Online Appendix

"Roll Call Vote Selection:
Implications for the Study of Legislative Politics"

Contents

A Legislative Voting Procedures in a Comparative Perspective

Table OA.A1 presents information on legislative voting procedures for 145 legislative chambers across 105 countries. All information concerns *most legislative business*. The table includes the following:

- The country associated with the relevant chamber.
- The name of the chamber in the native language.
- The chamber type (lower, upper, or unicameral).
- Whether the standard operating procedure (SOP) is roll-call (RCV) or non-roll-call (non-RCV).
- The precise method defined as the SOP – electronic voting machines (EVM), voices, show of hands, rising in places, etc.
- Whether legislative actors can invoke a voting method that departs from the SOP – either from RCV to non-RCV or non-RCV to RCV.
- The legislative actors who can invoke a voting method that departs from the SOP.

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective

Country	Chamber	SOP (Precise method)	RCV possible?	Who can invoke RCV?	Non-RCV possible?	Who can invoke Non-RCV?
Albania	Kuvendi i Shqipërisë (unicameral)	Non-RCV (EVM or show of hands)	Yes	approval of chamber[1]	–	–
Argentina	Cámara de Diputados (lower)	Non-RCV (NA)	Yes	1/10 of those present	–	–
Argentina	Senado (upper)	Non-RCV (show of hands or rising in places)	Yes	majority of those present	–	–
Armenia	Azgayin Zhoghov (unicameral)	RCV (EVM)	–	–	No	none
Australia	House of Representatives (lower)	Non-RCV (voices)	Yes	2 members[2]	–	–
Australia	Senate (upper)	Non-RCV (voices)	Yes	2 members[3]	–	–
Austria	Nationalrat (lower)	Non-RCV (rising in places)	Yes	20 members, speaker	–	–
Austria	Bundesrat (upper)	Non-RCV (show of hands or rising in places)	Yes	5 members, speaker	–	–
Bahamas	House of Assembly (lower)	Non-RCV (NA)	Yes	prime minister, leader of the opposition, 3 members	–	–
Bahamas	Senate (upper)	Non-RCV (voices)	Yes	1 member	–	–

[1] Article 59 stipulates that 7 members can request an RCV where individual members' votes are recorded, but the request needs to be approved by the chamber. The standing orders do not specify if a majority of those present or a majority of members is required for approval.

[2] Even though it takes two members requesting an RCV for one to be held, Section 9 of the rules of procedure describe how if four or fewer members take a particular side in the vote ("Ayes" or "Noes"), the RCV is not completed and only the names of those members in the minority are recorded in the Votes and Proceedings.

[3] Similar to the Australian House of Representatives, it takes two members requesting an RCV for one to be held in the Senate. However, Article 102 describes how if only one member takes a particular side in the vote ("Ayes" or "Noes"), the RCV is not completed and the outcome is declared.

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	**Chamber**	**SOP (Precise method)**	**RCV possible?**	**Who can invoke RCV?**	**Non-RCV possible?**	**Who can invoke Non-RCV?**
Bangladesh	Jatiya Sangsad (unicameral)	Non-RCV (voices)	Yes	NA	–	–
Barbados	House of Assembly (lower)	Non-RCV (voices)	Yes	1 member	–	–
Barbados	Senate (upper)	Non-RCV (voices)	Yes	1 member	–	–
Belgium	Chambre des Représentants (lower)	Non-RCV (rising in places)	Yes	8 members, speaker	–	–
Belgium	Sénat (upper)	Non-RCV (rising in places)	Yes	5 members, speaker	–	–
Belize	House of Representatives (lower)	Non-RCV (voices)	Yes	1 member	–	–
Belize	Senate (upper)	Non-RCV (voices)	Yes	1 member	–	–
Bhutan	Gyelyong Tshogdu (lower)	Non-RCV (show of hands)	Yes	NA	–	–
Bhutan	Gyelyong Tshogde (upper)	RCV (EVM)	–	–	Yes	NA
Bolivia	Cámara de Diputados (lower)	Non-RCV (show of hands or rising in places)	Yes	5 members	–	–

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	**Chamber**	**SOP (Precise method)**	**RCV possible?**	**Who can invoke RCV?**	**Non-RCV possible?**	**Who can invoke Non-RCV?**
Bolivia	Cámara de Senadores (upper)	Non-RCV (show of hands or rising in places)	Yes	majority of those present	–	–
Bosnia	Predstavnički Dom (lower)	RCV (EVM)	–	–	Yes	1/3 of members
Bosnia	Dom Naroda (upper)	RCV (EVM)	–	–	Yes	1/3 of members
Brazil	Câmara dos Deputados (lower)	Non-RCV (rising in places)	Yes	1 member	–	–
Brazil	Senado Federal (upper)	Non-RCV (rising in places)	Yes	1 member	–	–
Bulgaria	Narodno Sabranie (unicameral)	Non-RCV (EVM)	Yes	1/10 of members, 1 parliamentary group	–	–
Burkina Faso	l'Assemblée Nationale (unicameral)	Non-RCV (show of hands)	Yes	speaker, government, responsible committee, party leader, 4 members	–	–
Canada	House of Commons (lower)	Non-RCV (voices)	Yes	5 members	–	–
Canada	Senate (upper)	Non-RCV (voices)	Yes	2 members	–	–
Chile	Cámara de Diputados (lower)	RCV (EVM)	–	–	No	none

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	**Chamber**	**SOP (Precise method)**	**RCV possible?**	**Who can invoke RCV?**	**Non-RCV possible?**	**Who can invoke Non-RCV?**
Chile	Senado (upper)	RCV (EVM)	–	–	No	none
Colombia	Cámara de Representantes (lower)	Non-RCV (show of hands)	Yes	majority of those present	–	–
Colombia	Senado (upper)	Non-RCV (show of hands)	Yes	majority of those present	–	–
Costa Rica	Asamblea Legislativa (unicameral)	Non-RCV (rising in places)	Yes	majority of those present	–	–
Croatia	Hrvatski Sabor (unicameral)	RCV (EVM)	–	–	Yes	parliamentary group
Cuba	Asamblea Nacional (unicameral)	Non-RCV (show of hands)	Yes	NA	–	–
Czech Republic	Poslanecká Sněmovna (lower)	RCV (EVM and show of hands)	–	–	No	none
Czech Republic	Senát (upper)	RCV (EVM and show of hands)	–	–	No	none
Denmark	Folketing (unicameral)	RCV (EVM)	–	–	Yes	speaker if outcome seems obvious and fewer than 17 members object
Dominica	House of Assembly (unicameral)	Non-RCV (voices)	Yes	1 member	–	–

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	**Chamber**	**SOP (Precise method)**	**RCV possible?**	**Who can invoke RCV?**	**Non-RCV possible?**	**Who can invoke Non-RCV?**
Dominican Republic	Cámara de Diputados (lower)	RCV (EVM)	–	–	No	none
Dominican Republic	Senado (upper)	RCV (EVM)	–	–	No	none
Ecuador	Asamblea Nacional (unicameral)	Non-RCV (show of hands)	Yes	10 members	–	–
El Salvador	Asamblea Legislativa (unicameral)	Non-RCV (show of hands)	Yes	1 member	–	–
Estonia	Riigikogu (unicameral)	RCV (EVM)	–	–	No	none
Ethiopia	Yehizbtewekayoch Mekir Bet (lower)	Non-RCV (show of hands or secret ballot)	No	none	–	–
Fiji	Parliament (unicameral)	Non-RCV (voices)	Yes	1 member	–	–
Finland	Eduskunta (unicameral)	RCV (EVM)	–	–	Yes	speaker
France	Assemblée Nationale (lower)	Non-RCV (show of hands)	Yes	speaker, 1 party, referral committee, government "conference of presidents"	–	–
France	Sénat (upper)	Non-RCV (show of hands)	Yes	speaker, 1 party, referral committee, government, 30 members	–	–

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	**Chamber**	**SOP (Precise method)**	**RCV possible?**	**Who can invoke RCV?**	**Non-RCV possible?**	**Who can invoke Non-RCV?**
Georgia	Sakartvelos P'arlament'i (unicameral)	RCV (EVM)	–	–	No	none
Germany	Bundestag (lower)	Non-RCV (show of hands or rising in places)	Yes	1/20 of members, 1 parliamentary group	–	–
Germany	Bundesrat (upper)	Non-RCV (show of hands)	No[4]	none	–	–
Ghana	Parliament (unicameral)	Non-RCV (voices)	Yes	1 member with speaker approval	–	–
Greece	Voulí Ton Ellínon (unicameral)	Non-RCV (show of hands or rising in places)	Yes	1/20 of members, speaker	–	–
Guatemala	Congreso (unicameral)	RCV (EVM)	–	–	No	none
Guyana	National Assembly (unicameral)	Non-RCV (voices)	Yes	1 member	–	–
Honduras	Congreso Nacional (unicameral)	Non-RCV (show of hands)	Yes	1 member	–	–
Hungary	Országgyűlés (unicameral)	RCV (EVM)	–	–	No	none
Iceland	Althingi (unicameral)	RCV (EVM)	–	–	Yes	if speaker believes outcome is obvious and no objections raised

[4]Rule 29 of the standing orders does permit a voting method that is referred to as a roll-call. However, these roll-call votes are conducted at the Land (German state), and not individual, level. In fact, individual level voting is not permitted in the Bundesrat (i.e., all members representing a particular Land are required to vote as a bloc). Because individual level voting is not practiced in the Bundesrat, we consider this a case where roll-calls are never conducted.

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	Chamber	SOP (Precise method)	RCV possible?	Who can invoke RCV?	Non-RCV possible?	Who can invoke Non-RCV?
India	Lok Sabha (lower)	Non-RCV (voices)	Yes	NA	–	–
India	Rajya Sabha (upper)	Non-RCV (voices)	Yes	NA	–	–
Ireland	Dáil Éireann (lower)	Non-RCV (voices)	Yes	1 member with speaker approval, 10 members otherwise	–	–
Ireland	Seanad Éireann (upper)	Non-RCV (voices)	Yes	1 member with speaker approval, 5 members otherwise	–	–
Isle of Man	House of Keys (lower)	Non-RCV (voices)	Yes	1 member	–	–
Isle of Man	Legislative Council (upper)	Non-RCV (voices)	Yes	1 member	–	–
Israel	Knesset (unicameral)	RCV (EVM)	–	–	Yes	speaker
Italy	Camera dei Deputati (lower)	Non-RCV (show of hands)	Yes	20 members, parties if they have 20 members	–	–
Italy	Senato della Repubblica (upper)	Non-RCV (show of hands)	Yes	15 members	–	–
Jamaica	House of Representatives (lower)	Non-RCV (voices)	Yes	1 member	–	–

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	**Chamber**	**SOP (Precise method)**	**RCV possible?**	**Who can invoke RCV?**	**Non-RCV possible?**	**Who can invoke Non-RCV?**
Jamaica	Senate (upper)	Non-RCV (voices)	Yes	1 member	–	–
Kenya	National Assembly (lower)	Non-RCV (voices)	Yes	1 member with speaker approval, 30 members in other instances	–	–
Kenya	Senate (upper)	Non-RCV (voices)	Yes	1 member with speaker approval, 15 members in other instances	–	–
Kosovo	Kuvendi i Kosovës (unicameral)	Non-RCV (show of hands)	Yes	speaker, parliamentary group	–	–
Latvia	Saeima (unicameral)	RCV (EVM)	–	–	No	none
Liberia	House of Representatives (lower)	Non-RCV (voices)	Yes	NA	–	–
Liberia	Senate (upper)	Non-RCV (voices)	Yes	1 member, speaker if outcome is unclear	–	–
Lithuania	Seimas (unicameral)	RCV (EVM)	–	–	Yes	speaker
Luxembourg	Chambre des Députes (unicameral)	Non-RCV (show of hands)	Yes	5 members	–	–
Macedonia	Sobranie (unicameral)	Non-RCV (EVM or show of hands)	Yes	speaker, 10 members and only if proposal was within 5 votes of passage/failure in earlier vote	–	–

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	Chamber	SOP (Precise method)	RCV possible?	Who can invoke RCV?	Non-RCV possible?	Who can invoke Non-RCV?
Malaysia	Dewan Rakyat (lower)	Non-RCV (voices)	Yes	15 members	–	–
Malaysia	Dewan Negara (upper)	Non-RCV (voices)	Yes	8 members	–	–
Maldives	Rayyithunge Majilis (unicameral)	RCV (EVM)	–	–	Yes	NA
Malta	Parlament (unicameral)	Non-RCV (voices)	Yes	1 member with speaker approval	–	–
Marshall Islands	Legislature (unicameral)	Non-RCV (voices)	Yes	3 members	–	–
Mauritius	National Assembly (unicameral)	Non-RCV (voices)	Yes	1 member	–	–
Mexico	Cámara de Diputados (lower)	Non-RCV (rising in places)	Yes	6 members	–	–
Mexico	Senado (upper)	Non-RCV (rising in places)	Yes	6 members	–	–
Micronesia	Congress (unicameral)	Non-RCV (voices)	Yes	1/5 of those present	–	–
Moldova	Parlamentul (unicameral)	Non-RCV (show of hands)	Yes	approval of chamber[5]	–	–
Montenegro	Skupština (unicameral)	RCV (EVM)	–	–	No	none
Nauru	Parliament (unicameral)	Non-RCV (voices)	Yes	1 member	–	–

[5] Article 89 stipulates that the speaker or members (not specified how many) can request an RCV method (electronic voting), but the request needs to be approved by the chamber. The standing orders do not specify if a majority of those present or a majority of members is required for approval.

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	Chamber	SOP (Precise method)	RCV possible?	Who can invoke RCV?	Non-RCV possible?	Who can invoke Non-RCV?
Netherlands	Tweede Kamer der Staten-Generaal (lower)	Non-RCV (show of hands)	Yes	1 member	–	–
Netherlands	Eerste Kamer der Staten-Generaal (upper)	RCV (roll-call)	–	–	Yes	approval of chamber[6]
New Zealand	House of Representatives (unicameral)	Non-RCV (voices)	Yes	1 member with speaker approval	–	–
Nicaragua	Asamblea Nacional (unicameral)	RCV (EVM)	–	–	Yes	NA
Norway	Storting (unicameral)	RCV[7] (EVM)	–	–	Yes	speaker unless outcome is unclear and then speaker or 1/5 of members determine new vote is needed[8]
Pakistan	National Assembly (lower)	Non-RCV (voices)	Yes	NA	–	–
Pakistan	Senate (upper)	Non-RCV (voices)	Yes	NA	–	–
Palestine	Al-Majlis al-Tashrī'iyy al-Filasṭīniyy (unicameral)	Non-RCV (show of hands or rising in places)	No	none	–	–

[6] Article 108 stipulates that the speaker or a member can request a vote by rising in places, but the request needs to be approved by the chamber. The standing orders do not specify if a majority of those present or a majority of members is required for approval.

[7] The rules of procedure are somewhat ambiguous with respect to what voting method is the SOP. However, Article 60 does list a number of methods that can be employed, including RCV and non-RCV methods. Therefore, we needed to consult additional materials from the parliament's website in order to determine the SOP. A guide to the parliament, titled "The Norwegian Parliament" and posted on the website, notes that the electronic voting system is typically used and the results are posted on the website. Additionally, a section of the website, "Voteringer", also notes that most votes are taken electronically and the results from electronic votes can be viewed at the individual level on the website. For these reasons, we determined the SOP is RCV (EVM).

[8] Having determined that the SOP is RCV by electronic means (see footnote 7), we then further consulted the rules of procedure to learn when non-RCVs are possible. The rules describe how the speaker can determine that a vote be held by rising in places (rather than electronically). However, if the outcome of that vote is unclear, the speaker or 1/5 of members can determine that a new vote is needed which is held either electronically or by a conventional roll-call. For these reasons, we determined that the speaker can invoke a non-RCV method, but if the speaker or 1/5 of members believe the outcome is unclear, the voting method returns to an RCV method (electronic or roll-call).

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	**Chamber**	**SOP (Precise method)**	**RCV possible?**	**Who can invoke RCV?**	**Non-RCV possible?**	**Who can invoke Non-RCV?**
Panama	Asamblea Nacional (unicameral)	Non-RCV (show of hands or rising in places)	Yes	approval of chamber[9]	–	–
Papua New Guinea	National Parliament (unicameral)	Non-RCV (voices)	Yes	2 members	–	–
Paraguay	Cámara de Diputados (lower)	Non-RCV (show of hands or rising in places)	Yes	1/5 of those present	–	–
Paraguay	Cámara de Senadores (upper)	Non-RCV (show of hands or rising in places)	Yes	1/5 of those present	–	–
Peru	Congreso (unicameral)	RCV (EVM)	–	–	Yes	2/3 of members
Philippines	House of Representatives (lower)	Non-RCV (voices)	Yes	1/5 of members	–	–
Philippines	Senate (upper)	Non-RCV (voices)	Yes	1/5 of members	–	–
Poland	Sejm (lower)	RCV (EVM and show of hands)	–	–	No	none
Poland	Senat (upper)	RCV (EVM and show of hands)	–	–	Yes	speaker, 20 members
Portugal	Assembleia da República (unicameral)	Non-RCV (rising in places)	Yes	10 of members on some issues, Assembly or Conference of Leaders on all others	–	–

[9] The standing orders stipulate that any member can request an RCV (Article 198). The standing orders do not specify if a majority of those present or a majority of members is required for approval.

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	Chamber	SOP (Precise method)	RCV possible?	Who can invoke RCV?	Non-RCV possible?	Who can invoke Non-RCV?
Romania	Camera Deputatilor (lower)	RCV (EVM)	–	–	Yes	approval of chamber[10]
Rwanda	Umutwe w'Abadepite (lower)	NA[11]	Yes	NA	Yes	NA
Rwanda	Sena (upper)	NA[12]	Yes	NA	Yes	NA
Samoa	Legislative Assembly (unicameral)	Non-RCV (voices)	Yes	1 member with speaker approval	–	–
Senegal	Assemblée Nationale (unicameral)	Non-RCV (EVM or show of hands)	Yes	10 members	–	–
Serbia	Narodna Skupština (unicameral)	RCV (EVM)	–	–	Yes	NA
Seychelles	National Assembly (unicameral)	Non-RCV (show of hands)	Yes	1 member with speaker approval	–	–
Singapore	Parliament (unicameral)	Non-RCV (voices)	Yes	5 members	–	–
Slovakia	Národná Rada (unicameral)	RCV (EVM)	–	–	No	none
Slovenia	Državni Zbor (lower)	RCV (EVM)	–	–	No	none

[10] Article 123 stipulates that the speaker or a party leader can request a vote by show of hands or secret ballot, but the request needs to be approved by the chamber. The standing orders do not specify if a majority of those present or a majority of members is required for approval.

[11] The standing orders are ambiguous about what voting method is standard operating procedure. Both RVC (electronic voting machine, recorded division) and non-RCV (show of hands, consensus, secret ballot) methods are possible, but which method is standard is not explicitly stated. The orders do state the following: (1) when the item is not a bill, voting by consensus, show of hands, or electronically are the only permitted methods, (2) voting by secret ballot can occur at the request of 1/5 of those present, (3) voting on provisions of a bill is conducted electronically or by show of hands, (4) votes on entire bills are conducted by recorded division.

[12] Same as for the Rwandan lower house (Umutwe w'Abadepite).

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	**Chamber**	**SOP (Precise method)**	**RCV possible?**	**Who can invoke RCV?**	**Non-RCV possible?**	**Who can invoke Non-RCV?**
Solomon Islands	Parliament (unicameral)	Non-RCV (voices)	Yes	1 member with speaker approval	–	–
South Africa	National Assembly (lower)	RCV (EVM)	–	–	No	none
South Africa	National Council of Provinces (upper)	Non-RCV (voices)	Yes	4 members	–	–
South Korea	Daehan Minguk Gukhoe (unicameral)	RCV (EVM)	–	–	Yes	1/5 of members, majority of chamber upon speaker recommendation
Spain	Congreso de los Diputados (lower)	Non-RCV (rising in places)	Yes	two parliamentary groups, 1/5 of members	–	–
Spain	Senado (upper)	Non-RCV (rising in places)	Yes	50 members	–	–
Sri Lanka	Parlimenthuwa (unicameral)	Non-RCV (voices)	Yes	1 member with speaker approval	–	–
Sweden	Riksdag (unicameral)	RCV (EVM)	–	–	Yes	speaker unless outcome is unclear or 1 member requests new vote[13]
Switzerland	Nationalrat (lower)	RCV (EVM)	–	–	No	none
Switzerland	Ständerat (upper)	Non-RCV (EVM)	Yes	10 members	–	–

[13] Article 10 of the rules of procedure state that the speaker can determine that a vote be held by rising in places rather than the standard procedure. However, if the outcome of that vote is unclear or if a member calls for an exact count, the legislature reverts to an RCV method where every member's individual vote is recorded.

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	**Chamber**	**SOP (Precise method)**	**RCV possible?**	**Who can invoke RCV?**	**Non-RCV possible?**	**Who can invoke Non-RCV?**
Thailand	Wutthisapha (upper)	RCV (EVM)	–	–	Yes	20 members if not objected to by 1/3 of those present
Tonga	Legislative Assembly (unicameral)	Non-RCV (show of hands)	Yes	1 member from minority	–	–
Trinidad and Tobago	House of Representatives (lower)	Non-RCV (voices)	Yes	1 member	–	–
Trinidad and Tobago	Senate (upper)	Non-RCV (voices)	Yes	1 member	–	–
Turkey	Büyük Millet Meclisi (unicameral)	Non-RCV (show of hands)	Yes	15 or 20 members[14]	–	–
Tuvalu	Parliament (unicameral)	Non-RCV (voices)	Yes	1 member, speaker if outcome is unclear	–	–
Uganda	Parliament (unicameral)	Non-RCV (voices)	Yes	40 members	–	–
United Kingdom	House of Commons (lower)	Non-RCV (voices)	Yes	members with speaker approval[15]	–	–
United Kingdom	House of Lords (upper)	Non-RCV (voices)	Yes	members[16]	–	–
United States	House of Representatives (lower)	Non-RCV (voices)	Yes	1/5 of those present	–	–

[14] The standing orders are vague/inconsistent about whether holding an RCV requires 15 members (Article 143) or 20 members (Article 81). It appears that for some kinds of legislative business 15 members are required while for other kinds it is 20 members.

[15] Articles 38-40 of the rules of procedure describe how an RCV method (recorded division) can be held if members challenge the speaker's decision on the outcome of the original voice vote. However, the rules do not specify how many members need to challenge the original decision and the speaker needs to approve the request for an RCV to be held.

[16] Article 53 of the rules of procedure describe how an RCV method (recorded division) can be held if members challenge the speaker's decision on the outcome of the original voice vote. However, similar to the House of Commons, the rules for the House of Lords do not specify how many members need to challenge the original decision in order for an RCV to be held.

Table OA.A1: Legislative Voting Procedures in a Comparative Perspective (*continued*)

Country	**Chamber**	**SOP (Precise method)**	**RCV possible?**	**Who can invoke RCV?**	**Non-RCV possible?**	**Who can invoke Non-RCV?**
United States	Senate (upper)	Non-RCV[17] (voices)	Yes	1/5 of those present[18]	–	–
Uruguay	Cámara de Representantes (lower)	Non-RCV (EVM)	Yes	1/3 of those present	–	–
Uruguay	Cámara de Senadores (upper)	Non-RCV (EVM)	Yes	1 member with speaker approval[19]	–	–
Vanuatu	Parlement (unicameral)	Non-RCV (show of hands)	Yes	NA	–	–
Venezuela	Asamblea Nacional (unicameral)	Non-RCV (show of hands or rising in places)	Yes	1 member[20]	–	–

[17]The rules of procedure are ambiguous with respect to what the SOP is. Therefore, we needed to consult additional materials posted on the chamber's website in order to determine the SOP. A guide to the Senate's voting procedures assembled by the Congressional Research Office, titled "Voting and Quorum Procedures in the Senate", describes voting by voices as the SOP.

[18]While the rules of procedure describe how RCVs are conducted, it does not specify the threshold requirement for holding an RCV. In order to determine the threshold, we again consulted "Voting and Quorum Procedures in the Senate". The document states that 1/5 of those present need to approve a request for an RCV in order for one to be held.

[19]Articles 98 and 99 of the rules of procedure state that an RCV can be held but do not describe how one can be invoked. Therefore, we needed to consult the plenary minutes in order to determine the threshold. The minutes indicate that an RCV is held if any one member requests it and the speaker approves that request.

[20]The standing orders stipulate that any member can request an RCV (Article 94) but do not specify the procedure required to approve the request.

B Legislative Politics Research Across Chambers

To estimate the contemporary importance of different legislatures in terms of scholarly research, we counted the number of articles published in journals covered by the Social Science Citation Index (SSCI) from 1990 to March 2018. The SSCI includes primarily English language journals, but also includes journals published in other languages.

In designing our search algorithm, we focused on a common set of search criteria.[21] We recognize that some legislatures may have specific characteristics that cause this common set of criteria to over- or under-count the number of relevant cites. But we have no reason to believe such errors would significantly alter the order of legislatures reported here or change the relative share of articles attributed to each legislature.

B.1 Search procedure

For each legislative lower house or unicameral legislature, we searched by topic for articles according to the following criteria: country name (both as noun and adjective) with (a) the names of the legislature in English or in the native language, or (b) "chamber of deputies" or "parliament". For upper legislative houses, we changed criterion (b) to include "upper house". We present our data in Table OA.B1. The table presents the following information about each chamber:

- The associated country.
- The name of the chamber in the native language.
- The chamber type (lower, upper, or unicameral).
- The number of articles that focus on the chamber.
- The number of articles that focus on the chamber as a percentage of all articles across all 145 chambers.

[21] The full search code algorithm is available from the authors upon request.

Table OA.B1: Legislative Politics Research Across Chambers

Country	**Chamber Name**	**Chamber Type**	**SOP**	**# of Art.**	**% of Art.**
United States	Senate	Upper	Non-RCV	483	13.77
United States	House of Representatives	Lower	Non-RCV	408	11.63
Germany	Bundestag	Lower	Non-RCV	373	10.63
United Kingdom	House of Commons	Lower	Non-RCV	322	9.18
Australia	House of Representatives	Lower	Non-RCV	108	3.08
Canada	House of Commons	Lower	Non-RCV	97	2.77
France	Assemblée Nationale	Lower	Non-RCV	93	2.65
Italy	Camera dei Deputati	Lower	Non-RCV	85	2.42
Sweden	Riksdag	Unicameral	RCV SOP but not mandatory	83	2.37
Ireland	Dáil Éireann	Lower	Non-RCV	80	2.28
Netherlands	Tweede Kamer der Staten-Generaal	Lower	Non-RCV	79	2.25
Spain	Congreso de los Diputados	Lower	Non-RCV	77	2.19
Norway	Storting	Unicameral	RCV SOP but not mandatory	73	2.08
Switzerland	Nationalrat	Lower	RCV mandatory	72	2.05
Denmark	Folketing	Unicameral	RCV SOP but not mandatory	68	1.94
New Zealand	House of Representatives	Unicameral	Non-RCV	67	1.91

Table OA.B1: Legislative Politics Research Across Chambers (*continued*)

Country	**Chamber Name**	**Chamber Type**	**SOP**	**# of Art.**	**% of Art.**
Poland	Sejm	Lower	RCV mandatory	60	1.71
Belgium	Chambre des Représentants	Lower	Non-RCV	57	1.62
Australia	Senate	Upper	Non-RCV	52	1.48
Austria	Nationalrat	Lower	Non-RCV	48	1.37
Israel	Knesset	Unicameral	RCV SOP but not mandatory	48	1.37
Hungary	Országgyűlés	Unicameral	RCV mandatory	43	1.23
Germany	Bundesrat	Upper	Non-RCV	40	1.14
Czech Republic	Poslanecká Sněmovna	Lower	RCV mandatory	37	1.05
Finland	Eduskunta	Unicameral	RCV SOP but not mandatory	36	1.03
United Kingdom	House of Lords	Upper	Non-RCV	27	0.77
Greece	Voulí Ton Ellínon	Unicameral	Non-RCV	27	0.77
India	Lok Sabha	Lower	Non-RCV	24	0.68
Romania	Camera Deputatilor	Lower	RCV SOP but not mandatory	22	0.63
Turkey	Büyük Millet Meclisi	Unicameral	Non-RCV	22	0.63
Brazil	Câmara dos Deputados	Lower	Non-RCV	21	0.60
Mexico	Cámara de Diputados	Lower	Non-RCV	19	0.54
Portugal	Assembleia da República	Unicameral	Non-RCV	17	0.48

Table OA.B1: Legislative Politics Research Across Chambers (*continued*)

Country	Chamber Name	Chamber Type	SOP	# of Art.	% of Art.
South Africa	National Assembly	Lower	RCV mandatory	17	0.48
Canada	Senate	Upper	Non-RCV	16	0.46
Argentina	Cámara de Diputados	Lower	Non-RCV	15	0.43
Slovakia	Národná Rada	Unicameral	RCV mandatory	15	0.43
South Korea	Daehan Minguk Gukhoe	Unicameral	RCV SOP but not mandatory	14	0.40
Bulgaria	Narodno Sabranie	Unicameral	Non-RCV	13	0.37
Lithuania	Seimas	Unicameral	RCV SOP but not mandatory	10	0.29
Mexico	Senado	Upper	Non-RCV	10	0.29
Uruguay	Cámara de Representantes	Lower	Non-RCV	10	0.29
Chile	Cámara de Diputados	Lower	RCV mandatory	9	0.26
Uganda	Parliament	Unicameral	Non-RCV	9	0.26
Estonia	Riigikogu	Unicameral	RCV mandatory	8	0.23
Rwanda	Umutwe w'Abadepite	Lower	NA	8	0.23
Slovenia	Državni Zbor	Lower	RCV mandatory	8	0.23
Spain	Senado	Upper	Non-RCV	8	0.23
Ireland	Seanad Éireann	Upper	Non-RCV	6	0.17
Luxembourg	Chambre des Députes	Unicameral	Non-RCV	6	0.17

Table OA.B1: Legislative Politics Research Across Chambers (*continued*)

Country	**Chamber Name**	**Chamber Type**	**SOP**	**# of Art.**	**% of Art.**
Malta	Parlament	Unicameral	Non-RCV	6	0.17
Peru	Congreso	Unicameral	RCV SOP but not mandatory	6	0.17
South Africa	National Council of Provinces	Upper	Non-RCV	6	0.17
Argentina	Senado	Upper	Non-RCV	5	0.14
Bangladesh	Jatiya Sangsad	Unicameral	Non-RCV	5	0.14
Cuba	Asamblea Nacional	Unicameral	Non-RCV	5	0.14
Czech Republic	Senát	Upper	RCV mandatory	5	0.14
Italy	Senato della Repubblica	Upper	Non-RCV	5	0.14
Malaysia	Dewan Rakyat	Lower	Non-RCV	5	0.14
Switzerland	Ständerat	Upper	Non-RCV	5	0.14
Croatia	Hrvatski Sabor	Unicameral	RCV SOP but not mandatory	4	0.11
Ecuador	Asamblea Nacional	Unicameral	Non-RCV	4	0.11
France	Sénat	Upper	Non-RCV	4	0.11
Georgia	Sakartvelos P'arlament'i	Unicameral	RCV mandatory	4	0.11
Latvia	Saeima	Unicameral	RCV mandatory	4	0.11
Nicaragua	Asamblea Nacional	Unicameral	RCV SOP but not mandatory	4	0.11
Palestine	Al-Majlis al-Tashrī'iyy al-Filasṭīniyy	Unicameral	Non-RCV	4	0.11

Table OA.B1: Legislative Politics Research Across Chambers (*continued*)

Country	**Chamber Name**	**Chamber Type**	**SOP**	**# of Art.**	**% of Art.**
Poland	Senat	Upper	RCV SOP but not mandatory	4	0.11
Serbia	Narodna Skupština	Unicameral	RCV SOP but not mandatory	4	0.11
Singapore	Parliament	Unicameral	Non-RCV	4	0.11
Bosnia	Predstavnički Dom	Lower	RCV SOP but not mandatory	3	0.09
Brazil	Senado Federal	Upper	Non-RCV	3	0.09
Ghana	Parliament	Unicameral	Non-RCV	3	0.09
Kenya	National Assembly	Lower	Non-RCV	3	0.09
Kosovo	Kuvendi i Kosovës	Unicameral	Non-RCV	3	0.09
Philippines	House of Representatives	Lower	Non-RCV	3	0.09
Samoa	Legislative Assembly	Unicameral	Non-RCV	3	0.09
Austria	Bundesrat	Upper	Non-RCV	2	0.06
Chile	Senado	Upper	RCV mandatory	2	0.06
Colombia	Senado	Upper	Non-RCV	2	0.06
Costa Rica	Asamblea Legislativa	Unicameral	Non-RCV	2	0.06
Fiji	Parliament	Unicameral	Non-RCV	2	0.06
Guatemala	Congreso	Unicameral	RCV mandatory	2	0.06
India	Rajya Sabha	Upper	Non-RCV	2	0.06

Table OA.B1: Legislative Politics Research Across Chambers (*continued*)

Country	**Chamber Name**	**Chamber Type**	**SOP**	**# of Art.**	**% of Art.**
Macedonia	Sobranie	Unicameral	Non-RCV	2	0.06
Mauritius	National Assembly	Unicameral	Non-RCV	2	0.06
Moldova	Parlamentul	Unicameral	Non-RCV	2	0.06
Pakistan	Senate	Upper	Non-RCV	2	0.06
Papua New Guinea	National Parliament	Unicameral	Non-RCV	2	0.06
Philippines	Senate	Upper	Non-RCV	2	0.06
Venezuela	Asamblea Nacional	Unicameral	Non-RCV	2	0.06
Albania	Kuvendi i Shqipërisë	Unicameral	Non-RCV	1	0.03
Belgium	Sénat	Upper	Non-RCV	1	0.03
Bhutan	Gyelyong Tshogdu	Lower	Non-RCV	1	0.03
Colombia	Cámara de Representantes	Lower	Non-RCV	1	0.03
El Salvador	Asamblea Legislativa	Unicameral	Non-RCV	1	0.03
Iceland	Althingi	Unicameral	RCV SOP but not mandatory	1	0.03
Jamaica	House of Representatives	Lower	Non-RCV	1	0.03
Montenegro	Skupština	Unicameral	RCV mandatory	1	0.03
Nauru	Parliament	Unicameral	Non-RCV	1	0.03
Pakistan	National Assembly	Lower	Non-RCV	1	0.03
Solomon Islands	Parliament	Unicameral	Non-RCV	1	0.03

Table OA.B1: Legislative Politics Research Across Chambers (*continued*)

Country	**Chamber Name**	**Chamber Type**	**SOP**	**# of Art.**	**% of Art.**
Sri Lanka	Parlimenthuwa	Unicameral	Non-RCV	1	0.03
Thailand	Wutthisapha	Upper	RCV SOP but not mandatory	1	0.03
Tonga	Legislative Assembly	Unicameral	Non-RCV	1	0.03
Tuvalu	Parliament	Unicameral	Non-RCV	1	0.03
Uruguay	Cámara de Senadores	Upper	Non-RCV	1	0.03
Armenia	Azgayin Zhoghov	Unicameral	RCV mandatory	0	0.00
Bahamas	House of Assembly	Lower	Non-RCV	0	0.00
Bahamas	Senate	Upper	Non-RCV	0	0.00
Barbados	House of Assembly	Lower	Non-RCV	0	0.00
Barbados	Senate	Upper	Non-RCV	0	0.00
Belize	House of Representatives	Lower	Non-RCV	0	0.00
Belize	Senate	Upper	Non-RCV	0	0.00
Bhutan	Gyelyong Tshogde	Upper	RCV SOP but not mandatory	0	0.00
Bolivia	Cámara de Diputados	Lower	Non-RCV	0	0.00
Bolivia	Cámara de Senadores	Upper	Non-RCV	0	0.00
Bosnia	Dom Naroda	Upper	RCV SOP but not mandatory	0	0.00

Table OA.B1: Legislative Politics Research Across Chambers (*continued*)

Country	**Chamber Name**	**Chamber Type**	**SOP**	**# of Art.**	**% of Art.**
Burkina Faso	l'Assemblée Nationale	Unicameral	Non-RCV	0	0.00
Dominica	House of Assembly	Unicameral	Non-RCV	0	0.00
Dominican Republic	Cámara de Diputados	Lower	RCV mandatory	0	0.00
Dominican Republic	Senado	Upper	RCV mandatory	0	0.00
Ethiopia	Yehizbtewekayoch Mekir Bet	Lower	Non-RCV	0	0.00
Guyana	National Assembly	Unicameral	Non-RCV	0	0.00
Honduras	Congreso Nacional	Unicameral	Non-RCV	0	0.00
Isle of Man	House of Keys	Lower	Non-RCV	0	0.00
Isle of Man	Legislative Council	Upper	Non-RCV	0	0.00
Jamaica	Senate	Upper	Non-RCV	0	0.00
Kenya	Senate	Upper	Non-RCV	0	0.00
Liberia	House of Representatives	Lower	Non-RCV	0	0.00
Liberia	Senate	Upper	Non-RCV	0	0.00
Malaysia	Dewan Negara	Upper	Non-RCV	0	0.00
Maldives	Rayyithunge Majilis	Unicameral	RCV SOP but not mandatory	0	0.00
Marshall Islands	Legislature	Unicameral	Non-RCV	0	0.00
Micronesia	Congress	Unicameral	Non-RCV	0	0.00

Table OA.B1: Legislative Politics Research Across Chambers (*continued*)

Country	**Chamber Name**	**Chamber Type**	**SOP**	**# of Art.**	**% of Art.**
Netherlands	Eerste Kamer der Staten-Generaal	Upper	RCV SOP but not mandatory	0	0.00
Panama	Asamblea Nacional	Unicameral	Non-RCV	0	0.00
Paraguay	Cámara de Diputados	Lower	Non-RCV	0	0.00
Paraguay	Cámara de Senadores	Upper	Non-RCV	0	0.00
Rwanda	Sena	Upper	NA	0	0.00
Senegal	Assemblée Nationale	Unicameral	Non-RCV	0	0.00
Seychelles	National Assembly	Unicameral	Non-RCV	0	0.00
Trinidad and Tobago	House of Representatives	Lower	Non-RCV	0	0.00
Trinidad and Tobago	Senate	Upper	Non-RCV	0	0.00
Vanuatu	Parlement	Unicameral	Non-RCV	0	0.00

C Alternative Measures of Legislator Preferences

Studies of mass-elite linkages use several different methods to measure the ideological position of political actors. A common approach is to identify the perceived ideological positions based on survey questions that ask the voters or the experts to place political parties on a left-right scale (Adams, Ezrow and Somer-Topcu, 2014; Bakker et al., 2015). The resulting measure can directly be compared to the voters' self-placement on the same scale. However, public opinion or expert surveys are usually limited to the position of political parties or party leaders so they do not include information about all individual legislators. An alternative approach is to use elite surveys that ask the candidates or the incumbents to place themselves on an ideological scale (Burden, 2004). In order to make sure that the measure is comparable across candidates, the responses are scaled using the candidates' placement of political parties on the same ideological scale (Aldrich and McKelvey, 1977; Poole, 1998; Saiegh, 2009). Some of these surveys also include more detailed questions on the candidates' positions on policy issues on the public agenda (Ansolabehere, Snyder and Stewart, 2001).

An alternative to survey-based methods, which also relies on the perception of third parties, is to use information from electoral campaign contributions. McCarty and Poole (1998) and Bonica (2013) devise measures for candidate ideology by modeling the political action committees' decisions about whether and how much to contribute to election campaigns. This method was used to produce comparable estimates of ideology of the candidates for as well as the incumbents of several offices such as the Congress, the state legislatures, the federal courts and the boards of education (Bonica, 2014) but the variation in campaign finance regulations and practices limits the applicability of the method cross-nationally.

Responses to survey questions arguably reflect the sincere preferences of the legislators (Burden, 2004; Saiegh, 2009). For studies of representation, however, the legislators' public positions and policy decisions are more relevant. The availability of computerized techniques makes it possible to analyze political texts such as legislative speeches. Some techniques score texts by comparing the words to a dictionary (Laver and Garry, 2000) or a "reference text" that was already assigned a score by the researcher (Laver, Benoit and Garry, 2003). Another technique models word count as a function of ideological position of the text and the importance of the word. This technique avoids the problem of identifying a dictionary or a reference text that is assumed to have a known ideological position (Slapin and Proksch, 2008). These methods opened the way to systematically analyze the legislators' positions on a diverse set of issues. However, it should be recognized that access to speech is not equal for all legislators, and the distribution of time on the legislative floor is influenced by the strategic concerns of party leaders (Proksch and Slapin, 2012). Therefore, the use of legislative speech as a measure of political ideology is subject to similar problems as using the roll-call votes.

Apart from voting for a bill, the strongest tool that a legislator can use to support a policy is cosponsoring a bill. Thus, cosponsorship decisions and networks are also used to estimate ideological position. It can be argued that cosponsorship is of less direct consequence to policy making compared to floor votes and hence less open to the position-taking incentives and agenda-setting powers of party leadership. One major problem of using cosponsorship decisions is the asymmetrical information that can be gathered from the decision to cosponsor a bill and not to cosponsor a bill. The latter does not necessarily mean disapproval of the bill. Given the time constraints that the legislators face, the measure can be sensitive to the assumptions about which bills the legislator takes into consideration (Alemán et al., 2009; Desposato, Kearney and Crisp, 2011). More recent studies use social media networks to measure ideology. Barberá (2015) estimates ideological position based on the legislators' decision to "follow" other representatives, political parties, and news outlets on Twitter. While this is an innovative method, it relies on a rather strong assumption that legislators interact with their colleagues only if they agree with them.

D Testing Hypotheses of Voting Transparency

In this section, we examine the relationship between a legislative chamber's voting procedures and a number of different factors. To do so, we test the four hypotheses presented in Hug, Wegmann and Wüest (2015) using our sample of legislative chambers. Specifically, the authors test the following hypotheses in their article:

> **Hypothesis 1.** *The more concentrated candidate selection is in the hands of national parties, the less likely it is that a transparent voting procedure will be chosen.*
>
> **Hypothesis 2.** *If candidates are elected in SMD elections, it is more likely that a transparent voting procedure will be chosen.*
>
> **Hypothesis 3.** *The larger the number of MPs in a parliament, the more likely it is that a transparent voting procedure will be chosen.*
>
> **Hypothesis 4.** *Small parliaments with party-entered candidate selection processes are less likely to have a transparent voting procedure than large parliaments with party-centered systems of candidate selection.*

For a discussion of the theoretical intuitions behind these hypotheses, please see Hug, Wegmann and Wüest (2015). In the original analysis, the authors estimate logit models where the dependent variable assumes a value of 1 if a legislative chamber uses roll-call (open) voting as the standard operating procedure for final passage votes (0 otherwise). They find support for **Hypothesis 1**.

Apart from using our own sample and the dependent variable corresponding to votes on most legislative business (rather than final passage), we tried to keep our analysis as similar as possible to the original one. In that vein, we use sources contained in the "Quality of Government" dataset (Teorell et al. 2019) to collect the relevant information. Specifically, Johnson and Wallack (2012) provide measures of whether parties control the selection of candidates, the prevalence of single-member seats, and the size of parliamentary chambers. We refer to these measures as *Average ballot under control of party*, *Size of the chamber*, and *Single-member district seats*.[22] We also include two control variables that indicate whether the legislature can remove the executive and whether it is bicameral. The relevant information for these two variables are found in Regan, Frank and Clark (2009) and Johnson and Wallack (2012), respectively. Finally, Hug, Wegmann and Wüest (2015) omit from their analysis all chambers that are indirectly elected or unelected. We opted to take a different approach and instead control for the percentage of a chamber's membership that is directly elected (*Directly elected members*). We do so because there are several chambers in our sample where some members are directly elected while others are not. Rather than drop these observations and

[22] *Average ballot under control of party* measures the extent to which parties exercise control over who is placed in competitive positions on electoral ballots. Higher values indicate the selection process is *less* party-centered. Additionally, because Hug, Wegmann and Wüest (2015) drop all indirectly elected or unelected chambers from their analysis, their measure for single-member districts captures the share of members who are *elected* in single-member districts. Because we instead control for the share of members who are directly elected (rather than drop chambers), our measure captures the share of members from single-member districts even if those members were not directly elected.

reduce the size of the sample, we instead control for the prevalence of directly elected members. The relevant information for this variable is found in the "Varieties of Democracy" dataset (Coppedge et al. 2019). Because the last year covered in Johnson and Wallack (2012) is 2005, all measures are set to that year.[23] The final dataset we assembled contains 85 chambers (rather than the original 145) due to missing data.[24]

The results are presented in Models 1 and 2 of Table OA.D1. Model 2 includes an interaction between *Size of the chamber* and *Average ballot under control of party* in order to test **Hypothesis 4**. As the results show, we do not find much support for any of the hypotheses presented earlier. Across both models, every relevant variable is statistically insignificant. Important to note, these results are not very different from those presented Hug, Wegmann and Wüest (2015), where the authors only find support for **Hypothesis 1**. However, there are additional differences in the findings we should note. First, Hug, Wegmann and Wüest (2015) find a negative and statistically significant effect for chamber size, indicating that larger chambers are associated with less transparent voting procedures. This actually contradicts the authors' **Hypothesis 3**. In contrast, we do not find a significant effect for chamber size, although the coefficient estimates are positive (as predicted by **Hypothesis 3**). Also, Hug, Wegmann and Wüest (2015) do not detect a significant effect for bicameralism, whereas we present mixed evidence that bicameralism is associated with less transparent voting procedures. The coefficient estimate for bicameralism is negative and significant in Model 2. Overall, our results do not appear to be very different from those in Hug, Wegmann and Wüest (2015).

We also thought it was important to examine whether a country's level of democracy is associated with the transparency of its legislature's voting procedures. Whereas the sample from Hug, Wegmann and Wüest (2015) primarily consists of consolidated European democracies, our sample includes a high number of developing democracies or even authoritarian regimes. Our immediate intuition is that voting procedures should become more transparent as the level of democracy increases because it may be more important to legislators that they establish personal reputations in democracies than in non-democratic regimes. In order to formally test this intuition, in Models 3 and 4 we include the *Polity IV index* (Marshall, Gurr and Jaggers 2018) for 2005 as an independent variable while keeping all other modeling decisions the same. Higher values for the index correspond to a more democratic regime. As the results from these models show, we do not find much evidence that democracy is associated with more transparent voting procedures. While the estimates for the index are positive, they are insignificant for both Models 3 and 4 ($p-$values equal 0.127 and 0.135, respectively). Similar to what we find earlier, the results from Models 3 and 4 indicate that chambers that are part of a bicameral legislature are less likely to employ roll-call votes as the standard operating procedure.

[23] Hug, Wegmann and Wüest (2015) do the same in their analysis.

[24] In comparison, the final sample from Hug, Wegmann and Wüest (2015) that was used for their analysis contained 44 chambers.

Table OA.D1: Explaining Voting Transparency

	Model 1	**Model 2**	**Model 3**	**Model 4**
Average ballot under control of party	-0.288	0.535	-0.314	0.486
	(0.425)	(0.681)	(0.459)	(0.716)
Size of the chamber	0.002	0.050	-0.001	0.046
	(0.019)	(0.036)	(0.019)	(0.037)
Size of the chamber $\times$		-0.050		-0.047
Average ballot under control of party		(0.034)		(0.034)
Single-member district seats	-0.014	-0.014	-0.011	-0.010
	(0.009)	(0.009)	(0.010)	(0.010)
Legislature can remove executive	0.528	0.470	0.627	0.569
	(0.753)	(0.758)	(0.755)	(0.760)
Bicameralism	-0.839	-0.864^{*}	-1.135^{*}	-1.163^{*}
	(0.515)	(0.523)	(0.554)	(0.564)
Directly elected members	0.003	0.000	0.004	-0.001
	(0.014)	(0.014)	(0.014)	(0.014)
Polity IV index			0.265	0.242
			(0.174)	(0.162)
(Intercept)	-0.399	-0.852	-2.706	-2.899
	(1.476)	(1.505)	(2.141)	(2.045)
N	85	85	85	85
AIC	109.732	109.041	108.247	107.846
BIC	126.831	128.582	127.789	129.830
$\log L$	-47.866	-46.521	-46.124	-44.923

Standard Errors in Parenthesis. $^{*}p < 0.1$

E Simulations, Results, and Robustness Checks

E.1 Data Generating Process

E.1.1 Description of Simulation

Before turning to the results and a variety of robustness checks for those presented in the manuscript, we put forward in greater detail the structure of the data generating process used to create the various samples of simulated voting records. All annotated code to replicate the simulations is available online.

STEP 1. Define a natural legislature with random draws of parameter values.

Each natural legislature is composed of $N = 100$ legislators defined by the location of their ideal points, x_j. After setting the ideal points of the two party leaders at 0 and 1 (for the left and right party, respectively), we randomly draw the remaining 98 ideal points. To define the distributions from which these ideal points are drawn, we take a random draw of the parameter for party heterogeneity $d \sim U\,[0.5, 2]$. Additionally, we take a random draw on the parameter $\phi \sim U\,[0.2, 0.8]$, indicating the proportion of seats controlled by the right party. With this, we draw $(\phi * N) - 1$ ideal points for legislators of the right party from the distribution $x_{rj} \sim U\,[1-d, 1+d]$ and $((1-\phi) * N) - 1$ ideal points for legislators of the left party from the distribution $x_{\ell j} \sim U\,[-d, d]$.

STEP 2. Generate voting records for all potential motions.

To generate the potential legislative docket, we randomly draw a set of 2000 proposals and corresponding status quos from the unit interval: $b \sim U\,[0, 1]$ and $sq \sim U\,[0, 1]$. While we constrain the set of potential motions a party leader can propose to this sample, we do not assume each of these will actually be proposed. We will return to this in STEP 5 below.

Given the set of potential motions, we determine how each legislator would vote were the proposal made and therefore whether the proposal would pass. We assume that legislators' votes are entirely driven by policy motivations: if the motion b is closer to legislator j's ideal point x_j than the current status quo sq, then they will vote in favor of the motion. Otherwise, they vote against it. These votes are saved in a voting matrix which we will then subset according to (1) whether the motion would ever be made, and (2) whether it would receive a roll call vote. In addition, we can now establish whether each potential motion would pass according to whether it receives at least $\frac{N}{2} + 1$ votes in support. This information on passage is also stored as it affects the decision calculus of the party leader in deciding whether to propose the motion at all.

STEP 3. Generate cohesion score for each legislator on each potential motion.

Given the voting record on a given potential motion, we can define the cohesion score for each legislator on each potential motion. First, we consider cohesion for those legislators who are voting with their own party leaders. We define cohesion for such legislators in party i as the difference between the proportion of legislators in party i voting with party leader i and the proportion of legislators in party $\neg i$ voting with party leader $\neg i$. In the event legislator j in party i votes in alignment with party leader $\neg i$, we assign a cohesion score of 0.

STEP 4. Establish whether a roll call vote would be requested.

Because taking a vote via roll call does not affect the voting behavior of legislators in this model, we can establish that a roll call vote will be requested anytime the demonstration of positive cohesion as defined in STEP 3 offsets the cost of requesting a roll call vote, k. While our choice of k is inductive throughout, typically targeting what we see empirically as an average number of roll call votes for our sample, we demonstrate in this appendix the robustness of our results to this choice. We store what hypothetical proposals would receive a roll call requests for after the following step to subset our sample into observed (roll call) votes and unobserved votes that would not receive a roll call vote request.

STEP 5. Establish whether a party leader would ever propose the potential motion.

Finally, given the set of potential motions and their corresponding voting outcomes, relative party cohesion scores, and whether either party would request the vote be taken via roll call, we determine whether either party leader would ever propose the motion in the first place. If a motion will pass but neither party requests a roll call, the decision calculus is on policy considerations alone: do they prefer the status quo to the proposed motion. If either party requests a roll call vote, their decision on whether to propose is a function of three things: (1) the policy outcome (weighted by α); (2) the cohesion score revealed on a given bill; and (3) if they were the one to request the roll call, the cost of doing so (k).

With this information about whether either party leader would propose each potential motion, we subset the data into two samples. First, we have the sample of all observed (roll call) votes — i.e., those that a party leader proposes and one or more legislators calls for a roll call vote. Second, we have the sample of all unobserved votes — i.e., those that a party leader will propose, but that no legislator requests to be taken by roll call. With these two samples, we conduct a series of analyses examining the degree to which the inferences we can draw from the roll call vote sample alone reflect that which we would draw if we observed the universe of legislative votes.

E.1.2 Roll Call Vote Samples

The model and corresponding simulation demonstrate why under the proposed motivations only a subsample of the total number of motions receiving a vote are taken by roll call. In the simulations that follow, we focus on the consequences of drawing on partial samples of all voting behavior to extract a variety of quantities of interest scholars are often interested. Before turning to those analyses, it is helpful to visualize the characteristics of votes likely to receive a roll call vote request. In the following two panels, we depict the percentage of proposed motions likely to receive a roll call vote given parameter values for party heterogeneity (d), seat share of the right party (ϕ), the weight assigned to policy compared to cohesion benefits α, and the cost of requesting a roll call vote (k).

Within each panel, we hold the values of α and k constant. Then, for each pairing of party heterogeneity (d) on the x-axis and right party seat share (ϕ) on the y-axis, we determine what motions would actually get proposed (allowing for a set of 121 bill-sq pairs in each, such that $\text{b}, \text{sq} \in \{0, .1, .2, ..., 1\}$). Of those that either party leader would propose, we then determine the percentage that will receive a roll call request. The darkest regions on each heat map correspond to nearly every motion receiving a roll call request, while the lightest regions correspond to nearly none of the motions receiving a roll call request.

In Figure OA.E1, each panel is increasing the value of k by 0.1 (L-R). Unsurprisingly, as the cost of requesting a roll call vote increases, fewer roll call votes are requested. Within each panel, it is also apparent that when party heterogeneity is greater, fewer roll call votes will be requested. Finally, since any legislator can request a vote be taken by roll call, it is unsurprising that there is little systematic effect of increasing the share of seats held by one party or the other.

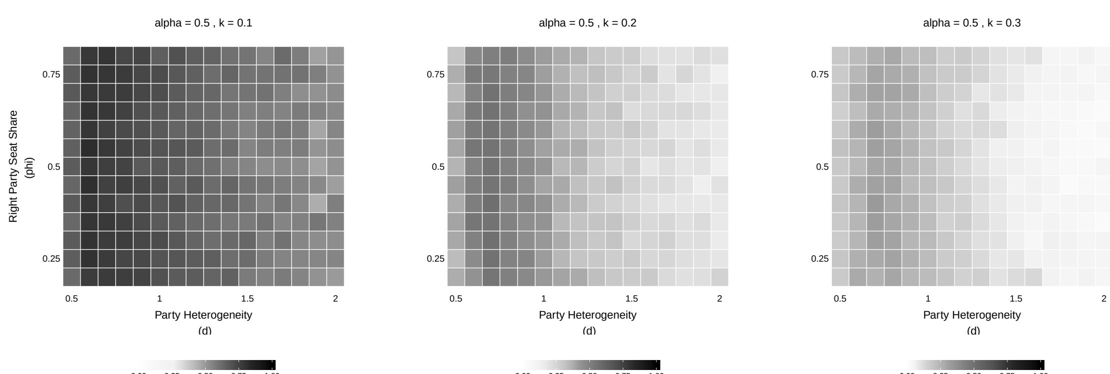

Figure OA.E1: Percentage of Motions Receiving Roll Call Vote Request (by k)

Turning to Figure OA.E2, the effects are somewhat less pronounced. As the weight assigned to policy decreases, roll call votes appear to become less frequent. This is particularly true for lower levels of party heterogeneity. As before, the proportion of votes receiving a RCV request is decreasing in party heterogeneity and there is little effect of seat share.

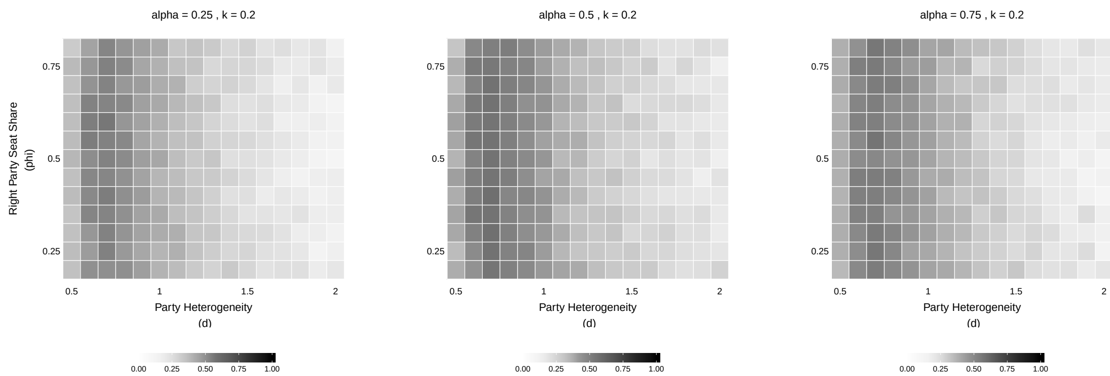

Figure OA.E2: Percentage of Motions Receiving Roll Call Vote Request (by α)

E.2 RCV Samples and Ideal Point Estimation

E.2.1 Descriptive Statistics for Simulations in Manuscript

Figures 1 and 2 of the manuscript demonstrate the ways in which the selection process of roll call votes can lead to ideal point estimates that understate ideological variation among moderate legislators. While the full sample of votes does a fairly good job discerning among legislators with ideologies in the center of the policy dimension where voting occurs, it fails to pick up variation in extremes due to a lack of discriminating votes. This is both true in empirical applications and replicated in the simulation by restricting the set of feasible proposals and status quos to the pareto set existing between the two party leaders' ideal points ($b, sq \in [0, 1]$). In addition to not discriminating among the ideologies of extreme legislators, the roll call vote sample fails to pick up variation in ideology among moderate legislators with ideal points $x_{ij} \in [0, 1]$ — as depicted for individual legislators in Figure 1 of the manuscript and in aggregate in Figure 2 of the manuscript. While these patterns are visually quite clear in the manuscript, we can see examining that data in Table OA.E1 as well. While the average number of legislators in a given natural legislature that our ideal point estimations suggest are equally extreme to either the right or left are about the same across the Full and Roll Call Vote samples, there is a dramatic difference in the proportion of legislators the models consider equally moderate. In the Full Sample, we expect to get on average 1-2 legislators identified as having the median ideal point of the legislature; in the RCV sample, we expect to get on average 27 legislators identified as having the same median ideal point of the legislature. While there is a substantial range on this number in the RCV sample that varies as a function of the randomly drawn parameters for the randomly drawn natural legislature, the best performing model on the RCV sample still placed 17 moderate legislatures at the median of the legislature.

	mean	median	std dev.	minimum	maximum
Full Sample					
minimum ideal point	29.8	32.5	10.8	12	46
median ideal point	1.5	1	0.6	1	3
maximum ideal point	33.2	34	7.8	12	47
RCV Sample					
minimum ideal point	31.4	33.5	13.0	12	63
median ideal point	26.9	22	13.9	17	63
maximum ideal point	34.7	34.5	9.8	12	61

Table OA.E1: Summary Statistics for the ideal points simulated across 50 natural legislatures in Figure 2 of the manuscript. For both the full and RCV samples, figures reflect the average, median, standard deviation, minimum, and maximum number of legislators with ideal points equal to the minimum, median, and maximum ideal point of the chamber.

E.2.2 Quantity vs. Prevalence of Roll Call Votes

In Figure 1 of the manuscript, we demonstrate the effect of increasing the prevalence of roll call votes for our ability to extract ideal point estimates. As the prevalence of RCVs increases — in Figure 1 of the manuscript from (L-R) 7.8% to 15.2% to 45.3% — the models are more able to discern (true) ideological differences between moderate legislators. In that exercise, however, as prevalence is increasing so too is the absolute number of roll call votes — there were 78, 148, and 418, respectively. Thus, one might alternatively infer it is the absolute number of roll call votes that drives the issue we are highlighting, not the prevalence. To tease apart whether it is the absolute number of observed roll call votes or the prevalence driving this effect, we run the following simulation on a single natural legislature — that is, from one random draw of legislators ideal points, the same party heterogeneity (d), the same seat share (ϕ), and the same cost of roll call request (k). All that is changing across panels is the total number of motions (Votes) and total number of roll call votes, holding the prevalence of those roll call votes defined as $\frac{\#\text{ RCV}}{\#\text{ Total Votes}}$ constant around 20%.

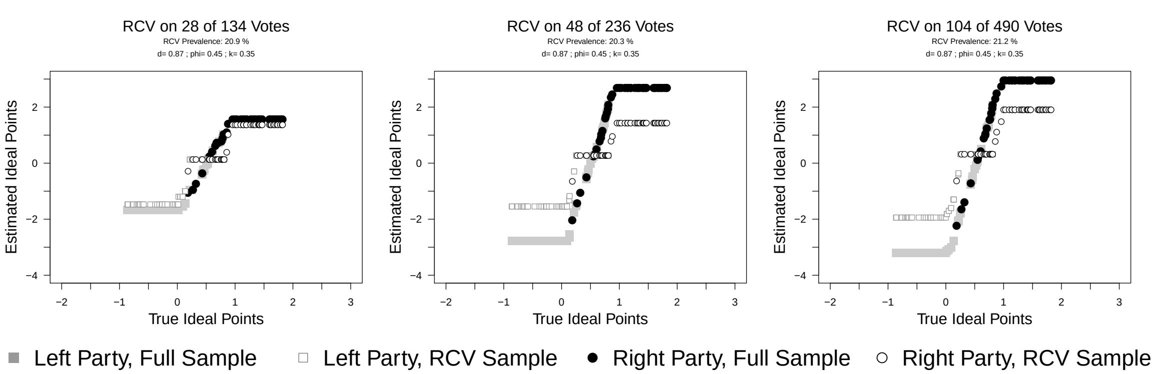

Figure OA.E3: Prevalence of Roll Call Votes

As is clear moving across the three panels of Figure OA.E3, increasing the number of votes taken by roll call does not change the problems associated with us only observing 20% of the total vote sample. While the estimates for the full sample (denoted by the solid circles and squares) are better able to differentiate among median legislators as the sample of total votes increases, increasing the size of the roll call vote sample does not change the fact that the properties of the partial sample will understate true variation that exists among median legislators.

E.2.3 Variation in Party Heterogeneity by Party

All simulations and results discussed in the manuscript assume party heterogeneity is constant across the parties. In the first two analyses that assume a single dimensional policy space (i.e., those results on ideal point estimation and party cohesion/unity scores), each natural legislature has its own single random draw of party heterogeneity $d \sim \mathrm{U}\,[.5, 2]$ which dictates the support of the distribution from which legislator ideal points are drawn. In the third analysis that allows for a two dimensional policy space, each policy dimension in each natural legislature has its own random draw of party heterogeneity such that $d_k \sim \mathrm{U}\,[.5, 2]$ where $k \in \{1, 2\}$ reflects the policy dimension. However, on a given policy dimension k, both parties have the same heterogeneity.

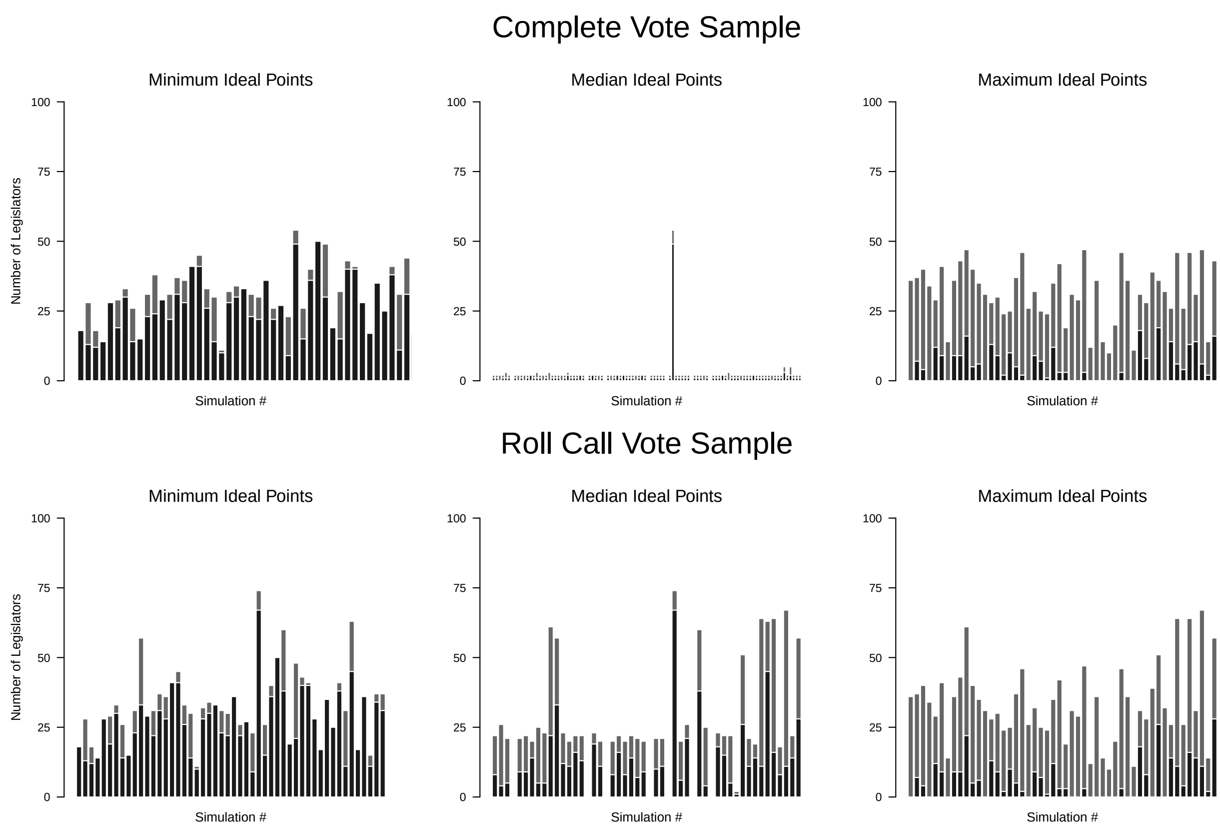

Figure OA.E4: Allowing for differences in party heterogeneity across parties in a given natural legislature, each stacked histogram depicts the proportion of legislators with ideal points equal to the minimum, median, and maximum ideal point for that legislature. The black bars denote the proportion of the left party and the grey bars denote the proportion of the right party.

This is a simplifying theoretical assumption and it is not difficult to imagine a variety of policy areas in which this is not the case. One might be concerned that if parties had different levels of heterogeneity, this would affect the incentives to request roll call votes and in turn the motions proposed by party leaders. To address this in the context of our model and its implications for ideal point estimation, we re-examine the simulation that estimates proportion of legislators for whom we would estimate having identical ideal points. In the manuscript, the results of this exercise for constant levels of party heterogeneity are reported in Figure 2. To allow for varying level of party heterogeneity, we simply take separate independent draws for party heterogeneity for the left and right parties, such that d_{ik} for $i \in \{\ell, r\}$ and $k \in \{1\}$ reflects the party heterogeneity for party i on dimension k. Therefore, when we take our random draw of $j \in \{1, ..., 100\}$ legislator ideal points for a given natural legislature, $x_{ijk} \sim \mathrm{U}\left[I_i - d_{ik}, I_i + d_{ik}\right]$. We then replicate the analysis depicted in Figure 2 of the manuscript, estimating the ideal points of our 100 legislators across 50 natural legislatures and then plotting the proportion of individual legislators with ideal points identical to the minimum, median, and maximum ideal point of the chamber. The results of this exercise are broken down by party in the following Figure OA.E4. The findings are nearly identical and to those presented for the common party heterogeneity depicted in the manuscript.

E.2.4 Robustness Checks on Policy Weight Parameter (α)

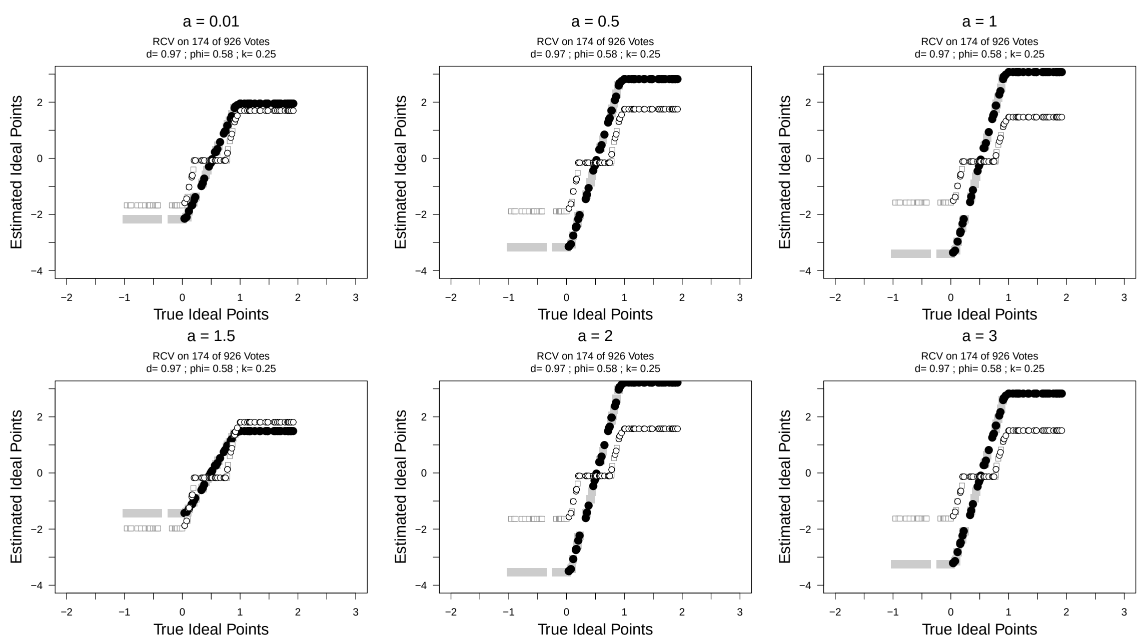

Figure OA.E5: Robustness Checks for Ideal Point Estimation — Varying the α weighting parameter

Recall that when either party leader is deciding whether to propose a given motion, they take into consideration both their utility over the proposal b compared to the status quo sq as well as their return for relative cohesion. To allow for the flexibility that one of these objectives may be more or less important for the party leaders, we include a weighting parameter ($\alpha > 0$) on the policy term, meaning the importance assigned to the policy outcome relative to cohesion is increasing in α. Throughout the main results presented in the manuscript, we assume $\alpha = 0.5$, meaning the import party leaders assign to policy outcomes is half as much as they assign to demonstrating cohesion. To demonstrate the results on ideal point estimation are robust to this selection of α in our simulations, the following replicates the results from Figure 1 in the manuscript across five additional values: $\alpha = \{0.01, 0.5, 1, 1.5, 2, 3\}$. As we would expect given the results presented in Figure OA.E2, changing the value of α is of no consequence for the results.

E.2.5 Analyzing Roll Call Votes with Very High and Very Low Prevalence

In each of the simulations in the manuscript, we choose parameter values that produce roll call votes on roughly 10-20% of the total sample of proposed motions. Given the empirical results from our survey of legislative procedures, this is in many cases a vast overstatement of the data contained in roll call voting records. While it perhaps goes without saying that a legislatures with roll call votes amounting to less than 2% of total votes are equally if not more worse off than those with the higher number of roll call votes that we focus our attention, it is straightforward to demonstrate the consequences of such small samples.

Consider the case of New Zealand, which as reported in Table 1 of the manuscript took 2% of their 8291 total votes via roll call between 2003 and 2015. This time period spans the complete 48th-50th parliaments, so we can say on average this amounts to a natural legislature with 2763 total votes with 55 of them taken via roll call. By adjusting our parameter vales to approximate this amount of total votes and roll call prevalence, we can generate the a sample which allows our data generating process to approximate such a legislature. Here, for a higher cost of requesting a roll call than we use throughout ($k = .4$) as well as more total votes (of 5500 potential motions, the party leaders collectively propose 2748), we are able to create a sample of 50 roll call votes which amounts to 1.82%.

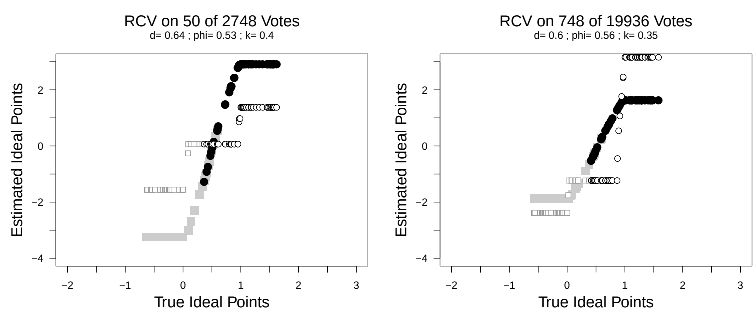

Figure OA.E6: Ideal Point Estimation with (very) small samples of roll call votes. For the figure on the left, we select parameter values that produce a sample similar to what we observe empirically for the New Zealand Parliament: of the 2748 total votes, only 50 (1.8%) are taken via roll call. For the figure on the right, we select parameter values that produce a sample similar to what we observe empirically for the French National Assembly: of the 19,936 total votes, only 748 (3.75%) are taken via roll call.

With this sample, we then repeat the analysis from the manuscript and produce the ideal points plotted in the left panel of Figure OA.E6. Unsurprisingly given the small sample of roll call votes, the ideal point estimation is only able to discern 6 distinct ideal points for the 100 legislators. Further, 96 of the 100 legislators are estimated to have ideal points of the minimum, median, or maximum of the legislature. While the estimation from the full sample obviously performs substantially better than the significantly smaller roll call sample, it is again true that the properties of the roll call vote sample make it particularly worse at discerning variation among moderate legislators.

We can repeat this exercise simulating a natural legislature similar to what we would expect the lower house of the French Parliament (the National Assembly) to look like. While the National Assembly exhibits a similarly low percentage of roll call votes (3.6% from 1998-2012), the large number of total votes (62,185) means this amounts to substantially more roll call votes in practice. This period includes the 11th, 12th, and 13th National Assemblies, meaning there are an average of 738 roll call votes and 20,728 total votes per National Assembly. By using a slightly lower cost of requesting a roll call vote as before ($k = 0.35$) but with substantially more potential motions yielding a total of 19,936 proposals, we are able to create a sample of 748 roll call votes, which amounts to 3.75% of all votes. Ideal points estimated from the full and roll call vote samples created to reflect a legislature similar to the National Assembly are depicted in the right panel of Figure OA.E6. The slightly higher prevalence of roll call votes (from 1.8% to 3.6%) in France does lead to some improvement in the distinction between legislators, but not much. The estimates from roll call votes alone produce only 10 distinct ideal points, with 94 of the 100 legislators receiving either the minimum, median, or maximum ideal point.

By contrast, we can similarly examine simulated data for natural legislatures with very high levels of roll call vote prevalence. For example, in Table 1 of the manuscript the legislature with the highest prevalence of roll call votes is Switzerland with 66% of all votes taken via roll call. If we lower the cost associated with roll call vote requests to $k = 0.1$ and $\alpha = 0.5$, we can generate a sample of 50 natural legislatures in which the average roll call vote prevalence is 63.9%. When we estimate the ideal points using this sample of roll call votes, we find that on average 10.32 legislators per natural legislature are assigned the identical median ideal point such that we cannot distinguish among them ideologically. While this is a vast improvement over the previous two examples of very low roll call prevalence, the problem remains even for legislatures with maximally prevalent roll call votes.

E.2.6 Ideal Point Estimation with Exogenous Agenda

All results in the manuscript as well as the appendix allow for an endogenous agenda in the sense that for a given natural legislature, any randomly drawn motion (b, sq) is only proposed and enters our sample of votes if either party leader would do so. One alternative way of populating the legislative agenda would be to randomly draw this same set of motions but assume they are all proposed — i.e., removing the discretion of the party leaders to propose the motion or not. To demonstrate our findings with respect to ideal point estimation are not sensitive to this specification

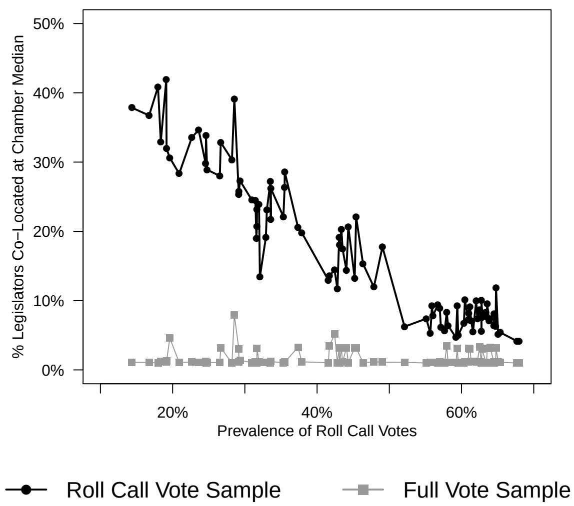

Figure OA.E7: Ideal Point Estimation with Exogenous Agenda

of the agenda, we can randomly simulate legislative agendas for a set of natural legislatures and then re-estimate our ideal points to determine whether the issue of not being able to distinguish among median legislators remains. In Figure OA.E7, we plot the percentage of legislators co-located at the chamber median for both the full sample of votes (in grey) and the partial sample of votes for which a roll call vote would be requested (in black) alongside the prevalence of RCV in that natural legislature. As before, across all levels of roll call vote prevalence, the selection process by which roll call vote samples are generated results in more moderate legislators being co-located at the median of the chamber.

E.3 RCV Samples and Cohesion & Unity Scores

E.3.1 Descriptive Statistics for Simulations in Manuscript

In Figure 4 of the manuscript, we depict the distribution of differences in cohesion scores between unobserved and observed votes. The summary statistics for that figure are provided in the first row of Table OA.E2 under "Signed Differences, All," indicating it includes for the entire sample of 50 randomly drawn legislatures the distribution of *Cohesion on Unobserved Votes - Cohesion on RCVs*. To get a sense of the average absolute magnitude of this difference, we also include here the descriptive statistics for the absolute difference: $||$*Cohesion on Unobserved Votes - Cohesion on RCVs*$||$.

To examine whether the sizable differences are only occurring in those legislatures that are in some sense "extreme" — either because they are for legislatures in which one party holds a sizable majority of the seats (i.e., a very large or very small ϕ) or because the legislators within a party are ideologically diverse (i.e., a large d) — we examine the distribution of differences for a subsample of observations restricting the values of $\phi \in [.35, .65]$ and $d \in [.75, 1.5]$. The descriptive statistics for

	mean	median	std. dev.	minimum	maximum
Signed Difference					
All	0.02	0.02	0.09	-0.16	0.22
Subsample	0.01	0.01	0.10	-0.16	0.21
Absolute Difference					
All	0.08	0.08	0.05	0.001	0.22
Subsample	0.09	0.10	0.05	0.005	0.21

Table OA.E2: Summary statistics for differences in cohesion scores across unobserved votes and observed roll call votes, as depicted in Figure 4 of the manuscript. Each figure in the table reflects the difference between cohesion for unobserved and observed votes, meaning positive values of the signed difference indicate unobserved cohesion is greater than that which we observe with roll call votes. The subsample corresponds to the sample of "typical" legislatures defined above.

this subsample are included in Table OA.E2 again for both the signed and absolute difference in cohesion scores.

E.3.2 Robustness Checks on Policy Weight Parameter (α)

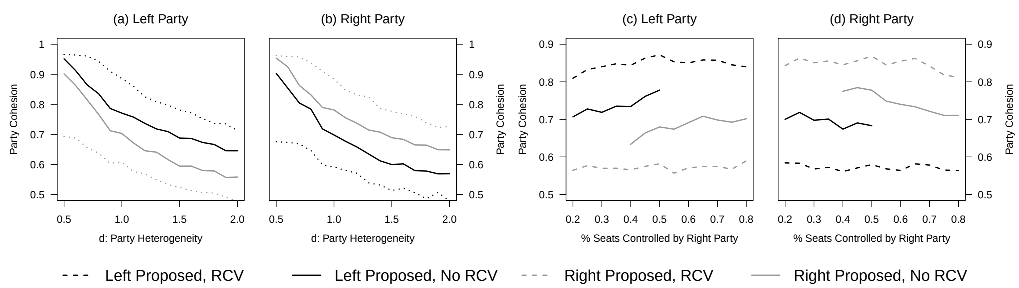

Figure OA.E8: Each figure shows for the left and right party across values of party heterogeneity (d) and seats controlled by the right party (ϕ) the differences in cohesion across both unobserved (non-RCV) votes and observed (RCV) votes in, divided by the which party made the proposal. All simulations are the same as those in the manuscript with the exceptions that $\alpha = 1$ and we run fewer (100) simulations, which is why the lines appear less smooth.

To demonstrate the simulation results on party cohesion and unity depicted in Figures 3 and 4 of the manuscript are not sensitive to the choice of the parameter α that acts as a weight placed by the party leader on policy vis-a-vis cohesion, we re-simulate and estimate the models for $\alpha = 1$. When $\alpha = 1$, this corresponds to party leaders who assign equal weight to outcomes over policy and the demonstration of party cohesion. In Figure OA.E8, we repeat the analysis for the effect of the parameters for party heterogeneity (d) and right party seat share (ϕ) on party cohesion in the observed and unobserved sample. The key insights remain the same: the proposing party will appear consistently more cohesive on roll call votes than on unobserved votes, while the opposite is true for the non-proposing party. As we would expect, party cohesion is monotonically decreasing in party heterogeneity for both parties regardless of the proposing party and in both the observed and unobserved samples of votes. In Figure OA.E8c-d, we again see a similar result from the manuscript concerning the relationship between the share of seats in the legislature and party cohesion.

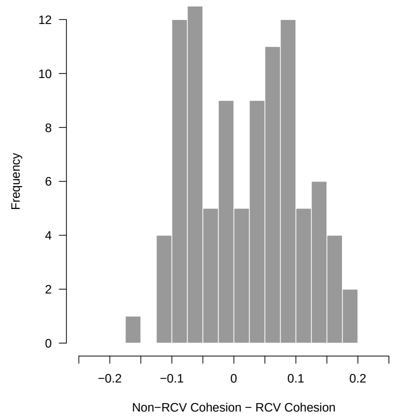

Figure OA.E9: Distribution of the difference between party cohesion in Unobserved (Non-RCV) votes and cohesion in observed (RCV) votes in each of the 50 natural legislatures. All simulations are the same as those in the manuscript with the exception $\alpha = 1$.

Continuing the robustness check for $\alpha = 1$, Figure OA.E9 illustrates the difference between average unity scores in the unobserved and observed samples. As before, unity scores are neither systematically over- nor under-estimated. Further, the frequency with which these differences are meaningfully different from zero indicates cohesion scores estimated from roll call votes are frequently unrepresentative of the degree of party cohesion in all legislative voting. For an $\alpha = 1$, we find that in 22% of the simulated natural legislatures, the difference between RCV and non RCV average unity scores is at least 10% for one of the two parties.

E.3.3 Robustness Checks on Cost of Roll Call Vote Request (k)

In the simulations on cohesion and unity scores in the manuscript we selected a value of $k = 0.2$ to reflect the cost of roll call vote requests. As the panel of heat maps in Figure OA.E1 demonstrate, increasing k reduces the proportion of proposals receiving a roll call vote request across all values of party heterogeneity (d) and seat share (ϕ). To ensure these results are not a function of the arbitrarily/inductively choice of k, we repeat the above analysis in Figures OA.E10 and OA.E11 for $k = \{0.1, 0.3\}$.

In Figure OA.E10 we replicate the findings presented in Figure 3 of the manuscript for $k = 0.1$ in the top row and $k = 0.3$ in the bottom row. While the trends remain almost identical to those presented in the manuscript for $k = 0.2$, it is clear how changes in the cost of requesting a roll call vote affect the patterns we observe. Recall from Figure OA.E1 the proportion of motions receiving roll call votes is going to be high, and even approaching 100%. It is therefore unsurprising that for smaller values of k we see the patterns for observed and unobserved votes converging on one another, though even for a fairly small k they remain substantively distinct. By the same token, as we increase k and see an even lower prevalence of roll call votes in the bottom row of Figure OA.E10,

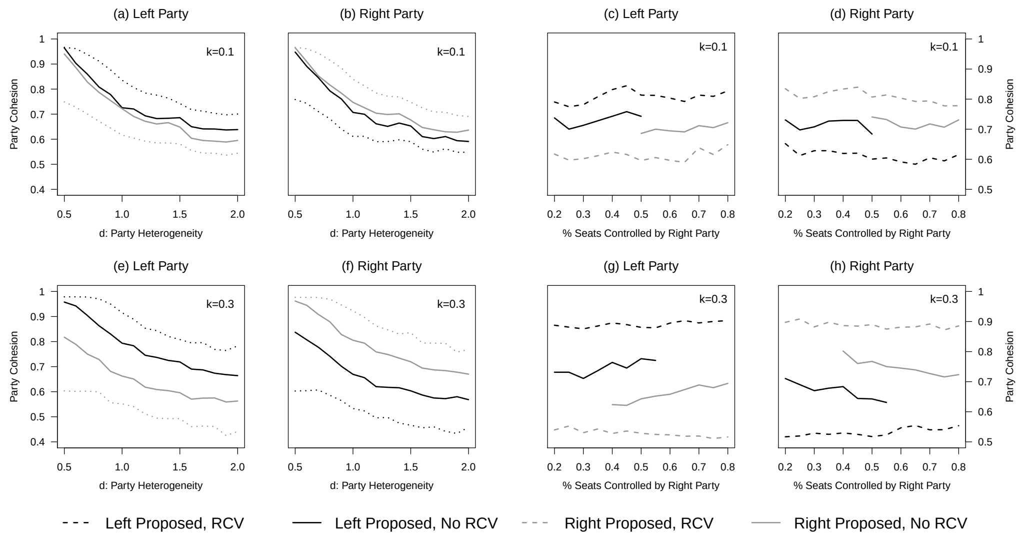

Figure OA.E10: Each figure shows for the left and right parties the differences in cohesion for both unobserved (non-RCV) votes and observed (RCV) votes across values of party heterogeneity (d) and seats controlled by the right party (ϕ). We further divide the data by which party leader proposed the motion. All simulations are the same as those in the manuscript with the exceptions that $k = \{0.1, 0.3\}$ and for computational convenience we run fewer (50) simulations, which is why the lines are less smooth.

the differences we see in the observed and unobserved samples can grow quite large for all values of d and ϕ.

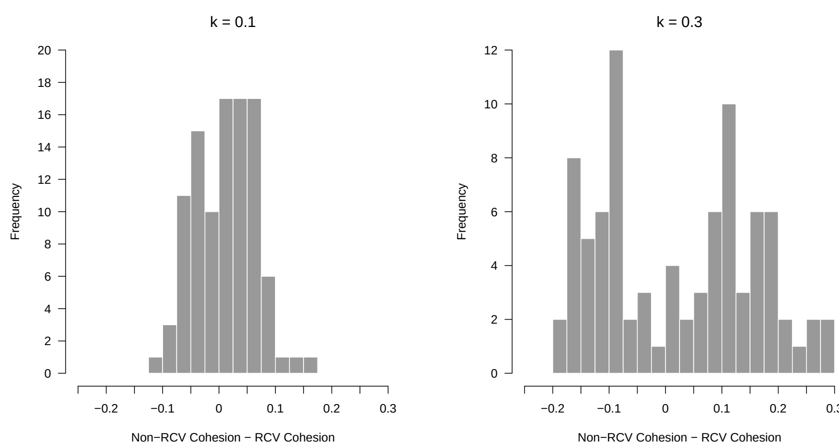

Figure OA.E11: Distribution of the difference between party cohesion in Unobserved (Non-RCV) votes and cohesion in observed (RCV) votes in each of the 50 natural legislatures. All simulations are the same as those in the manuscript with the exception that $k = 0.1$ (L) or $k = 0.3$ (R).

In Figure OA.E11 we turn to the effect of k on the distribution of the difference between cohesion in the observed and unobserved samples. Again, as we would expect these differences are most extreme as we increase k and reduce the prevalence of roll call votes, and smaller but still meaningful for small costs of roll call requests. For the left panel of Figure OA.E11 in which $k = 0.1$, the natural legislatures in this sample take on average 65% of their total votes by roll call. As our empirical findings indicate, this would be a rare case similar to what we see in Switzerland but no where else in our sample. While we do see here that the non-RCV cohesion is more similar to the observed cohesion we see for roll call votes, it is even still true here that 4% of the legislatures would be off by 10+% in either direction and 41% would be off by 5+% in either direction. Thus while expanding the prevalence of roll call votes certainly improves the inferences we can draw from the roll call vote sample alone, it does not eliminate the issues of sample selection entirely even for an extreme case like this.

In the right panel of Figure OA.E11 we assess the robustness of our main result by increasing the cost of requesting a roll call vote ($k = 0.3$). This produces a set of natural legislatures for which the average prevalence of roll call voting is 14.5% of total votes, a figure more in line with our empirical findings than the previous example in which $k = 0.1$. As we would expect, the more selective sample of roll call votes creates a greater differences in cohesion between the observed and unobserved votes. For over half of the natural legislatures in this sample (53 of 100), estimates of cohesion from the roll call vote sample would be off by 10+% compared to those of the unobserved votes.

E.3.4 Party Cohesion with Exogenous Agenda

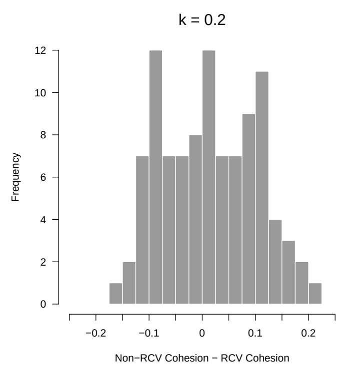

Figure OA.E12: Distribution of the difference between party cohesion in Unobserved (Non-RCV) votes and cohesion in observed (RCV) votes in each of the 50 natural legislatures with an exogenous agenda.

We can also consider whether the result concerning the differences between party cohesion on observed and unobserved votes are robust to the use of an exogenous agenda. As before with the case of ideal point estimation with an exogenous legislative agenda, we populate the set of proposals on which legislators will vote with a randomly drawn set of motions (b, sq) and assume each of these will be proposed. Once proposed, each individual legislator must decide whether to request a roll call vote and how they will vote. To demonstrate our findings presented in Figure 4 of the manuscript are robust to an exogenous legislative agenda, we replicate the analysis that looks at the absolute difference in party cohesion between the observed RCV sample and unobserved non-RCV sample. These results for $k = 0.2$ are presented in Figure OA.E12. We find a similar distribution to that which we saw for an endogenous agenda. For 31% of natural legislatures, party cohesion inferred from the roll call vote sample is greater than 10% different than it is in the sample of unobserved votes.

E.4 RCV Samples and Policy Dimensions

E.4.1 Robustness Checks on Cost of Roll Call Vote Request (k)

In the manuscript we demonstrate for a sample of 25 natural legislatures how using a roll call vote sample to discern the appropriate number of policy dimensions may result in an underestimation of dimensionality. In the main results, we simulate the data assuming an $\alpha = 0.5$ and a cost of roll call votes k equal to 0.35. This produces a sample of 546 votes of which 60 are taken via roll call (11%). Given the empirical findings about the low prevalence of roll call votes in many contexts, this is an appropriate starting point for how we might think about the consequences for assessing policy dimensions.

	(1) α=0.5 k=0.4	(2) α=0.5 k=0.35	(3) α=0.5 k=0.3	(4) α=0.5 k=0.25	(5) α=0.5 k=0.2	(6) α=0.5 k=0.15
Simulated Votes						
Mean Total Votes	527	546	580	608	654	748
Mean % Roll Call	8%	11%	17%	20%	25%	34%
All Votes						
% Votes on d_1	50%	50%	49%	49%	50%	49%
% Votes on d_2	50%	50%	51%	51%	50%	51%
% ID 2 dimensions	96 - 100%	96 - 100%	92 - 100%	96 - 100%	96%	100%
Roll Call Votes						
% Votes on d_1	42%	42%	40%	35%	36%	44%
% Votes on d_2	58%	58%	60%	65%	64%	56%
% ID 2 dimensions	36 - 56%	56 - 80%	72 - 96%	72 - 96%	80 - 96%	92-100%

Table OA.E3: Robustness of Dimensionality Results for Values of k and α. All figures correspond to the mean across the 25 simulated natural legislatures with the given parameter values. For the rows indicating the percentage of simulations correctly identifying the two policy dimensions, the upper bound corresponds to the result given an eigenvalue of 1 threshold and the lower bound corresponds to an "elbow" method — see Figures OA.E13 and OA.E14 for scree plots of the eigenvalues.

To demonstrate how these findings are affected by changes in the cost of requesting a roll call vote (k) and thus in turn the prevalence of votes taken via roll call, we conduct a series of robustness checks that repeat our analysis of dimensionality across different values of k. In Table OA.E3, we show the key quantities of interest for $k \in \{0.4, 0.35, 0.3, 0.25, 0.2, 0.15\}$. When $k = 0.4$, we simulate a sample of 527 total votes for which 8% receive a roll call vote. In the full sample, there is an even split of votes across the two dimensions and, on average, the models correctly pick up the two dimensions 96-100% of the time. The roll call vote sample performs much less well. The models only correctly identify the existence of two policy dimensions for 36-56% of natural legislatures and a disproportionate amount of the observed votes (58%) are on policies from the dimension in which the parties are less heterogeneous (smaller d).

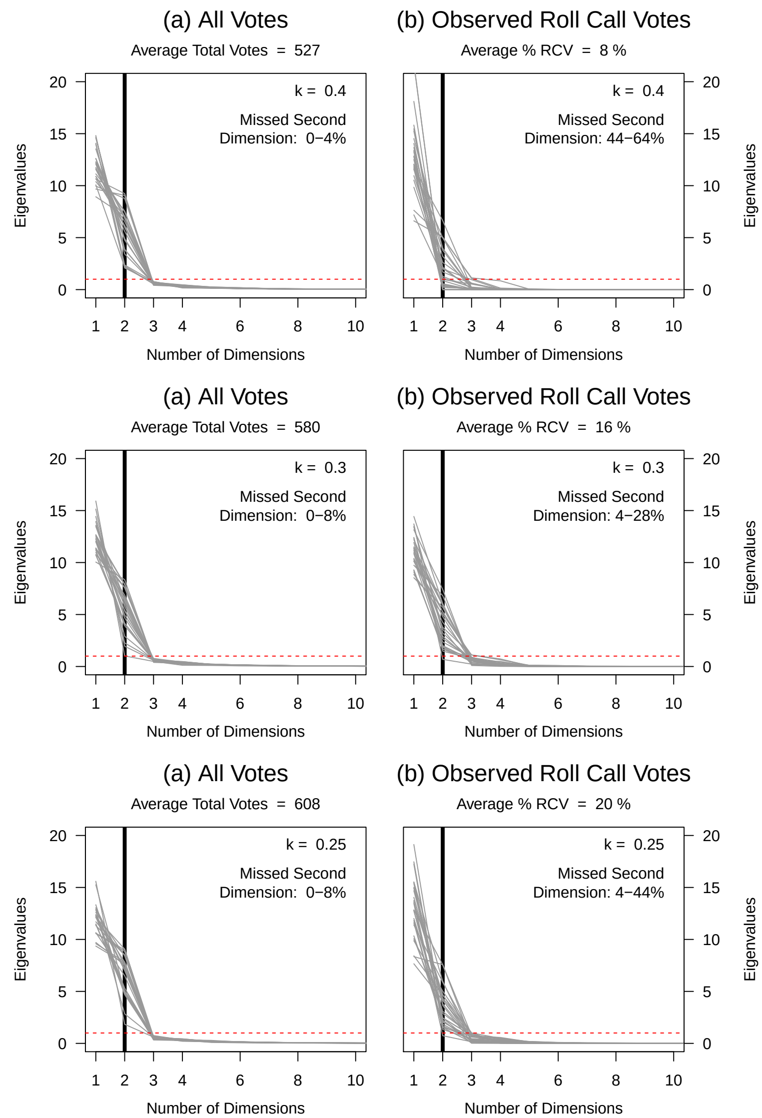

Figure OA.E13: Scree plots corresponding to models (1), (3), and (4) in Table OA.E3.

As we lower the cost of requesting a roll call vote, the likelihood that the models pick up the two policy dimensions increases. On the other extreme, for the natural legislatures simulated with a $k = 0.15$, roll call votes are on average 34% of the total votes. While votes on the first dimension are still underrepresented, the models on average perform quite well picking up the two policy dimensions 92-100% of the time. Across the intermediate ranges of k, it is clear both the prevalence of roll call vote requests and ability of the models to pick up the two dimensions are increasing as k decreases. However, decreasing k does not affect the imbalance of roll call vote requests across the two dimensions: for all values of k, we will observe fewer votes on the dimension with greater party heterogeneity.

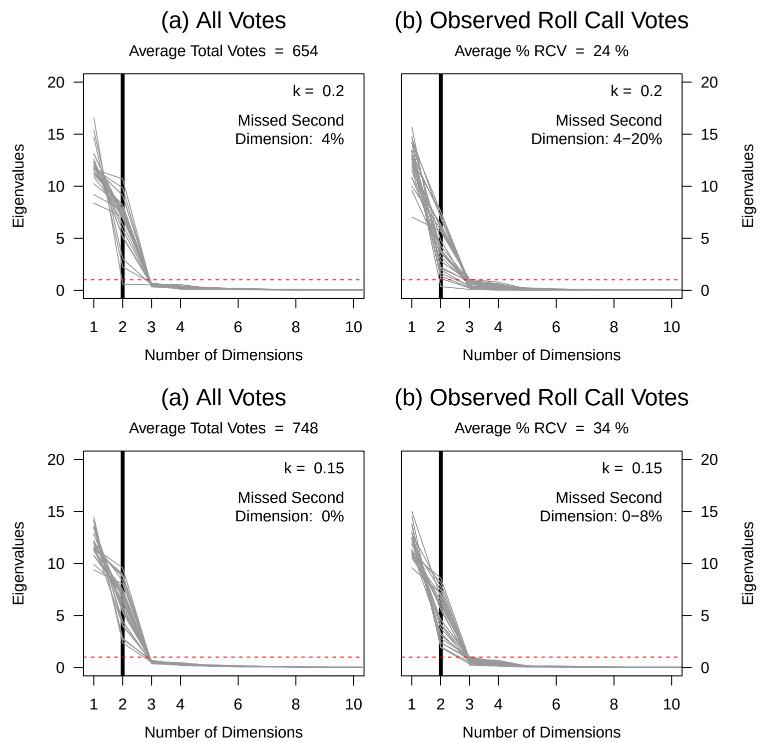

Figure OA.E14: Scree plots corresponding to models (5) and (6) in Table OA.E3.

E.4.2 Robustness Checks on Policy Weight Parameter (α)

Finally, we can illustrate the robustness of our findings concerning dimensionality to variation in the weight parameter, α. In Figure OA.E15 we replicate the initial model with $k = 0.35$ and $\alpha = 0.1$. Compared to the primary simulation included in the manuscript in which $\alpha = 0.5$, this robustness check reflects the case in which party leaders assign equal weight to policy outcome and cohesion considerations. In the new model, an average of 9% of the total 535 votes are taken via roll call. The models on the full sample of votes correctly identify the two dimensions in 92-100% of the natural legislatures, while the partial sample only picks up the two dimensions in 52-76% of the natural legislatures. As before, in the roll call vote sample those votes on the more heterogeneous policy dimension are under-represented compared to votes on the less heterogeneous policy dimension (40 vs. 60%), but the split is equal in the full sample.

E.4.3 Quantity vs. Prevalence of Roll Call Votes

Here we turn to the question of whether increasing the absolute number of roll call votes while holding the relative percentage of the total voting sample constant enables us to draw better inferences from the observed samples. To examine whether increasing the quantity of roll call votes

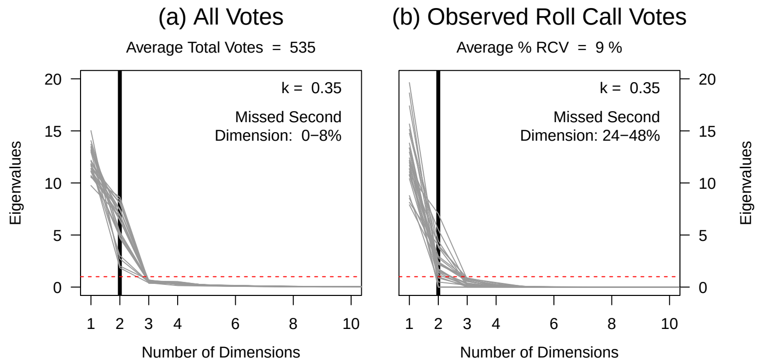

Figure OA.E15: Scree plots for robustness check on policy weight parameter, $\alpha = 1$ and $\kappa = 0.35$.

	(1) α=0.5 k=0.35	(2) α=0.5 k=0.35	(3) α=0.5 k=0.35	(4) α=0.5 k=0.35
Simulated Votes				
Mean Total Votes	546	836	1097	1655
Mean % Roll Call	11%	12%	11%	11%
All Votes				
% Votes on d_1	50%	50%	50%	50%
% Votes on d_2	50%	50%	50%	50%
% ID 2 dimensions	92 - 100%	100%	92 - 100%	84 - 100%
Roll Call Votes				
% Votes on d_1	42%	31%	39%	44%
% Votes on d_2	58%	69%	61%	56%
% ID 2 dimensions	56 - 80%	40 - 64%	44-72%	44 - 68%

Table OA.E4: Holding the prevalence of roll call votes across natural legislatures constant, each column shows the results of our analyses on dimensionality while increasing the absolute number of roll call votes in the sample.

while holding their prevalence constant affects our ability to discern the dimensionality of legislative policy, we repeat the analysis in the manuscript for larger samples of roll call votes while maintaining the prevalence from 11-12%. With the initial results for a legislature with 546 total votes presented in column 1 of Table OA.E4, we replicate this analysis and present the results in columns 2, 3 and 4 for legislatures with 836, 1097, and 1655 votes, respectively.

As is clear from the table, our ability to discern correctly the existence of the two policy dimensions is not necessarily improved as we increase the total number of roll call votes in a given legislature while holding their prevalence constant. As the quantity of roll call votes increases, there is no measurable improvement in the percentage of legislatures for which the two dimensional policy space is recognized. For example, while the initial sample we used of 546 total votes with 11% roll call votes, our analysis suggests the models may get up to 80% of legislatures “correct” in terms of picking up the two policy dimensions. However, if we just over double our sample of total votes to

1097 of which 11% are roll called, the last row of column 3 shows our models may correctly indicate two policy dimensions in as few as 44% and only as many as 72% of natural legislatures. When we compare these results to those in Table OA.E3, it appears to be the prevalence of roll call votes that matters for the purpose of identifying policy dimensions rather than the absolute number of roll call votes.

E.4.4 Policy Dimensionality with Exogenous Agenda

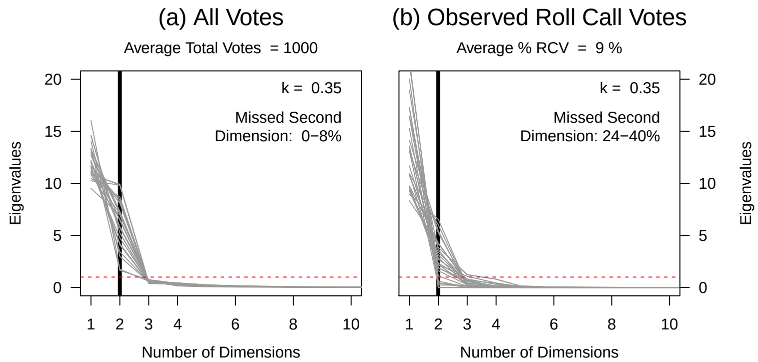

Figure OA.E16: Scree plots for robustness check on exogenous legislative agenda.

Finally, we examine how simulating votes according to an exogenous (randomly drawn) legislative agenda affects our results concerning the ability of our ideal point estimation models to discern multiple policy dimensions. To do this, we replicate the analysis presented in Figure 5 of the manuscript after eliminating the option for a randomly drawn motion on one of two dimensions to not be proposed by either party. These results are presented for a sample of 25 natural legislatures all with a $k = 0.35$ in Figure OA.E16. When using the full sample of votes and the eigenvalue of one threshold, our model correctly identifies the two policy dimensions for the entire sample of natural legislatures. If we increased this threshold to 2, it would incorrectly suggest with the full sample of votes that 8% of our natural legislatures (or 2 of 25) exhibit only a single policy dimension. Turning to estimates of the same model on the roll call vote sample, the eigenvalue of one threshold would lead us to missing the second policy dimension in 24% (or 6/25) of our natural legislatures. With the higher threshold of 2, we see our models fail to pick up the second policy dimension in 40% (or 10/25) of our natural legislatures.

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