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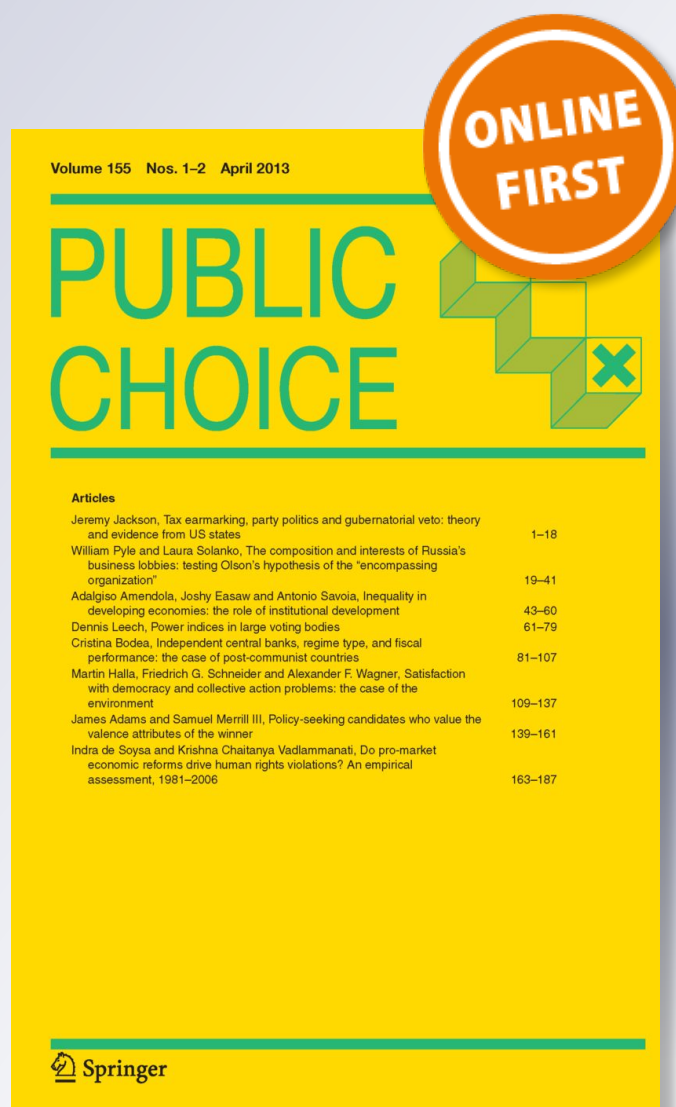
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# Is there a selection bias in roll call votes? Evidence from the European Parliament

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**Abstract** We examine the magnitude and significance of selection bias in roll call votes. Prior to 2009, all recorded (roll call) votes in the European Parliament had to be requested explicitly by European Political Groups. Since 2009, a roll call vote has been mandatory on all final legislative votes. We exploit that change in the rules and compare differences between final legislative votes, amendment votes and non-legislative votes before and after 2009, using a difference-in-differences approach with extensive controls. Using data from the Sixth (2004–2009) to Seventh (2009–2014) European Parliaments, we fail to find any large differences in voting cohesion for the main political groups. We find even less significance when we control for changes in parliamentary membership between those two periods. The results suggest that selection biases in the European Parliament associated with strategic choices are negligible.

**Keywords** Roll call votes · European Parliament · Party discipline · Natural experiment · Difference in difference estimation

**JEL Classification** P16 · P48 · D72 · D78

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## 1 Introduction

In recent years, statistical analysis of roll call votes (RCVs) has become the bread and butter of empirical research on legislative behavior in democracies. In US politics, roll call voting data are now used to understand a wide variety of contemporary as well as historical processes, since the pioneering work of Rice (1925), Poole and Rosenthal (1985, 1997, 2007), Krehbiel (1993) and others. The volume of literature using roll call votes in the US Congress is now enormous. Keith Poole, together with Howard Rosenthal, played a pioneering role in this area of research, and has given political scientists statistical tools that have changed the way studies of legislative politics is conducted. Outside the United States, research using RCVs has grown as data has become available in electronic form, and as voters insist on more transparency in legislative activity to improve democratic accountability. Examples include analyses of votes in the United Nations (Voeten 2000), France (Rosenthal and Erik 2004), the United Kingdom (Schonhardt-Bailey 2003), the Czech Republic (Noury and Mielcova 2005), Latin America (Morgenstern 2004; Londregan 2000) and several other nations (Carey 2007; Hix and Noury 2016).

In the context of that literature, the European Parliament is an interesting laboratory for studying legislative behavior. The electorate of the European Parliament, and the Members of the European Parliament (MEPs) themselves, are very heterogeneous, spread across 28 countries and representing more than 500 million citizens. The European Parliament also is unique in that its members are elected under a variety of electoral systems, since each member state of the European Union (EU) is allowed to adopt its own electoral rules (with some minimal constraints). Moreover, the EU political system is neither a purely parliamentary nor a purely presidential system, which makes for a particularly rich institutional context. Last but not least, the power of the European Parliament has grown over the past three decades, as a result of changes to the EU treaties. The European Parliament thus also offers a unique setting in which to analyze the effects of shifts in power within the legislative branch of government. Research on the European Parliament initially was based on samples of roll call votes (Attinà 1990; Raunio 1997; Kreppel and Tsebelis 1999; Hix 2001; Kreppel 2002), but has been based on the full population of roll call votes since the work of Noury and Roland (2002) and Hix et al. (2005, 2006, 2007).

Despite this fast-growing literature, the usefulness of RCV data has been called into question for legislatures wherein RCVs represent subsets of all votes, which remains the case in most legislatures (cf. Carey 2009). In those chambers, RCVs are not random samples of the populations of votes. On the contrary, whether a vote is held by roll call usually is a strategic choice by one or more parties. Because of the selection effect, RCVs may lead to a distorted (biased) view of legislative voting. In the literature on roll-call votes in the United States, extensive debates have taken place on the selection effects in roll calls: for example, on whether selection biases led to underestimation of the dimensionality of politics (see Koford 1989; Snyder 1992 and the rejoinder by Rosenthal 1992), on the effects of closeness of votes on strategic voting decisions (see Snyder and Groseclose 2000; McCarty et al. 2001), on the effects of the introduction of electronic voting on the compositions of roll call votes, in particular the share of votes taken by the Committee of the Whole (Roberts and Smith 2003). Carrubba et al. (2008) propose a model for analyzing the distortions that can arise when party leaders use RCVs to discipline their members.

In the context of the European Parliament, Carrubba et al. (2006) collected information on all votes, including non-RCVs, between July 1999 and June 2000, and discovered several large differences between RCVs and the total population of votes during that period.

First, RCVs in the European Parliament are not proportional to the activity of parliamentary committees, since a few committees (Environment, Public Health and Consumer Policy; Citizen's Freedoms and Rights, Justice and Home Affairs; Constitutional Affairs; and Economic and Monetary Affairs) account for slightly over two-thirds of all RCVs, but less than a third of all votes. Second, even though some political groups (especially the Greens) request RCVs more than others, no proportionality was found between party size and the proportions of RCVs requested.<sup>1</sup> Third, RCVs over-sample non-legislative 'resolutions' relative to legislative bills: the former constituted over three-quarters of RCVs, but counted for less than half of all parliamentary votes during the period in question.

This evidence thus suggests that when RCVs can be requested by political actors, they are unlikely to be random samples of all votes. That conclusion raises a serious concern, as analyzing RCV data may produce biased inferences about the voting cohesion of parties, the types of coalitions that form in legislatures, the dimensions of political conflict and alignment, or which actors and groups are on the winning and losing side most often. The following empirical question therefore needs to be answered: given good theoretical arguments for why RCVs should be biased, and empirical evidence showing that RCVs are not random samples of all votes, how biased are roll call votes in practice?

At face value, this question seems impossible to answer, since RCVs are by definition the only votes that are observed and recorded.<sup>2</sup> In this paper we propose a partial answer to the question by exploiting an institutional change in the rules of procedure in the European Parliament between the Sixth (2004–2009) and Seventh (2009–2014) legislative sessions (which we refer to as EP6 and EP7 for convenience). Specifically, whereas in EP6 all RCVs had to be requested by one or more of the chamber's political groups, from the start of EP7 RCVs became mandatory for all final votes on legislative bills. That change in the rules allows us to use a difference-in-differences approach to compare the final legislative votes and other votes (amendments and non-legislative votes) in EP6 and EP7, using various controls. By looking at the difference between requested RCVs and non-requested RCVs we are able to filter out any strategic selection effects that are the main alleged cause of estimation biases.

A potential objection to our approach might be that the institutional change between the Sixth and Seventh sessions of the European Parliament is not a natural experiment, because recordings of only final legislative votes have become mandatory. One could also argue that conditions in EP7 are not necessarily the same as in EP6, since the individual MEPs in the two sessions were not identical. However, it is precisely here that the difference-in-differences methodology is relevant because it allows us to filter out effects that are specific to final legislative votes relative to other votes, both within EP7 and between EP7 and EP6. We explain below how we do this.

Our analysis is closely related to a number of recent studies examining RCV selection effects in the European Parliament (cf. Høyland 2010). Hug (2016) examines party effects on final and non-final legislative votes in EP6 and EP7. Using an item-response model, he

<sup>1</sup> The European People's Party (EPP) was overrepresented as a requester of RCVs on final votes, whereas the Greens were overrepresented as requesters of RCVs on amendment votes.

<sup>2</sup> The only exception of which we are aware is Hug (2009), who was able to use records from RCV and non-RCV electronic votes in Switzerland to recover individual voting behavior. He found that party cohesion was on average higher for RCVs than for unrecorded votes. That method cannot be replicated for legislatures wherein electronic data for non-RCVs are not collected, which at the moment seems to be the case for most legislatures across the world.

analyzes how party pressures differ between a given political group and non-attached members in EP7, and between final passage votes and votes on other legislative proposals in EP6. Comparing samples of votes from the beginning of EP6 and EP7 he concludes that in final passage votes the average party pressure has decreased considerably after the rule change.

Mühlböck and Yordanova (2015) also look for evidence of selection bias in RCVs in the European Parliament. They ask how voting cohesion might differ between recorded and non-recorded votes as a result of party signaling and/or disciplining efforts. Their analysis indicates that the cohesion of political groups on final legislative votes strengthened, on average, after the new rules of procedure were introduced. They conclude that relying on RCVs can lead to underestimating rather than overestimating the voting cohesiveness of political groups in the European Parliament. The main differences between our study and these two studies are, first, that we use a much larger sample of votes and, second, that we look at both aggregate political-group cohesion and the behavior of individual legislators.

Our main finding is that, on average, a statistically significant, but quantitatively small (usually negative) difference in political group cohesion emerges when RCVs are mandatory than when they are merely requested. This result is robust to comparing final legislative votes to other legislative votes and to other, non-legislative RCVs, as well as to the inclusion of various control variables. While good theoretical arguments have been made for possible selection biases in studies of RCVs, and even though requested RCVs clearly are not random samples of all votes, our findings suggest that the effect of this selection on aggregate voting behavior in the European Parliament is rather small. Moreover, we show that any significant effects are most likely driven by composition effects, owing to turnover in MEPs between the EP6 and EP7. When looking only at the voting behavior of MEPs who were present in both legislatures, we find no significant difference in voting cohesion between requested and mandatory RCVs. That is an important finding, as it suggests that RCV data can produce reliable estimates of legislative behavior even when RCVs are taken only on a minority of a legislature's votes.

Having said that, our approach focuses only on one selection effect in roll call votes. One important effect our approach does not preclude is that the transparency implied by RCVs may affect the voting behavior of representatives. Our study cannot uncover the effects of transparent voting because we do not have data on counterfactual scenarios when the votes of individual legislators are not recorded. Recent experimental research indicates that observability may influence individuals' vote choices. Morton and Ou (2013), for instance, find that when voting is public rather than private, individuals are significantly more likely to make ethical rather than selfish choices. Also, selection biases of roll calls might underestimate the dimensionality of politics by ignoring other votes. We do not discuss that issue in this paper.

The rest of the paper is organized as follows. Section 2 discusses possible sources of bias resulting from strategic choices to request RCVs. Section 3 provides institutional and political context to the data we use in our analysis. Section 4 explains how we use the difference-in-differences approach, and presents the empirical results. Section 5 examines and eliminates an alternative mechanism that might play a role in explaining group cohesion; Sect. 6 concludes.

## 2 Bias in roll call votes?

Two classes of strategic reasons are available for a legislative party to request a RCV: disciplining and signaling. When discussing these motives, we consider the potential effects of

a roll call on the party requesting a public vote as well on the parties not requesting a roll call.

Research on the strategic use of roll call votes builds on the broader literature on party discipline in the US Congress, such as Krehbiel (1993, 2000), who argues that voting cohesion is based on joint preferences, and Cox and McCubbins (2005) and Cox and Poole (2002), who emphasize party cartel effects. The classical disciplining motive for asking for a RCV is that party leaders want to monitor the behavior of members of their parliamentary party group and to put pressure on them to follow party voting instructions. A party should thus be more cohesive on a RCV that it requests than would otherwise be the case had the vote not been held by roll call (see Hug et al. 2008 for a formal analysis and numerical calibration). For parties that do not request a RCV, however, it is not obvious that any significant cohesion effect will be observed.

Nevertheless, a direct counterargument to the above can be made: if a vote is expected to be contentious among party members, then a party leader may want a RCV to impose discipline on the party's ranks. In that case, asking for a RCV likewise should lead to more cohesion than not asking for one. However, if the issue on which a vote is taken is highly contentious among a party's members, then cohesion should be lower than would be observed on other votes for which a RCV was not asked and which are less controversial, on average. Indeed, the disciplining effect of requesting a roll call vote might not be sufficiently strong to offset the contentiousness of the issue.

In short, since these two effects—the disciplining effect and the selection of contentious issues effect—go in different directions, it is not clear which one dominates.

One may object to these claims on the grounds that control of the legislative agenda might prevent contentious issues from being voted on at all, whether by RCV or otherwise (e.g., Cox and McCubbins 2005). However, many situations arise for which agenda control is limited. For example, exogenous economic shocks or political events might force votes on decisions that will appear contentious to elected representatives. In such situations, agenda control can limit only partly the contentiousness of the issues being brought to the floor. In the case of the European Parliament, agenda control also is constrained since a separate institution, the European Commission, has a monopoly on legislative initiatives. Hence, the European Parliament often is forced to vote on issues that it might not otherwise have proposed unilaterally.

What about other parties? An issue that is contentious for one party is not necessarily contentious for others, so it is not clear that RCVs that are contentious for the party asking for a public vote should be more or less contentious for other parties. The extent of contentiousness for each party plausibly depends on the issue at hand.

Other considerations must be taken into account when examining the disciplining motive for calling a RCV. A first consideration is the importance (salience) of a vote to a party. The disciplining effect of asking for a RCV may be stronger if the outcome of a particular vote is important for a party and tougher punishments are attached to breaches of discipline. How those considerations will affect other parties that are not asking for a RCV will again depend on the specific legislative issue at hand.

Regarding the importance of the vote, Carrubba et al. (2006) emphasize a second consideration that goes in a direction opposite to that of the disciplining motive. For less important issues, members who oppose the party line will prefer not to show up for the vote, while those who do vote mainly will comprise the party faithful as well as members wanting to be rewarded by the party for their loyalty. When those circumstances materialize, lesser importance will be attached to tighter cohesion, but also to voting turnout. While the two effects related to issue importance (the disciplining effect and the

**Table 1** Strategic motives for RCVs and signs of selection bias

	Party calling RCV	Other parties
Disciplining members	+	.
Disciplining effect under contentious vote	-	.
Disciplining effect and important vote	+	.
Disciplining effect with abstention and selective participation	-	.
Signaling unity	+	.
Embarrassing opponent	.	-
Signaling dissent	-	.

A “+” means a positive effect, a “-“ means a negative effect and a “.” means no effect

participation effect) go in different directions, they lead to different predictions about voting participation.

The second class of strategic reasons for requesting a RCV relates to the signaling motive. A basic signaling motive is to ask for a RCV to show voters, interest groups, or other political actors that the party is united on a particular issue. A clear selection effect emerges here as a party will tend to call for votes on which the party is united. RCVs should then display more cohesion.

A party might also want to show voters or external interests that another party is divided. In that case, the selection effect will work in the opposite direction: RCVs will be held on issues for which some parliamentary parties’ preferences are split.

A different signaling effect is the incentive to identify for voters or supporting groups dissenters from the party line on a particular issue. When subgroups of legislators can request RCVs, parties might be less cohesive in an RCV than would otherwise be the case.

Table 1 summarizes the signs of the biases one should observe in RCVs under the various motives discussed. As we can see, the direction of bias is not obvious. Positive and negative biases might cancel each other out; it is not clear a priori clear that observed RCVs necessarily should be biased systematically in one way or another.

In general, biased RCVs should be observed mostly in the voting behavior of the party requesting them. Nevertheless, parties not requesting RCVs are in general unaffected, except when a party requests a RCV to embarrass other parties for their lack of cohesion. It follows that if any party can request a RCV, as opposed to one party having monopoly control over which votes are taken by roll call, and if there is sufficient variation in parties requesting RCVs, then any selection biases are likely to be mitigated in aggregate.

### 3 Institutional and political context

The European Parliament currently has 751 MEPs representing 28 member states and more than 170 national political parties. Rather than sit as delegates of their states or national parties, the MEPs sit in ‘political groups’ according to their ideological preferences. The political groups have become powerful actors, able to marshal their troops in support of the policy positions of the group leaders (Raunio 1997; Kreppel 2002; Noury and Roland 2002; Hix et al. 2005).



The 2009 elections for EP7 saw a considerable turnover of MEPs. Of the 785 MEPs at the end of EP6, 368 were reelected to EP7, which was exactly 50% of the 736 MEPs in EP7. Three other differences between EP6 and EP7 might have affected MEP behavior.

First, the political composition of the chamber differed slightly, as Table 2 shows. The two sessions contained broadly similar political forces, with some minor name changes. The European People's Party (EPP) on the center-right was the largest group in both parliaments, the social democrats (S&D) were the second largest, and the liberals (ALDE) were third. However, one difference between the two sessions was on the right of the EPP. In EP7, most of the members of the former Union for Europe of the Nations (UEN) group joined either EPP or ALDE, while a new European Conservatives and Reformists (ECR) group was created by the British and Czech conservatives, who left the EPP to form a new group aligned with several conservative parties mainly from Central and Eastern Europe. The balance of power in the chamber also shifted slightly to the right. Nonetheless, the median member of the chamber on a left–right dimension remained one of the MEPs in the centrist ALDE group.

The second difference between EP6 and EP7 relates to the legislative powers of the European Parliament. The Treaty of Lisbon entered into force on December 1, 2009. As with most previous reforms, the Lisbon Treaty further strengthened the powers of the European Parliament relative to the EU Council and the Commission. The new treaty established the 'co-decision' procedure as the main process for adopting legislation (now called the 'ordinary legislative procedure'), which led to its extension to several policy areas in which the European Parliament had only limited legislative authority previously. Under the co-decision procedure, the Commission has the right of legislative initiative, and legislation must then pass both a majority in the European Parliament and (usually) a qualified-majority in the Council (composed of the ministers from the EU governments). The Treaty of Lisbon also established that the 'consent procedure' would be adopted for international agreements between the EU and third countries (such as trade agreements), whereby these agreements need to be ratified by a majority in the European Parliament. In short, the MEPs in EP7 were better able to influence EU legislation than the MEPs in EP6 in the areas of justice and home affairs (such as the free movement of people), agriculture and international trade.

Third, and crucial for our research design, the European Parliament changed its internal rules of procedure for RCVs. Three types of voting procedures are used in the European Parliament: (1) a show of hands vote, whereby the presiding chair (the president or one of the vice-presidents) observes the overall result of the vote and it is recorded in the minutes; (2) an electronic vote, whereby MEPs press one of the voting buttons on their desks and the total number of Yes, No, and Abstain votes is displayed at the front of the chamber and recorded in the minutes; and (3) a roll call vote, whereby MEPs press one of the voting buttons on their desks, the total number of Yes, No, and Abstain votes is displayed at the front of the chamber; how each MEP voted is recorded in the minutes and published at the end of the legislative day (and reported on such websites as [www.VoteWatch.eu](http://www.VoteWatch.eu)).

Regarding RCVs, Rule 167(1) of the new rules of procedure adopted at the start of EP7 stated that:

In addition to the cases provided for under Rules 106(5), 107(5) and 166, the vote shall be taken by roll call if this is requested in writing by a political group or at least 40 Members the evening before the vote unless the President sets a different deadline.

**Table 2** Political composition of EP6 and EP7

Political group (left to right)	Political tradition(s)	EP6 (January 2007)		EP7 (July 2009)	
		MEPs	%	MEPs	%
European United Left-Nordic Green Left (EUL-NGL)	Radical left	41	5.2	35	4.8
Greens/European Free Alliance (G/EFA)	Greens and left-wing regionalists	43	5.5	56	7.6
Alliance of Socialists and Democrats (S&D)	Social democrats	217	27.6	184	25.0
Alliance of Liberals and Democrats for Europe (ALDE)	Liberals and centrists	104	13.2	84	11.4
European People's Party (EPP)	Christian democrats and conservatives	288	36.7	265	36.0
Union for Europe of the Nations (UEN)	National conservatives	40	5.1		
European Conservatives and Reformists (ECR)	National conservatives			55	7.5
Europe of Freedom and Democracy (EFD)	Anti-Europeans	22	2.8	27	3.7
Non-attached MEPs (NA)	Mostly radical right	30	3.8	29	3.9
Total		785	100.0	736	100.0

EP6 and EP7 are the Sixth (2004–2009) and Seventh (2009–2014) legislative sessions of the European Parliament, respectively. In EP6, the EPP group was called European People's Party-European Democrats (EPP-ED), the S&D group was called the Party of European Socialists (PES), and the EFD group was called the Independence/Democracy (IND/DEM) group

So, a RCV must be requested by one of the political groups or 5.4% of MEPs except in three cases, when a roll call vote is compulsory. Two of those cases were not new: Rule 106(5), which relates to the vote on the election of the Commission; and Rule 107(5), which relates to a motion of censure in the Commission. However, Rule 166 was new and stated that:

When voting on any proposal for a legislative act, whether by way of a single and/or final vote, Parliament shall vote by roll call using the electronic voting system.

In other words, in contrast to EP6, in EP7 all final legislative votes were by roll call.

When using roll call votes, in addition to voting ‘Yea’, ‘Nay’, or ‘Abstain’, members of the European Parliament have two options for not voting. First, MEPs can sign the register to prove that they were present, but did not vote (see Fisman et al. 2015, who characterize this as an explicit form of shirking). Second, the MEPs have the option of not turning up at all. Although in this paper our measure of cohesion does include ‘Abstain’ votes, we do not look explicitly at how strategic voting affects, or is affected by, voting ‘Abstain’. To simplify our analysis, we also ignore other forms of not voting.

We mentioned in the previous section that it is difficult to make clear a priori predictions about the effect of a party requesting a RCV on other parties not requesting the RCV. It is therefore useful to mention existing findings on the European Parliament so as to identify patterns of voting across parties. The existing research shows that MEPs increasingly vote along party lines and less and less along national lines and, moreover, that the political groups have become more cohesive over time. The research on dimensionality shows that political groups compete with each other on two dimensions in the European Parliament: (1) on the ideological left–right scale, with socialist, green and radical left groups on one side, the EPP and other rightwing groups on the other, and the liberals in the middle; and (2) a pro/anti-European integration dimension, on which the EPP, socialists and liberals occupy the pro-European side and the other groups are on the anti-European side.

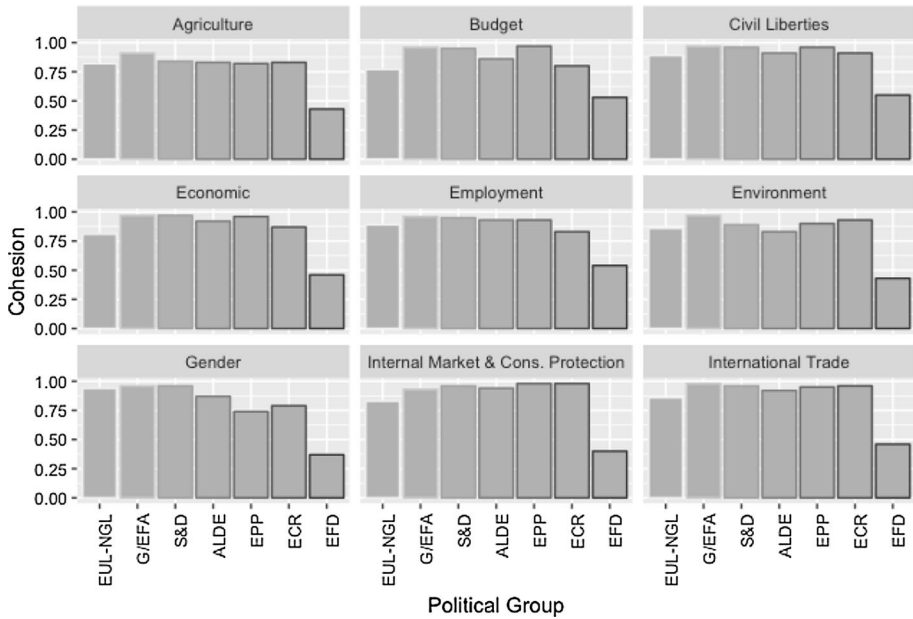
Figure 1 shows the cohesion rates of the parties in EP7 by policy area. As one can see, the main political groups appear to have converging interests, although they differ on some issues. For example, gender equality is highly salient to socialists and greens, but of lesser importance to liberals and EPP. Cohesion varies more widely by policy area for the smaller political groups.

## 4 Empirical analysis

We aim to exploit the fact that final legislative votes became mandatory in EP7. We thus want to look at the differences in voting cohesion of the political groups in final legislative votes versus amendment votes in EP7 relative to those same two categories of votes in EP6. The “treatment group” comprises final legislative votes in EP7 and the “control group” comprises other legislative votes in EP6 and EP7. To compare like with like we analyze all roll call votes in EP6 ( $N=6192$ ) and all roll call votes in EP7 ( $N=6961$ ). Among those votes, some are legislative votes, some are non-legislative resolutions and some are votes on budgetary issues. We use all of the votes to explore the variations in voting behavior over time. In our main regressions, we use only legislative votes.

We thus estimate the following OLS regression equation:

$$COHESION_{ij} = \alpha + \beta FINAL_j + \gamma EP_j + \delta (FINAL_j \cdot EP_j) + \theta CONTROL_{ij} + \varepsilon_{ij}$$



**Fig. 1** Cohesion of the political groups by policy issue in EP7. Source: [www.VoteWatch.eu](http://www.VoteWatch.eu)

where  $COHESION_{ij}$  is a measure of the cohesion of political group  $i$  on vote  $j$ ,  $FINAL_j$  is a dummy variable that takes the value of 1 if a vote is a final legislative vote and 0 otherwise, and  $EP7_j$  is a dummy variable that takes the value 1 if the vote is taken during EP7 and 0 otherwise.  $\alpha$ ,  $\beta$ ,  $\gamma$ , and  $\delta$  are the parameters of the model to be estimated and  $\varepsilon_{ij}$  is the error term. The cohesion index is calculated as follows:

$$COHESION_{ij} = \frac{\max\{Y_{ij}, N_{ij}, A_{ij}\} - \frac{1}{2}[(Y_{ij} + N_{ij} + A_{ij}) - \max\{Y_{ij}, N_{ij}, A_{ij}\}]}{(Y_{ij} + N_{ij} + A_{ij})}$$

The last relationship is a slightly modified version of the Rice Index, adapted for legislatures wherein parliamentarians have three recorded voting options (Yes, No or Abstain) rather than just two (Yes, No). As one can see, maximal cohesion takes a value of 1, whereas it takes a value of 0 if votes within a party are divided equally between Yes, No and Abstain.

The regression coefficient  $\alpha$  measures cohesion on non-final votes in EP6 and  $\beta$  measures the average difference in cohesion between final legislative votes and other votes (in EP6 and EP7). Coefficient  $\gamma$  measures the difference in cohesion between EP6 and EP7 on non-final votes, and  $\delta$  is the difference-in-differences estimator in which we are interested (Angrist and Pischke 2009).

The key assumption for this approach to be valid is that in the absence of a change in the voting rule, the difference between final legislative votes and other votes would be identical in both parliaments. If we expect cohesion on RCVs to be biased upwards owing to strategic motives, then  $\delta$  should be negative since those strategic motives have been eliminated in the treatment group in EP7.

**Table 3** Difference-in-differences in average cohesion

	Pre-treatment (EP6)	Post-treatment (EP7)	Difference post-/pre-treatment
Treatment (final votes)	0.827*** (0.0027) [550]	0.838*** (0.0025) [794]	0.0116*** (0.0037)
Control (amendments)	0.799*** (0.0018) [1760]	0.810*** (0.0021) [1262]	0.0109*** (0.0026)
Difference treatment–control	0.0277*** (0.0035)	0.0283*** (0.0033)	Difference-in-differences: 0.00069 (0.00485)

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$ . Robust standard errors in parentheses. Number of observations in square brackets

In Table 3 we first present the basic difference-in-differences comparisons of the means of the four variables across the political groups, including only final legislative votes and legislative amendment votes. In the first column, we show the average cohesion rate in final legislative votes and amendment votes in EP6 as well as their difference. Standard errors are indicated in parentheses. The second column reports the same calculations for EP7. The first row shows average cohesion on final votes in EP6 and EP7 as well as their difference. The second row does the same for amendment votes. The third column reports the difference between final legislative votes in EP7 and EP6, the difference between amendment votes in EP7 and EP6, along with the difference between those two differences. The third row displays the difference between final votes and amendment votes in EP6, the difference between final and amendment votes in EP7 and the difference between those two differences. The last element of the third column and the third row is the difference-in-differences and its standard error. We see that it is not statistically significant. In other words, the simple difference-in-differences approach suggests that, on average, no significant difference is evident in the cohesiveness of the political groups between requested RCVs and compulsory RCVs. The average effect is practically zero. Since the cohesion scores of the main political groups vary between 0.85 and 0.95, the upward bias owing to strategic motives is at best negligible.

Table 3 also indicates that average group cohesion on amendments increased in EP7 and is statistically significant. In addition, the evidence reported in Table 3 shows that final votes are more cohesive than amendment votes. Although the magnitudes of the effect decline, the difference is significant. Comparing the two periods, we see that the difference between final and amendment votes is somewhat larger in EP7 than in EP6.

In Table 4 we show the difference-in-differences estimates for all political groups. We have excluded two of them: the Union for Europe of the Nations (UEN), a conservative group that existed in EP6, but not in EP7, and the European Conservatives and Reformists (ECR), which, as discussed above, was not present in EP6, but was formed in EP7 when the British and Czech conservative MEPs left the EPP. We also excluded Non-Attached MEPs, as those parliamentarians sat as independents rather than as members of a political group. Note that because of the ECR's formation, the composition of the EPP changed between the two parliaments. The EPP arguably became more ideologically homogeneous as a result. Similarly, the composition of the Europe of Freedom and Democracy (EFD) group, formerly the Independence-Democracy group in EP6, also changed, as some of the

**Table 4** Difference-in-differences regressions with control variables

Variables	(1) Average	(2) ALDE	(3) EFD	(4) EUL-NGL	(5) EPP	(6) S&D	(7) G/EFA
EP7	0.011* (0.006)	0.026*** (0.006)	0.013 (0.009)	-0.049*** (0.007)	0.029*** (0.005)	0.007 (0.006)	0.039*** (0.004)
Final_legislative	0.030*** (0.005)	0.117*** (0.007)	-0.075*** (0.012)	-0.022** (0.009)	0.062*** (0.006)	0.092*** (0.006)	0.034*** (0.006)
Diff_in_Diff	-0.004 (0.007)	-0.027*** (0.009)	0.057*** (0.016)	-0.044*** (0.013)	0.001 (0.008)	-0.018** (0.008)	-0.006 (0.007)
Party requesting RCV		-0.014 (0.012)	-0.009 (0.010)	0.074*** (0.008)	-0.050*** (0.007)	-0.003 (0.008)	0.028*** (0.003)
Constitutional affairs	0.015 (0.017)	0.090*** (0.027)	0.262*** (0.043)	-0.186*** (0.047)	-0.041*** (0.011)	0.070** (0.034)	-0.089*** (0.024)
Foreign affairs	0.016 (0.021)	-0.015 (0.035)	0.001 (0.042)	0.045 (0.041)	0.002 (0.010)	0.060* (0.034)	0.020 (0.024)
Agriculture	-0.034* (0.017)	-0.023 (0.027)	0.003 (0.035)	0.006 (0.036)	-0.092*** (0.009)	-0.046 (0.034)	-0.034 (0.022)
Budget	0.047*** (0.017)	0.057** (0.027)	0.073* (0.040)	0.061 (0.041)	0.026*** (0.009)	0.076** (0.033)	0.022 (0.021)
Budgetary control	-0.020 (0.054)	-0.059 (0.119)	-0.001 (0.057)	-0.041 (0.143)	-0.084*** (0.024)	0.070* (0.036)	0.031 (0.023)
Culture	0.019 (0.015)	0.001 (0.033)	0.148*** (0.045)	-0.010 (0.043)	-0.034** (0.014)	0.039 (0.035)	-0.010 (0.025)
Development	0.029* (0.016)	0.049* (0.028)	0.001 (0.051)	0.012 (0.057)	-0.001 (0.011)	0.073** (0.033)	0.038* (0.021)
Economic	0.023* (0.014)	0.029 (0.026)	0.059* (0.035)	0.061* (0.036)	-0.014* (0.008)	0.045 (0.033)	-0.027 (0.021)
Employment	0.031* (0.018)	-0.013 (0.028)	0.107*** (0.037)	0.154*** (0.036)	-0.078*** (0.014)	0.020 (0.035)	-0.003 (0.021)
Environment	0.022 (0.014)	-0.016 (0.026)	0.045 (0.034)	0.148*** (0.035)	-0.070*** (0.008)	0.015 (0.033)	0.022 (0.020)
Gender equality	-0.007 (0.019)	-0.112*** (0.036)	0.162*** (0.044)	0.054 (0.042)	-0.189*** (0.025)	0.080** (0.034)	-0.001 (0.022)
Internal market	0.020 (0.019)	-0.064** (0.028)	0.059* (0.036)	0.136*** (0.036)	-0.038*** (0.011)	0.018 (0.034)	0.013 (0.022)
International trade	0.024 (0.021)	-0.049* (0.029)	0.114*** (0.037)	0.113*** (0.038)	-0.076*** (0.013)	0.039 (0.034)	0.007 (0.021)
Industry	0.003 (0.015)	-0.003 (0.026)	0.101*** (0.035)	-0.033 (0.037)	-0.047*** (0.009)	0.019 (0.033)	-0.010 (0.021)
Legal affairs	0.025* (0.015)	-0.002 (0.026)	0.023 (0.035)	0.151*** (0.036)	-0.030*** (0.008)	-0.004 (0.033)	0.025 (0.020)
Civil liberties	0.024* (0.013)	-0.017 (0.027)	0.089** (0.035)	0.078** (0.036)	-0.043*** (0.008)	0.047 (0.033)	0.006 (0.021)

**Table 4** (continued)

Variables	(1) Average	(2) ALDE	(3) EFD	(4) EUL-NGL	(5) EPP	(6) S&D	(7) G/EFA
Fisheries	-0.016 (0.015)	0.002 (0.027)	0.041 (0.035)	-0.028 (0.037)	-0.050*** (0.009)	-0.009 (0.034)	-0.037* (0.021)
Petition	0.023 (0.021)	-0.079 (0.097)	0.083 (0.096)	0.093 (0.080)	-0.113*** (0.038)	0.118*** (0.035)	0.035 (0.033)
Regional development	0.040*** (0.015)	0.029 (0.027)	0.111*** (0.039)	0.077* (0.040)	-0.037*** (0.012)	0.045 (0.034)	0.015 (0.021)
Transport	0.021 (0.015)	0.033 (0.026)	0.062* (0.035)	0.120*** (0.036)	-0.051*** (0.008)	-0.005 (0.034)	-0.020 (0.022)
Constant	0.792*** -0.011	0.844*** (0.026)	0.387*** (0.034)	0.781*** (0.035)	0.923*** (0.007)	0.857*** (0.033)	0.893*** (0.020)
Observations	4362	4362	4362	4362	4362	4362	4362
R-squared	0.082	0.144	0.063	0.209	0.142	0.118	0.104

Dependent variable = political group cohesion score. Clustered robust standard errors in parentheses

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$

former UEN members joined the new group in EP7. We discuss these possible composition effects further below.

Because some clustering or correlation across votes is possible, we report clustered robust standard errors. Typically, many RCVs are conducted on any given issue, which leads to blocks of votes being taken together. Votes comprising blocks share various similarities, such as the *rapporteur*, the timing, the substance of the issue, and so on. If legislators vote similarly on votes in a given block, voting clusters will be observed. For example, votes on several amendments to a legislative proposal are then followed by a final vote on the (amended) proposal. We hence define a voting block as a collection of votes on a particular issue during a legislative day.

On top of estimating regressions for each political group, Table 4 also adds various controls that make our estimates more precise, and to some extent allow a *ceteris paribus* interpretation of our results. Carrubba et al. (2006) noted no proportionality between group size and the proportion of RCVs requested and also that certain committees were over- or underrepresented in RCVs relative to the general population of votes. We therefore control for those differences. We first introduce a control for RCV requests, which takes the value 1 for the group that asked for the RCV and 0 otherwise. We also enter controls for the legislative committee working on the relevant legislative proposal. As we can see, some of the difference-in-differences estimates are not significant, in particular for the EPP and the Greens. When significant, the coefficients carry negative signs for ALDE, S&D and EUL-NGL and a positive sign for EFD. Note also that the average coefficient is statistically insignificant and very small. In general, political groups are not necessarily systematically more or less cohesive when they request a RCV. The EPP is less cohesive, the radical left (EUL-NGL) and the Greens are more cohesive and no significant effect is found for the other political groups. We also ran regressions looking at relative cohesion scores instead of absolute cohesion scores, measuring the cohesion of a political group, relative to the EP as a whole, to control for consensus votes. We also used all other votes (including

**Table 5** Agreement index regression controlling for RCV requests by political group

Variables	(1) Average	(2) EPP	(3) S&D	(4) ALDE	(5) G/EFA	(6) EUL-NGL	(7) EFD
EP7	0.011 (0.007)	0.031* (0.016)	0.014 (0.014)	0.028 (0.018)	0.037*** (0.011)	-0.061*** (0.021)	0.018 (0.019)
Final legislative	0.029*** (0.006)	0.074*** (0.014)	0.059*** (0.010)	0.096*** (0.013)	0.033*** (0.010)	-0.000 (0.024)	-0.090*** (0.022)
Diff_in_Diff	-0.010 (0.009)	-0.013 (0.020)	-0.007 (0.016)	-0.025 (0.018)	-0.020 (0.014)	-0.077*** (0.028)	0.080*** (0.027)
RCV requested by:							
EPP	-0.011 (0.007)	-0.054*** (0.017)	0.008 (0.011)	-0.022 (0.013)	-0.006 (0.009)	0.006 (0.017)	0.003 (0.016)
S&D	-0.015* (0.008)	-0.051*** (0.018)	-0.011 (0.016)	-0.063*** (0.020)	-0.021 (0.013)	0.038** (0.016)	0.016 (0.022)
ALDE	-0.020* (0.012)	-0.040** (0.018)	-0.031 (0.019)	-0.021 (0.022)	0.003 (0.012)	-0.002 (0.031)	-0.027 (0.026)
G/EFA	-0.010* (0.006)	-0.016 (0.014)	-0.033*** (0.011)	-0.040*** (0.012)	0.022*** (0.008)	-0.005 (0.015)	0.011 (0.015)
EUL-NGL	-0.005 (0.007)	0.030** (0.012)	-0.078*** (0.021)	0.011 (0.013)	-0.062*** (0.016)	0.064*** (0.015)	0.004 (0.018)
IND/DEM	-0.009* (0.005)	-0.011 (0.013)	0.014 (0.011)	0.019 (0.016)	-0.018* (0.009)	-0.070*** (0.021)	0.012 (0.022)
Constant	0.810*** (0.007)	0.878*** (0.015)	0.896*** (0.011)	0.858*** (0.015)	0.909*** (0.009)	0.879*** (0.017)	0.443*** (0.016)
Observations	4366	4366	4366	4366	4366	4366	4366
R-squared	0.048	0.117	0.114	0.128	0.083	0.090	0.022

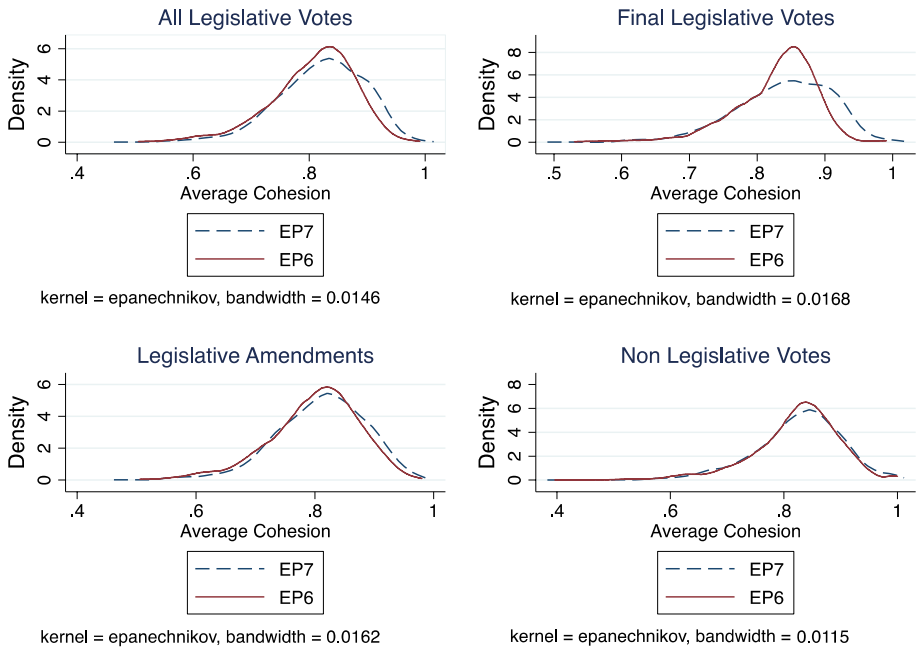
Dependent variable = political group cohesion scores (agreement index). Cluster robust standard errors in parentheses

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$

resolutions and motions) as control variables. The results (available upon request) are very similar. Non-linear difference-in-differences, using Papke and Wooldrige's (1996) Fractional Response model, also deliver similar results.

In Table 5, we refine the controls further by looking at the effect on party  $j$  of party  $i$  requesting a RCV, to take into account the possible effects of RCV requests on parties not requesting the roll call. Indeed, in Sect. 2, we argued that the effect of a roll call vote may be different for the party requesting the vote than for the other parties. Committee controls are included, but not reported in the table. The main finding here, again, is that the difference-in-differences estimate is significant only for EUL/NGL and EFD. We do see some effects of requests of some groups on the cohesiveness of other groups, but the signs are both negative and positive.





**Fig. 2** Distribution of average cohesion

## 5 Eliminating possible composition effects

We now examine an alternative mechanism that might play a role in explaining group cohesion: a composition effect owing to the turnover of MEPs between EP6 and EP7. As discussed above, the turnover of MEPs was considerable between EP6 and EP7. Suppose that mandatory RCVs led to less party cohesion. On the other hand if, for example, the newly elected members adopt particularly cohesive behavior, that would undo any reduction in cohesion resulting from mandatory RCVs. To eliminate such possible composition effects, we looked at the voting behavior of only those MEPs who served in both EP6 and EP7. For each MEP, we look at whether he or she voted with the group's majority on a given vote. If the MEP voted with the group majority we counted this as 'loyal' voting; we counted his or her vote as a 'disloyal' voter otherwise. Then, taking the ratio of loyal votes over all group incumbents' votes provides us with an overall 'loyalty score'. Those loyalty scores should be correlated strongly with our cohesion index.

We computed our measure of loyalty for both incumbent MEPs (in both EP6 and EP7) and new MEPs (in EP7). The results using only the incumbents should give us a good indication of the effect of the new voting rule for the members who served in both parliaments. After eliminating the composition effect we find that, on average, incumbents behaved similarly to new MEPs and to non-reelected MEPs (from EP6). Figure 2 illustrates the distributions of those measures, and shows that cohesion in EP6 and EP7 was nearly identical. Table 6 shows the average loyalty scores for incumbent/reelected and other members (not reelected and new MEPs). Note that the loyalty scores are all quite high (around 90%).

**Table 6** Average loyalty scores for reelected/incumbents and other members

	EP6			EP7		
	Reelected in EP6	Not reelected	All	Incumbents	New	All
EUL-NGL	0.8813	0.9151	0.8997	0.8528	0.8707	0.8626
G/EFA	0.9483	0.9337	0.9412	0.9566	0.9696	0.9647
S&D	0.9402	0.9384	0.939	0.9362	0.9492	0.9427
ALDE	0.9287	0.9223	0.9242	0.9291	0.9183	0.9236
EPP	0.9147	0.9221	0.9178	0.9512	0.9491	0.95
UEN	0.8351	0.8256	0.8227	–	–	–
ECR	–	–	–	0.9185	0.891	0.9048
EFD	0.8248	0.6369	0.6429	0.6784	0.6665	0.6534

**Table 7** Loyalty score regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	AVERAGE	EPP	S&D	ALDE	G/EFA	EUL-NGL	EFD
EP7	–0.026*** (0.005)	0.022* (0.012)	0.009 (0.009)	0.007 (0.012)	0.017** (0.008)	–0.027* (0.015)	–0.184*** (0.014)
Final Legislative	0.013*** (0.004)	0.042*** (0.008)	0.059*** (0.005)	0.069*** (0.007)	0.020*** (0.006)	–0.051*** (0.012)	–0.063*** (0.013)
Diff_in_Diff	0.006 (0.006)	0.012 (0.012)	–0.009 (0.009)	–0.006 (0.012)	–0.006 (0.008)	–0.004 (0.017)	0.051*** (0.016)
Constant	0.900*** (0.004)	0.903*** (0.008)	0.915*** (0.006)	0.900*** (0.008)	0.941*** (0.006)	0.908*** (0.010)	0.830*** (0.011)
Observations	4364	4366	4366	4366	4366	4365	4365
R-squared	0.062	0.079	0.074	0.084	0.022	0.044	0.269

Clustered robust standard errors in parentheses

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$

Table 7 presents the difference-in-differences estimation on the loyalty scores of MEPs who were in EP6 and EP7, aggregated by political group. As in the rest of the paper, we looked at the difference between final legislative votes and other legislative votes in EP6 and in EP7. As can be seen from Table 7, the difference-in-differences estimate is nowhere significant, except for EFD. We thus conclude that differences in voting cohesion between mandatory and requested RCVs might be explained by a composition effect.

## 6 Conclusion

We used a difference-in-differences estimation to measure any strategic bias in roll call votes (RCVs) in the European Parliament. We exploit a new rule introduced in EP7 (the 7th European Parliament), whereby roll call votes became mandatory on final legislative votes. The results from our estimations suggest no substantively meaningful effects on the voting cohesion of the political groups in the European Parliament when RCVs became

mandatory rather than being requested (strategically) by a political group. That finding holds for all of the political groups in the European Parliament. Our results could of course be explained by the fact that the strategic biases discussed herein (see Sect. 2) cancel out, but it would be surprising if that would systematically be the case. Our empirical results likewise are robust to the addition of various controls, such as the types of issues voted on, the identity of the political group requesting a roll call vote, or various definitions of the control group. Moreover, when we control for composition effects, to take account of changes in the membership of the European Parliament, we find that the average loyalty scores of all political groups are not significantly different for mandated versus requested roll call votes.

It is difficult to make bold assertions about the external validity of the results reported herein. We cannot exclude the fact a large cohesion bias may influence requested roll call votes in other democratically elected legislatures. Nevertheless, the European Parliament includes elected representatives from 28 European countries, and its party-political make-up and internal rules of procedure are similar to many other democratic legislatures. Our findings thus are strongly suggestive that cohesion biases in requested roll call votes may not be as strong in reality as one might think based on a priori theoretical reasoning. If that is indeed the case, then roll call analyses for legislatures where roll call votes constitute only small fractions of all votes may still be very useful in deepening our understanding of legislative behavior.

Whilst our analysis shows no large significant differences in party cohesion between mandated and requested roll call votes, differences in cohesion may still exist between roll call votes and secret votes because of the effects of transparency on legislative behavior. And transparency effects might explain the results of Hug (2009), rather than the strategic legislative maneuvering he associates with roll call voting requests. When voting is non-transparent (conducted in secret), many more possibilities arise for collusion between representatives and special interest groups, opportunities for corruption, and so on. It is important to note, nevertheless, that differences in party cohesion owing to transparent voting and differences caused by strategic requests for roll call votes should be regarded as separate theoretical and empirical issues.

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