their ideal point than

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[1]The filibuster's rules has changed over time (the number of votes required, the type of votes it applies to, etc.), as has its use (Binder, 2022; Wawro and Schickler, 2006). We do not use this variation to study its effects, though some do (e.g., Fu and Howell (2022)). We prefer our model-driven approach because our analysis shows that the effects depend on the distribution of ideal points and the majority party's seat share; a purely empirical approach could not study these forces.

the status quo is. This means that one end of the ideological spectrum must support the bill. Thus, the filibuster can only force compromise with minority party moderates, not majority party extremists, and *must* moderate legislation.

For this reason, the literature has not devoted attention to whether the filibuster moderates legislation (despite this argument's public prominence), focusing instead on how it reduces legislative productivity (Ramey, 2017), why senators choose to maintain it (Wawro and Schickler, 2010), or why it is used for some votes but not others (Judd and Rothenberg, 2021).[2]

A key element in our model is that decision makers might reject legislation that, compared to the status quo, moves policy closer to their ideal point. Empirically, this is the case, and several theoretical microfoundations suggest possible explanations. One is that the new policy will become the status quo in future bargaining (Buisseret and Bernhardt, 2017). Another is that voting for a policy may increase its legitimacy, making it more durable (Chen, Michaeli, and Spiro, 2020). Hence, a bad policy with less backing may be preferred over a less bad policy with more backing (Fischman, 2008, 2011). Another mechanism is that voting costs make agents abstain unless the policy improvement is large enough (Davis et al., 1970; Adams et al., 2006; Freixas and Zwicker, 2003; Afsar and Weibull, 2022). Finally, voters may not see the difference between two candidates who are too similar, thus voting randomly unless one is clearly preferred to the other (Kamada and Kojima, 2014). We do not take a stance on which mechanisms explain *why* legislators might reject legislation. Instead, we propose a reduced-form model where a senator needs sufficient side payments to vote for something that is far from her ideology. We thus deliberately assume that the status quo, if it exists, does not play a role for the legislator; she only considers whether the bill is sufficiently close to her ideal point.

3 Motivating evidence: Extremist defections

Our main concern with the standard model is that senators may not vote for a bill even if it moves policy closer to their ideal point. To study this, we focus on votes on non-unanimous bills in the Senate. We define the most extreme liberal and the most extreme conservative senators according to NOMINATE scores (see below) and calculate the fraction of votes

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[2]In a way, Peress (2009) is an exception, since he concludes that the filibuster may or may not moderate *policy*. But in Peress' model, the filibuster can only make policy more extreme by preventing the passage of a more moderate bill (thus preserving a less moderate status quo). The filibuster can never make a bill more extreme in order to pass. In our view, the heart of the public debate is about the tradeoff between reduced legislative productivity against increased moderation of the bills that pass. Peress avoids confronting this tradeoff by reducing moderation *through* reduced legislative productivity. We aim to investigate this (potential) tradeoff more directly.

where these two extremists both voted against the bill. The standard model predicts that this share should be zero. Instead, we find that these extremists vote together in roughly 10-15% of votes (trending modestly upwards over the last 20 years; see Appendix Figure A1).

Why might liberal and conservative extremists agree on rejecting a bill? An example is helpful. In 2010, the Senate passed the Dodd-Frank Act to overhaul financial regulation. The Republican Party opposed the bill and threatened to filibuster. Democrats held 58 seats and therefore, in principle, only needed two Republicans to overcome the filibuster. However, Russ Feingold (D-WI), the most liberal senator in office at the time, refused to back the bill, saying "My test for the financial regulatory reform bill is whether it will prevent another crisis. [This] fails that test and for that reason I will not vote to advance it [to a final vote]" (Sullivan, 2010). This is one instance where the most liberal senator defected from his party and voted alongside the most conservative.

Feingold's decision had actual policy consequences. To win over a third Republican and overcome the filibuster, Democrats agreed to drop the bill's tax on banks to fund enforcement. In the final bill, enforcement is funded through general revenue. Polarization scholar Nolan McCarty (2010) noted that "by refusing to support a bill that he considered too modest, [Feingold] ensured that the bill would be more conservative and favorable to banks."

Why would Feingold oppose the bill if it only made the policy more bank-friendly? One explanation is that legislators cannot deviate too far from their ideal point because of electoral pressures, like the risk of being challenged in a primary. For instance, since the explosive popularity of Representative Alexandria Ocasio-Cortez (D-NY) – first elected to the House in 2018 – progressive groups have noted that New York Senator Chuck Schumer has increased support for their agenda (Otterbein, 2021). Ocasio-Cortez's former chief of staff remarked "It's exciting to see how much action Schumer is currently taking. And I hope that progressives continue pressuring him, threatening a potential primary." A leading progressive organizer was similarly candid: "Schumer will have to explain every one of his decisions to one of the most progressive primary electorates in the country, and if voters think he's capitulating to Mitch McConnell... then he's going to be in some trouble" (Otterbein, 2021). These pressures make it difficult for senators to support bills far from their constituents' preferences, even if those bills are preferable to the status quo.

4   Model

This section presents a model of policy enactment. Legislators have a policy ideal point (sometimes called a bliss point), which could be based on their principles, reputation, con-

stituents, or interest group backers. Regardless of its source, politicians face pressure not to deviate from this point. In order to support policies that do, they demand "transfers." We are agnostic towards the exact interpretation of these transfers. They can be localized spending projects ("pork"), promises of future political influence, or particularist policies relevant for one senator's constituents but unrelated to the broader content of the bill.

For example, in 2021 the Senate passed the Innovation and Competition Act, a bipartisan technology bill focused on R&D investments and promoting domestic manufacturing. To earn progressive Hawaii Senator Brian Schatz's vote, Democrats also added a ban on the sale of shark fins. This has implications for Hawaii but not other states and is unrelated to the broader content or ideological position of the bill. This particularist policy is exactly the sort of transfer we have in mind to induce senators to compromise and vote for a bill that may be ideologically distant.

Our analysis focuses on the bill that minimizes the total transfer costs of passage. Shifts in national mood, priorities, or salience of different issues can lead to the passage of more or less liberal bills on certain issues during certain times, but over time, we expect policy to tend towards the cost-minimizing point. While a 60-vote threshold might not make it *impossible* to pass another bill, we expect its average policy effects to be well-summarized by whether it moves the cost-minimizing point to the left or the right.

4.1   Formalities

The voting body is a vector of legislators $i = 1, 2, \ldots, N$ ordered by their ideal point $s_i \in \mathbb{R}$ such that $i > j$ implies $s_i \geq s_j$. A bill is a tuple $(s, \mathbf{t})$ consisting of a policy $s \in \mathbb{R}$ and a vector of transfers $\mathbf{t} = (t_1, \ldots, t_N) \geq \mathbf{0}$. Each legislator votes for or against the bill, which is enacted upon receiving at least K votes in favor (where $K > N/2$). If the bill is enacted, legislator i earns linear utility from their received transfer t_i but quadratic disutility from the distance between their ideal point and the passed policy. If the bill fails to pass, the utility of each legislator is normalized to zero. Letting $v_i = \mathbb{1}(i \text{ votes in favor})$ and $V_{-i} = \sum_{j \neq i} v_j$, the payoffs of legislator i are hence given by

$$u_i(v_i; V_{-i}) = \begin{cases} t_i - (s - s_i)^2, & \text{if } v_i + V_{-i} \geq K \\ 0, & \text{otherwise.} \end{cases} \tag{1}$$

Voting decisions are determined by utility maximization. As tiebreaker, we assume that indifferent legislators vote in favor if and only if they consider themselves "adequately compensated", that is, if $t_i \geq (s - s_i)^2$. As a result, the voting rule of legislator i given a bill

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$(s, \mathbf{t})$ is simply

$$v_i^*(V_{-i}; s, t_i) = \begin{cases} 0, & \text{if } u_i(0; V_{-i}) > u_i(1; V_{-i}) \text{ or } [u_i(0; V_{-i}) = u_i(1; V_{-i}) \text{ and } t_i < (s - s_i)^2] \\ 1, & \text{otherwise} \end{cases}$$

$$= \begin{cases} 0, & \text{if } [V_{-i} = K - 1 \text{ and } t_i < (s - s_i)^2] \text{ or } [V_{-i} \neq K - 1 \text{ and } t_i < (s - s_i)^2] \\ 1, & \text{otherwise} \end{cases}$$

$$= \begin{cases} 0, & t_i < (s - s_i)^2 \\ 1, & t_i \geq (s - s_i)^2 \end{cases}$$

$$\equiv v_i^*(s, t_i). \tag{2}$$

Notably, this voting rule is independent of beliefs about how others will vote. It also implies that a bill $(s, \mathbf{t})$ will be enacted precisely if $t_i \geq (s - s_i)^2$ for at least K distinct values of i.

For any ideological position s, let $\mathbf{t}^*(s)$ denote the cost-minimizing transfer vector required to enact policy s:

$$\mathbf{t}^*(s) = \arg \min_{\mathbf{t}'} \sum_{i=1}^{N} t_i' \tag{3}$$

$$\text{s.t. } \sum_{i=1}^{N} v_i^*(s, t_i') \geq K.$$

Then a cost-minimizing bill, with slight abuse of notation denoted by s^*, is a (typically unique) choice of ideological content that minimizes total transfers required for passage:

$$s^* \in \arg \min_{s \in \mathbb{R}} \sum_{i=1}^{N} t_i^*(s). \tag{4}$$

4.2   Results

Two results are helpful for bringing the model to the data. The first shows that for a given policy position s, under transfer minimization, recipients are neighbors on the political spectrum.

Proposition 1 (Optimal coalition of supporters is a convex set) *For any $s \in \mathbb{R}$, let C^* be some integer range $[m, m + K - 1]$ that minimizes $\max\{|s - s_m|, |s - s_{m+K-1}|\}$. Then,*

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a cost-minimizing transfer scheme to enact s is given by

$$t_i^*(s) = \begin{cases} (s - s_i)^2, & i \in C^* \\ 0, & \textit{otherwise.} \end{cases} \tag{5}$$

Proof. Let $\mathbf{t}$ be some arbitrary transfer scheme enacting s, that is, $t_i \geq (s - s_i)^2$ for at least K distinct values of i. Define $C = \{i : t_i \geq (s - s_i)^2\}$. Then

$$\sum_{i=1}^N t_i - \sum_{i=1}^N t_i^*(s) \geq \sum_{i \in C \backslash C^*} (s - s_i)^2 - \sum_{i \in C^* \backslash C} (s - s_i)^2 \geq 0 \tag{6}$$

since $i \in C^* \backslash C$, $j \in C \backslash C^*$ implies $(s - s_i)^2 \leq (s - s_j)^2$ by construction of C^*. $\square$

Proposition 2 establishes that the ideological placement of the cost-minimizing bill will be the mean of its supporters' ideal points.

Proposition 2 (Cheapest policy is mean ideal point of supporters) *Let $C \subseteq \{1, \ldots, N\}$ be a coalition of n_C legislators. Then, the policy s_C that minimizes the total transfer cost of full support from C is the mean of their ideal points:*

$$s_C \triangleq \arg\min_s \sum_{i \in C} (s - s_i)^2 = \frac{\sum_{i \in C} s_i}{n_C} \tag{7}$$

Proof. The result follows directly from the first order condition of the cost function $T(s) = \sum_{i \in C} (s - s_i)^2$. $\square$

Combined, the two propositions imply that the cost-minimizing legislation can be found by searching over a relatively small set of candidate bills. A corollary of Proposition 2 is that as K approaches N, the cost-minimizing policy will approach the mean ideal point in the legislature. In this sense, very high supermajority requirements will always have a moderating impact on policy.

4.3 Stylized example

This model has multiple counteracting effects when it comes to how supermajority requirements impact policy outcomes. Below, we illustrate these effects by three stylized examples, all of which are shown in Figure 1.

Example 1: Between-party polarization. Suppose the legislature consists of two uniform parties of equal size. A parameter $d > 0$ describes the level of between-party polariza-

tion: legislators from the right party have their ideal point at d, while those from the left party have their ideal point at $-d$. The full distribution of ideal points is hence given by

$$s_i = \begin{cases} -d, & i \leq N/2 \\ d, & i > N/2 \end{cases} \tag{8}$$

for some even N. Let K denote the number of votes required for passage, and assume $K > N/2$ so that no party can pass legislation single-handedly. Then, a cost-minimizing bill s^* satifies

$$|s^*| = \frac{(N-K)d}{K}. \tag{9}$$

In this case, $|s^*|$ is strictly decreasing in K so supermajority requirements are unambiguously moderating.

Example 2: Within-party polarization. Suppose instead that the distribution of legislator ideal points is a three-point distribution given by:

$$s_i = \begin{cases} -1, & i \leq c \\ 0, & c < i \leq N - c \\ 1, & N - c < i \end{cases} \tag{10}$$

where $c \in (0, \frac{N}{3})$. Thus, c is one notion of political polarization, since a higher value of c indicates that more legislators are located at the extremes, well separated from the mass of centrists and the median legislator. Assume that the centrists do not have enough seats to pass the bill alone ($N - 2c < K$), but that they could pass the bill by allying with one of the two sets of extremists ($N - c > K$). In this case, a cost-minimizing bill satisfies

$$|s^*| = 1 - \frac{N - 2c}{K} > 0. \tag{11}$$

which is increasing in K. Hence, raising the threshold required for passage makes the cost-minimizing bill more extreme as it forces more compromises with extreme legislators.

Example 3: Majority party with extremists. Last, consider the case where the right party holds a majority of $N/2 + c$ seats, of which $N/2$ are party centrists located at $s_i = d > 0$ and c are extremists located at $s_i = 1$. The minority party is unanimous at $s_i = -1/2$. The

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legislator distribution is then given by

$$s_i = \begin{cases} -\frac{1}{2}, & i \leq N/2 - c \\ d, & N/2 - c < i \leq N - c \\ 1, & N - c < i. \end{cases} \tag{12}$$

In this case, the unique cost-minimizing policy if $K = N/2$ is $s^* = d$. The effects of raising K, however, are ambiguous. If $d > 1/4$, the majority party centrists are closer to the extremists than to the minority party, leading small increases in K to extremize policy. Beyond $N/2 + c$, however, additional increases in K are unambiguously moderating. Stated differently, the effect of supermajority requirements depends not only on the nature of polarization but also on the relative strength of the majority party.

Figure 1 illustrates our stylized examples. The dark blue bars indicate the coalition which would vote for the cost-minimizing bill capable of garnering 51 votes, and the light blue bars indicate the cost-minimizing additional nine votes needed to reach 60 votes. The dark blue line indicates the costs (i.e., total transfers) to pass a bill with any ideological position, with the corresponding vertical line denoting the cost-minimizing position of a bill receiving 51 votes. The dashed light blue line indicates the costs to pass a bill with 60 votes.

Mechanically, the cost of passing a bill with 60 votes is higher than the cost of passing one with 51. Requiring more votes requires more transfers to increasingly distant legislators, and this reflects the widely recognized effect that supermajority requirements increase gridlock by making it more difficult to pass anything.

Our focus, however, is on understanding how the ideological placement of the cost-minimizing bill is affected by supermajority requirements. Example 1 demonstrates that in the absence of within-party disagreement, supermajority requirements are moderating. In Example 2, such requirements instead force compromise with extremists, driving policy away from the median legislator. Example 3 highlights the importance of relative party power. Given our choice of the distance between parties and the size and composition of the majority party, the additional majority-party extremists required to reach 60 votes outweigh the minority party legislators who must be added, and a higher vote threshold makes legislation more extreme. The empirical distribution of senate ideal points from the 116th Congress (2019-2020) is given in panel (d), and illustrates all of the features highlighted in Examples 1-3. Understanding their relative empirical importance is the main motivation of our paper.

Figure 1: Costs of passing bills given theoretical and empirical distributions
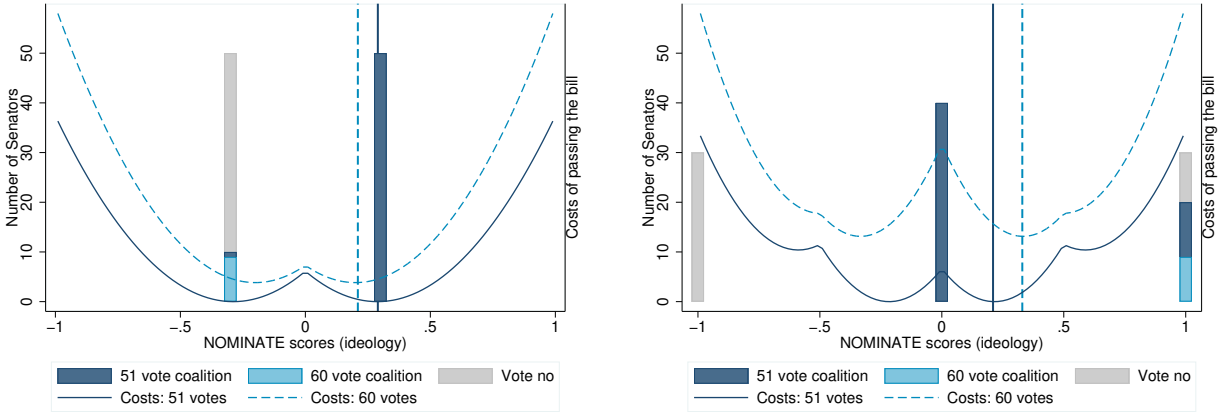
(a) Example 1: Between-party polarization

(b) Example 2: Within-party polarization
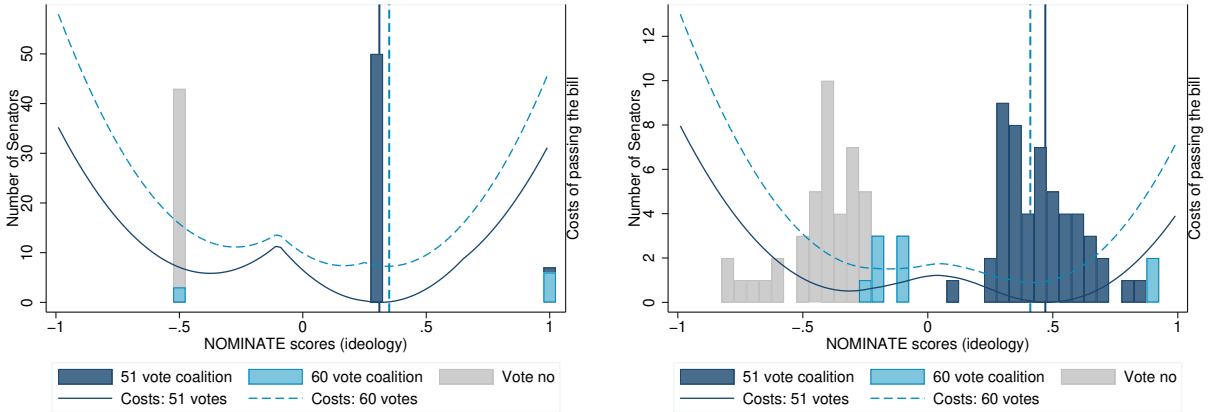
(c) Example 3: Majority party with extremists

(d) Empirical distribution (116th Congress)

Notes: Figure shows total transfer costs of passing a bill as a function of its ideological location and the number of votes required for passage (right axis), as well as the corresponding coalition of bill supporters (left axis). Note that the 51 vote coalition is always a subset of the 60 vote coalition. Vertical lines indicate the ideological placement of the cost-minimizing bill in each case. Panels (a-c) display the distribution of legislators used in our stylized examples. Panel (d) displays the empirical distribution of senators in the 116th Congress (2019-2020) when Republicans had a 53-seat majority.

5   Structural estimation and data

In order to understand the empirical relevance of compromises with extremist legislators, we structurally estimate our model. Doing so requires only data on legislators' ideal points since equations (3) and (4) show how to compute the ideological placement of the cost-minimizing bill from the distribution of ideal points. A prominent example of a supermajority requirement is the filibuster in the US Senate. While bills can pass with a simple majority (51

votes), they can only advance to a vote for final passage with 60 votes, and recent behavior of senators has converted this requirement into an implicit 60-vote threshold in order to pass bills (Binder, 2022). It is worth noting that although we discuss parties in our examples and results, information on political parties is not used in our estimation procedure.

Data. We measure senators' ideal points using NOMINATE scores (Lewis et al., 2023), which are widely used in political science (McCarty (2016) offers a helpful discussion). They are derived from a maximum likelihood estimation problem in which senators' ideal points and the ideological placement of each vote are jointly estimated in order to best explain senators' observed vote choices.

Two properties of NOMINATE scores are important. First, in their original methodological work, Poole and Rosenthal (1985) derive their estimates from a model in which legislator's have quadratic utility loss away from their ideal point. Thus, NOMINATE estimates are internally consistent with our model. Second, these scores describe voting behavior very well. Considering the post-1990 votes on final passage taken in the US Senate, NOMINATE scores correctly predict over 90% of votes taken. Numerous authors (e.g., Barber and McCarty (2015)) show this is driven by the first dimension of the scores, so we lose little by considering only one-dimensional ideology. Because our interest is in changes in polarization over time, we use Nokken and Poole (2004) scores, which are re-estimated in each successive Congress to allow ideal points to change over time.

Estimation. Given data on ideal points, we perform a grid search to determine the cost-minimizing bill capable of receiving 51 votes and 60 votes in each Congress since 1990. We then simulate how changing the voting threshold changes the ideological placement of the cost-minimizing bill.[3] It is worth noting that although we focus on the US Senate, the NOMINATE methodology has been applied to numerous other contexts (Voeten, 2001; Morgenstern, 2004; Hix, Noury, and Roland, 2006) and our approach can be adopted to study supermajorities there.

Counterfactual simulations. As our examples above show, the effects of supermajority requirements depend on how many seats are held by the majority party (and thus how close they are to reaching the threshold). In principle, we could explore this using the variation over time in the majority party's seat share. However, changes over time *also* reflect

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[3]One concern would be if senators' estimated NOMINATE scores were endogenous to the voting institutions in place. A large literature investigates how changes in procedural rules affect NOMINATE estimates and generally concludes these effects are small (see Barber and McCarty (2015) for a review). Specific to supermajority rules, Asmussen and Jo (2016) estimate comparable scores for legislators serving in the Senate and the House. They find that once one controls for changes in the composition of the constituents, legislators switching from the House (where no filibuster is possible) to the Senate (where it is) do not change their NOMINATE scores. Thus, there is no evidence to suggest that changing voting thresholds (like what we simulate) changes senators' ideal points.

changes in the distribution of senators' ideal points. Thus, variation from one Congress to the next cannot be used to understand the distinct role of changes in seat shares separate from changes in the distribution of ideal points.

To solve this problem, we also simulate changes in seat shares which hold fixed the distribution of ideal points within each party. To do so, note that we can assign any senator i to receive $\tilde{v}_i \equiv v_i/\bar{v}$ votes, where v_i is any positive scalar and $\bar{v} \equiv \frac{1}{n}\sum_i v_i$ is simply the average v_i across all 100 senators. In this formulation, the total number of votes remains 100, but any given senator might have more ($\tilde{v}_i > 1$) or less ($\tilde{v}_i < 1$) voting power. To understand the importance of changes in the distribution of NOMINATE scores separate from seat shares, we assign $\tilde{v}_i$ at the party level. (As a reminder, party membership plays no direct part in our algorithm.) For each Congress, we assign voting power such that each party is simulated as holding 52, 55, and 58 seats.[4]

As a concrete example, in the 113th Congress (2013-2014) Democrats held 55 seats, while in the 114th (2015-2016) they held only 46. Comparing the placement of the cost-minimizing bill between these two consecutive sessions conflates the changes in party control and seat shares with the changes in the distribution of NOMINATE scores *within* the parties (which is substantial; see Figure 3). By assigning each Democrat in the 114th Congress to hold 55/46 votes and each Republican to hold 45/54, we are able to simulate a 114th Congress wherein each party's distribution of individual senators is the same as what we observe in the data, but the relative size of the parties can be compared to the 113th Congress.

These simulations isolate the importance of the changing distribution of parties' ideal points "controlling for" the observed changes in seat shares. Our interpretation is *not* that a dramatic shift in a party's electoral success wouldn't involve some change in the composition of elected senators. Rather, our aim is to separate changes in seat shares from changes in ideal points so they can be independently considered.

6   Results

Given the Nokken-Poole estimates of senators' ideal points and our grid search algorithm, we can characterize the ideological content of the cost-minimizing bill as a function of the vote threshold. Panel (a) of Figure 2 presents these estimates over time for the compositions of the Senate actually observed, and for a 51- and 60-vote threshold. During all 16 Congresses that we consider (since 1991), we find that the cost-minimizing 60-vote bill is more moderate than the cost-minimizing 51-vote bill. Put differently, during each period, the filibuster being

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[4]For reference, across the 16 Congresses that we consider, the majority party has held 58 seats only once, has held 55 or more seats seven times, and has held 52 or more seats 14 times.

applied the way it is today would moderate passing legislation.

On average, a 60-vote threshold moderates legislation by about .056 (in NOMINATE space). This effect is not large. Interpreted within the distribution of NOMINATE scores in the most recent (117th) Congress, it is roughly 7% of the distance between party medians, 25% of the distance between the most moderate Democrat and the most moderate Republican, one-third of the within-party standard deviation of NOMINATE scores, and 7 times the median distance between a senator and her ideological neighbor.

However, this effect is not fixed over time. For example, during the 102nd Congress, the effect was only .01, while during the 117th it was .10. This cannot be reduced to a simple time trend. For instance, during the 111th Congress, the effect was very small (.015), while during the Congresses that came just before and after, it was five times as large (.075). This is despite all three Congresses having a Democratic majority. What accounts for this volatility in the filibuster's effects over time?

One challenge in interpreting the trends shown in Panel (a) is that the distribution of senators is changing at the same time as the parties' seat shares. To address this, we use the procedure discussed above to simulate the filibuster effect during each Congress, under hypothetical Democratic and Republican majorities of 52, 55, and 58 seat majorities. These results are shown in Panels (b) and (c). Panel (b) focuses on Democratic majorities, so a positive estimate of the filibuster effect suggests that it makes legislation more conservative; Panel (c) focuses on Republican majorities, so a negative effect makes legislation more liberal. The results show that the fluctuations observed in Panel (a) are mostly driven by changes in the size of Senate majorities. Returning to the 110th-112th Congresses, for example, once one controls for the number of seats held, the effects of the filibuster are constant.

But these fixed seat share simulations make long-run trends more clear, and those trends differ for large and small majorities. For small majorities, the effects of the filibuster have generally grown. For large majorities, however, the effects have withered. These effects grew during the 1990's and peaked during the 107th Congress (2001-2002). Since then, they have dropped, and in three of the last four Congresses (114th-116th, 2015-2020) it is now the case that a 60-vote threshold makes the cost-minimizing bill more extreme. Why have the effects of the filibuster changed over time, and why do these trends differ depending on the majority party's seat share? We next turn to answering these questions.
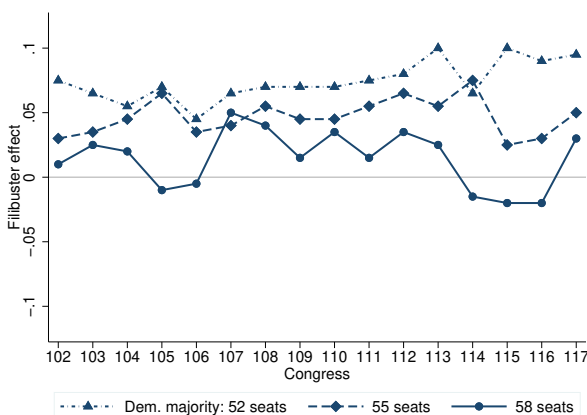
6.1 The rise of Senate extremists

Our primary insight in this paper is that supermajority rules not only require compromises with opposite party legislators, but can also force compromises with majority party
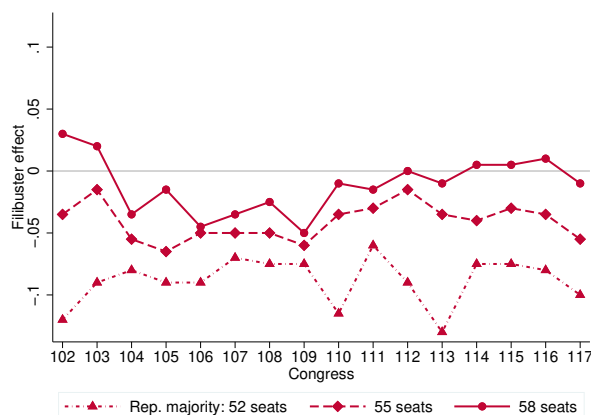
Figure 2: Filibuster effects over time given actual and hypothetical seat shares
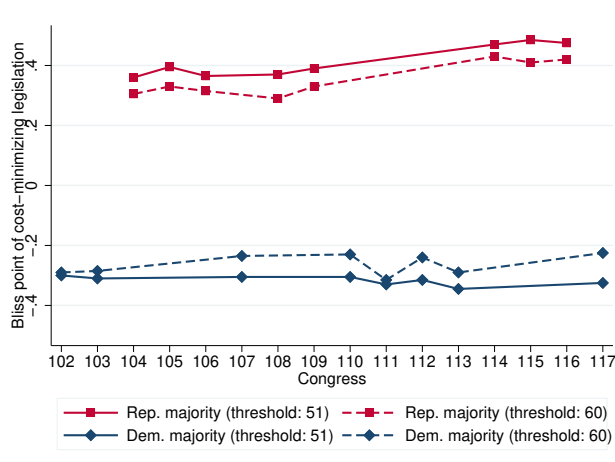
(a) Actual prevailing seat shares

(b) Hypothetical Democratic majorities

(c) Hypothetical Republican majorities

Notes: Figure shows the model-derived effects of requiring 60 votes to pass a bill (rather than 51) on the ideological placement of the cost-minimizing bill. Panel (a) displays effects given the observed compositions of Congress over time. Panels (b) and (c) simulate effects taking as given the observed distribution of senator ideologies, but holding fixed the number of seats held by a Democratic and Republican majority, respectively. A positive "filibuster effect" implies that requiring 60 votes leads the cost-minimizing bill to be more conservative than it would be if only 51 votes were required. Similarly, a negative "filibuster effect" implies that requiring 60 votes makes the cost-minimizing bill more liberal.

extremists. Here, we show that the prevalence of these extremists has increased over time.

To do so, we must define an "extremist." We see extremists as those whose voting behavior is substantially more extreme than the bulk of their party. To implement this, we need to define what a substantial difference is. For each party and each Congress, we calculate the median NOMINATE-distance between two neighboring senators. For both parties, this median within-party distance varies across different Congresses, ranging from

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.006-.012 for Republicans and .003-.01 for Democrats. To focus on large differences in voting behavior, we define a senator as an extremist if the distance between her and her more centrist neighbor is at least four times the largest median distance (i.e., if the distance is greater than .04 for Democrats or greater than .048 for Republicans). We acknowledge that drawing the line at four times the largest median distance is arbitrary. Nonetheless, as we show below, while different choices would change the estimated *number* of extremists, they would not change the trends over time.

In Panel (a) of Figure 3, we present a raw scatter plot of senators' NOMINATE scores over time. Each senator is displayed in the plot with their observed NOMINATE score, which does not depend on our classification of extremists, but we also plot the line that separates these extremists from the rest of their party. This raw presentation of the data illustrates a clear fact: Recent years have seen a large increase in the number of senators who are far more extreme than the bulk of their parties. As documented in the polarization literature, the parties' medians have moved apart from one another, but despite this, more and more senators are found far beyond their own party's median.

Figure 3: The rise of extremist senators over time

(a) Distributions of NOMINATE scores   (b) Extremist shares over time
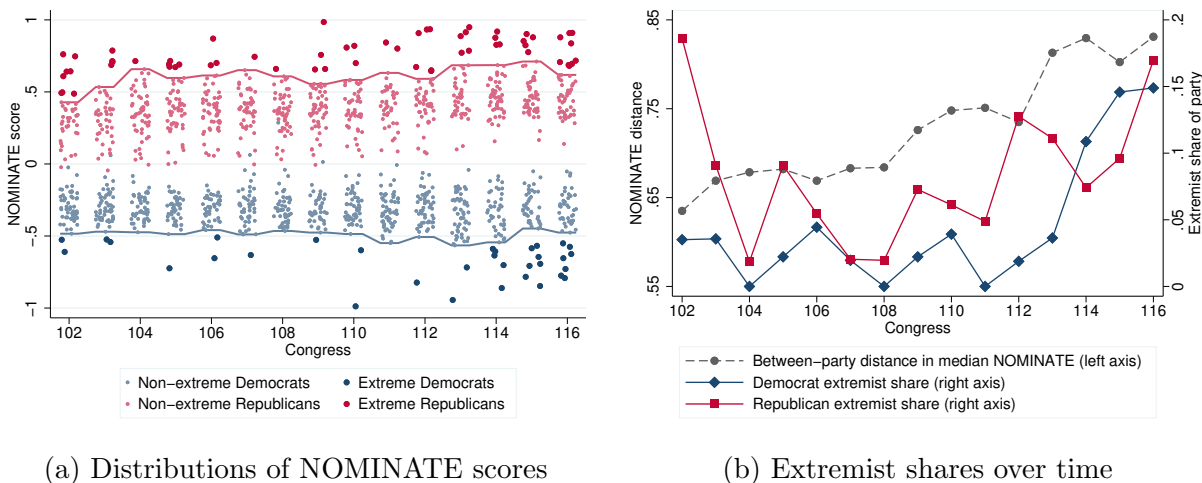
Notes: Figure shows the prevalence of "extremist" senators over time. Panel (a) presents the raw distribution of senators' NOMINATE scores over time, with a small "jitter" (i.e., uniform random variable) to improve the visibility of simultaneously-serving senators. The line displays the "boundary" of the non-extremists; senators beyond that line are classified by our clustering approach as extremists. Panel (b) shows the between-party difference in median NOMINATE scores, as well as each party's share of "extremist" senators.

Panel (b) plots the share of each party that we classify as extremists, as well as the between-party distance in median NOMINATE scores.[5] The growing distance between party medians – emphasized by the existing literature (e.g., Barber and McCarty (2015)) – is

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[5]It is reassuring that our approach performs well when considering the most high-salience shift in Senate

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meaningful and important; it has risen by one-third during our sample. However, a more dramatic trend is the rise in the extremist share of both parties. While Republicans had many extremists in the 1990's, by the 108th Congress (2003-2004, in the wake of September 11th) both parties had reached a local minimum, with no Democratic extremists and less than 5% of Republicans. Since then, however, extremism has been rising in both parties, and by the 116th Congress, 15-20% of each party is classified as extremists.

6.2 Competing forces of polarization

How do these two notions of polarization – the distance between the parties and the prevalence of extremists – influence the effects of the filibuster? To answer this, we take the distribution of NOMINATE scores in the 116th Congress and perform two sets of counterfactuals. In one, we move the parties closer and further from one another, without changing the composition within the parties (i.e., a spread-preserving shift in the median of each party). In this way, we vary the distance between the parties' medians from .73 to 1.03 (it was .83 in the 116th Congress). In the second, we change the number of votes given to extremist senators to change the extremist share of each party without actually changing how far extremists are from the bulk of their party. In this way, we vary the extremist share from 5% to 25% (it was 15%-17% in the 116th Congress). While varying the distributions in this way, we again simulate the effects of a 60-vote threshold on the ideological placement of the cost-minimizing bill, again as a function of the majority party and the size of its majority.

The results are shown in Figure 4. In Panels (a) and (c), we study between-party polarization (i.e., changes in the distance between party medians). Consistent with the common intuition, as the parties grow further and further apart, the moderating value of the filibuster increases. The smaller the majority party's seat share, the more minority party senators will be needed to reach 60 votes, and so the stronger the effect of distance is. Even when the majority party has 58 seats and the filibuster is polarizing (i.e., leads to more extreme legislation), increasing the between-party distance wears this away and pushes the effect towards zero.

The results are different, however, when polarization reflects changes in the extremist share within the parties. These effects are shown in Panels (b) and (d). They are non-monotonic, hinging critically on the seat share. When the majority party has few seats (52) then even reaching just 51 votes requires winning over nearly all of the extremists. As a result, the filibuster's moderating value increases with the extremist share, since the

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extremism, which is the Tea Party wave of senators who took office in the 112th Congress (elected in 2010). Interestingly, this dramatic shift is better reflected in our measure of extremism than in the between-party distance in medians, which actually fell during that year.

Figure 4: Competing forces of polarization
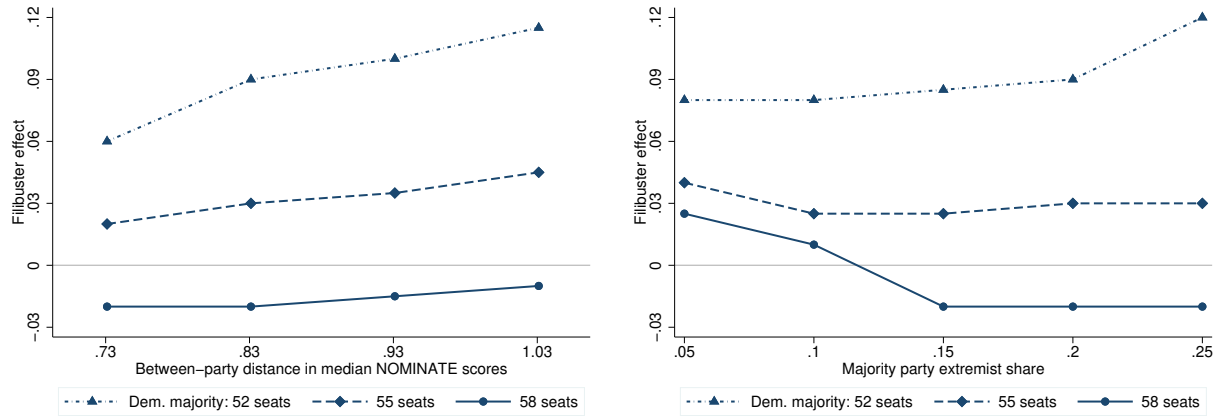
(a) Between-party polarization (Dem. majority)   (b) Within-party polarization (Dem. majority)
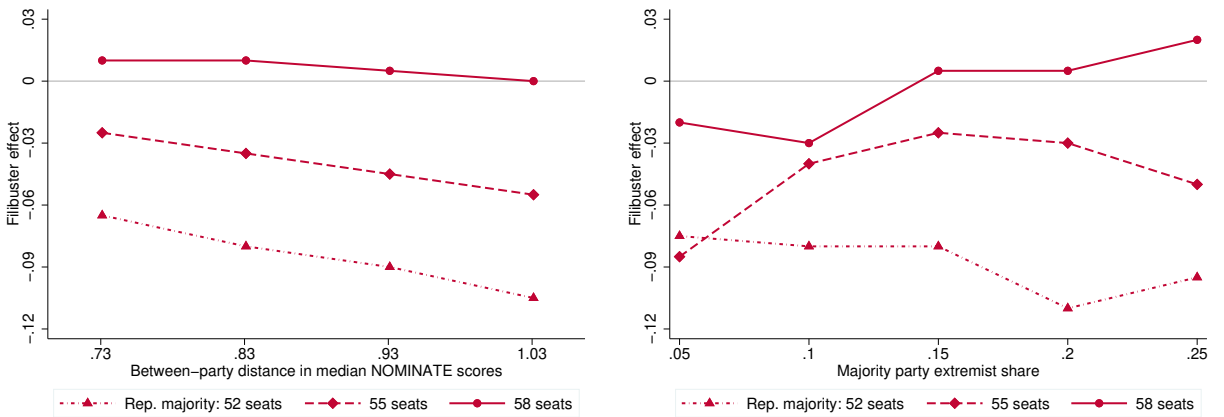
(c) Between-party polarization (Rep. majority)   (d) Within-party polarization (Rep. majority)

Notes: Figure displays the filibuster effect (i.e., the effect of requiring 60 votes to pass a bill, rather than 51, on the ideological placement of the cost-minimizing bill) for the 116th Congress, as a function of the majority party, its seat share, the distance between the party medians, and the "extremist" share of each party (i.e., the share more extreme than the party core).

minority-party moderates who must be won over become increasingly important for offsetting majority-party extremists.

When the majority party's seat share is large, however, this changes. For instance, when the extremist share is as low as 5% (the level seen when Barack Obama took office), the filibuster has moderating value even when the majority party holds 58 seats (as the Democrats did at the time). However, increasing the extremist share to 15% (the level seen in recent years) flips this effect, and leads the filibuster to become polarizing or anti-moderating.

In summary, then, increases in the distance between parties and increases in the extremist

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share within parties exert opposite influences on the effects of the filibuster, at least when majorities are large. It is not obvious which of these effects would be larger. However, from our simulations displayed in Figure 2, we found that the filibuster's moderating value among large majorities began to fall (and eventually flip) at exactly the same time that the extremist share began to rise. Thus, in recent years, the changes in the extremist share dominate the changes in the between-party distance.

7   Conclusions

The standard model of spatial politics implies that extremist legislators will *never* defect from their party's support for legislation. This immediately implies that supermajority rules must always moderate passing legislation, and we see this as widely held intuition. However, this assumption is empirically untrue. Thus, these extremists' votes may require substantive compromises. While rising between-party polarization increases the moderating value of supermajority rules, rising within-party polarization can decrease (and even reverse) their moderating potential. While both trends might reasonably be called "polarization," it is critical to be specific about the *type* of polarization when evaluating the moderating value of supermajority voting rules.

Our model and estimation strategy generally conform to the widely held intuition, but we show that rising within-party polarization (a novel fact we document for the US Senate) has indeed eroded the moderating value of the filibuster. Overall, then, our paper shows that the qualitative effects of voting rules are contingent on exactly the type of polarization they aim to address.

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Figure A1: Joint 'No' votes among most liberal and most conservative senator
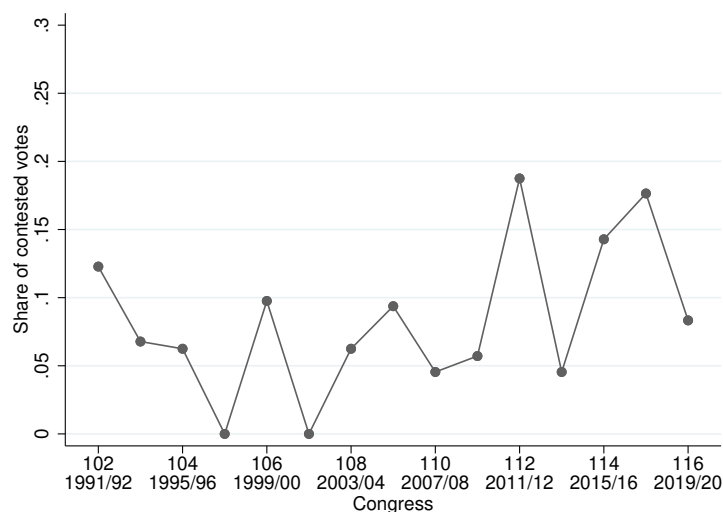
Notes: Figure shows the share of contested Senate votes in which the most liberal and most conservative senator of the Congress both voted no. By "contested votes" we mean votes on final passage of a bill in which at least one senator voted yes and at least one senator voted no. Most liberal and conservative senators are defined based on Nokken and Poole (2004) NOMINATE scores.

A Online appendix