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Selection Effects in Roll Call Votes*

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Abstract

An increasing number of studies comparing legislatures relies on analyses of roll call votes. These analyses are used to infer characteristics of the way in which the legislature works and how their members vote. This inference is, however, problematic, if not all votes in parliament are recorded or the recorded votes are systematically distinct from the rest of the votes. Neglecting the way in which roll call votes are triggered or decided may result in selection bias. In this paper I discuss these problems of selection bias regarding various rules employed in legislatures which may lead to roll call votes. I then present evidence for these selection biases from a unique source of electronically recorded votes, namely all votes decided on between 1995 and 2003 in the Swiss lower house. A careful analysis illustrates to what extent commonly used figures on party discipline are biased because of the selective nature of roll call votes.

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1 Introduction

Roll call votes in parliaments may yield important insights on various aspects of political systems. They may inform us on the apparent conflict lines in parliaments (e.g., Poole and Rosenthal, 1997), the cohesion of party groups (e.g. Loewenberg and Patterson, 1979; Harmel and Janda, 1982; Bowler, Farrell and Katz, 1999; Depauw and Martin, 2005),¹ the representativeness of members of parliaments (MPs) (e.g., Bartels, 1991; Levitt, 1996), etc. Thus, it cannot astonish, that studies using roll call votes from parliaments at the national or even supranational (e.g., Attina, 1990; Brzinski, 1995; Voeten, 2000; Hix, Noury and Roland, 2005; Hix, Noury and Roland, 2006 forthcoming) level have become more frequent.

With few exceptions an important potential problem of such studies is, however, neglected or glossed over. Namely, in most parliamentary settings not all votes are recorded as roll call votes. More precisely, while some parliaments like the US Congress record and publish all votes (e.g., Poole and Rosenthal, 1997), others like the Swiss lower house record all votes but publish only a subset, while still in others like the European parliament (EP) recorded votes have explicitly to be requested. While using roll call votes for the purposes discussed above is rather unproblematic for parliaments recording and publishing all votes (though see Londregan, 2000), this is hardly the case for all other parliaments. The reason is simply that the set of published votes in these cases is a subset of all votes by MPs, and the way in which this subsample is formed may bias our substantive results. For instance, if party leaders request roll calls to discipline their rank-and-file, it is likely that on the one hand roll call votes will take place mostly for contentious decisions and, on the other hand, roll call votes will also discipline the members of a party.² Which of these possible effects dominates is an empirical and partly theoretical matter. If the two effects do not cancel each

¹I will use the terms party cohesion and party discipline as synonymous in this paper, even though there are good reasons to distinguish them (Hazan, 2003; Bowler, 2000). This allows me some variation in the terms used and eschews the question what the cohesion scores actually measure. Since I focus on these scores in this paper, how cohesion is maintained is only indirectly, though importantly, relevant for the arguments that follow.

²This argument forms the underpinnings of studies finding that candidate selection affects behavior of legislators and thus party cohesion (e.g., Gallagher, 1988, 15). Only if party leaders can observe in roll-call votes the behavior of their party colleagues can the former affect the behavior of the latter.

other out, however, measures of party cohesion based on published votes will be biased. Similarly, if only a subset of all votes is recorded, for instance, final votes, particular characteristics of these votes may also hamper our inferences. Suppose only final votes on bills are published. It might be that at that time in the legislative process all conflictual elements have been resolved or that this final vote is a largely formal matter. As a consequence we would expect the set of final votes to hardly give us an accurate reflection of parliamentary conflict.

In this paper I discuss these problems of selection bias and offer empirical evidence, that these biases may be considerable. I first discuss in the next section the ways in which roll call votes have been used in the literature. In section three I discuss the different ways in which roll call votes occur in parliaments around the world. Based on this overview, I show how results from empirical studies are subject to potential selection biases depending on how roll call votes are recorded and published. In section four I illustrate and document these biases for two legislatures (1995-1999, 1999-2004) of the Swiss lower chamber. The empirical analysis relies on all votes in this parliamentary chamber, which allows us to distinguish parliamentary behavior in votes not published, those published automatically, and those requested on the demand of members of parliaments. In section five I offer some initial thoughts on how these selectivity problems may be addressed when studying the cohesion of party groups before concluding in section six.

2 The use of roll call votes in empirical studies

Roll call votes provide an important source of information for various aspects of political systems. Consequently, political scientists have used these recorded votes for various purposes and in various contexts. Of tantamount importance in the development of these studies is certainly the scholarly work on the US Congress. Given that all votes in both the House of Representatives and the Senate are recorded and published,³ congressional scholars have a long tradition of using this information. One of the central research questions addressed with the help of roll call votes consists of assessing the relevant conflict lines in both houses of Congress. Poole and Rosenthal's (1997) work was of central impor-

³Below I provide a detailed overview over the various ways employed to record and publish votes in a series of countries.

tance in the development of this literature.⁴ Similarly, early work on the US Congress demonstrated the comparatively rather low levels of party discipline (e.g., Loewenberg and Patterson, 1979; Harmel and Janda, 1982). Again, this information was largely obtained on the basis of roll call analysis.

Both of these types of analysis were quickly adapted to other contexts than the US Congress. Loewenberg and Patterson (1979), Janda (1980, 118-119) and Cox (1987) used divisions in the British parliament to underline important changes having occurred in the way in which this institution functioned. Similarly, other scholars have assessed the degree of party cohesion in Latin American legislatures (Amorim Neto, 2002; Jones, 2002; Nacif, 2002; Desposato, 2003; Morgenshtern, 2003), in the Danish parliament (Skjæveland, 1999), the Swiss Parliament (Vasella, 1956; Lüthi, Meyer and Hirter, 1991; Jeitziner and Hohl, 1997; Hermann, Leuthold and Kriesi, 1999; Kriesi, 2001; Hug and Schulz, 2006 forthcoming), the European parliament (Attina, 1990; Kreppel, 2002; Brzinski, 1995; Hix, Noury and Roland, 2005), just to name a few. Similarly, a series of scholars has attempted to assess the ideological conflict lines appearing in roll call votes in parliaments other than the US Congress. Studies on Latin American parliaments (Londregan, 2000), the Swiss Parliament (Jeitziner and Hohl, 1997; Hermann, Leuthold and Kriesi, 1999; Kriesi, 2001; Hug and Schulz, 2006 forthcoming) or the European parliament (Hix, 2001; Noury, 2002; Hix, Noury and Roland, 2006), are just a few examples for this trend.

Both of the main uses of roll call votes, namely the assessment of party cohesion and the determination of (conflict lines present in parliaments, have also generated many debates. Concerning the dimensional analysis debates exist regarding the appropriate theoretical model and the resulting empirical estimation method used to determine the conflict dimensions. While the model championed by Poole and Rosenthal (1997) relies in essence on a probit specification to link the underlying ideology dimensions to particular voting decisions by MPs, Heckman and Snyder (1997) favor a linear probability model. More recently, Londregan (2000) has argued that the models employed to analyze roll call votes should also take into consideration the strategic context of these votes. Consequently, the rules of procedures, the role of committees, etc. are likely to affect considerably the MPs' voting behavior on the floor. Similarly, relying on Bayesian statistics,

⁴I do not aim at providing a detailed overview of this literature here, since this task is admirably carried out by Poole and Rosenthal (1997).

Jackman (2004) offers an alternative way to assess the dimensionality of conflict in parliaments.⁵

Similar debates occur on the ways in which the cohesion of political parties or party groups in parliaments should be measured. The most frequently used such measure is the so-called Rice-index (e.g., Janda, 1980), which simply corresponds to the following formula:

$$RI_i = \frac{|YES_i - NO_i|}{YES_i + NO_i} \quad (1)$$

where YES_i and NO_i are the number of votes in favor, respectively against a particular proposal i . While the Rice-index is calculated for each vote, most often the average value of this index is of interest. Alternative measures attempt to correct for biases for small parties (Desposato, 2003; Desposato, 2005 Forthcoming), a larger set of voting options (Attina, 1990; Hix, Noury and Roland, 2005), or other aspects.

While all these various ways to improve upon our analysis of roll call votes are important, especially for comparative work the question arises whether roll call votes in one context are the same as roll call votes in another. This relates to the question of which roll call votes are recorded and published, and thus available for researchers. For valid inferences on partisan and parliamentary behavior, this set of available votes should either correspond to the total population of votes or to a subset selected in such a way that it does not affect our conclusions.

3 Institutions under which roll call votes occur and selection biases

The way in which roll call votes occur in parliaments differ quite dramatically. Many of these differences have to do with the traditions of parliamentary life in a particular country (e.g., Interparliamentary Union, 1986). An early overview for West European countries appeared in Saalfeld (1995). Similarly, Carey (2004) provides a detailed discussion of the institutions employed in Latin American parliaments. Both contributions clearly demonstrate that roll call votes occur under a wide array of institutional provisions. Building on these sources and

⁵Poole (2005) provides a very useful overview over these various methods.

complementing them with information from Interparliamentary Union (1986) I provide a summary of these institutions for 92 countries and their parliamentary chambers in table 1.⁶

Table 1 clearly suggests that the analysis of roll call votes may be potentially problematic, given that the available information fails to cover all votes taken in parliament. More precisely, in only 20 of the 92 countries considered are all parliamentary votes published. Thus, strictly speaking for research questions dealing with party cohesion and the dominant conflict lines, only data from these 20 countries provide unambiguous results. Unambiguous results, namely none, are also to be expected from the 23 countries in which no parliamentary votes are published. The remaining 49 countries have either only particular votes that are published and/or only those requested. The former is the rule in 43 countries, while the latter applies to 28 countries of the 49 countries. Hence, in six countries both rule applies.

Table 1: Parliamentary voting in 92 parliaments

Parliaments with no publication	23
Parliaments publishing all votes	20
Parliaments publishing specific votes	43
Parliaments publishing requested roll calls	28

The analysis of roll call data in these latter 49 countries, among them Switzerland, but also the European Union with the European parliament, may be problematic, if inferences to general MP behavior is attempted. Consider a parliament that only publishes a subset of parliamentary votes. If these votes do not form a random subset of all the votes taken in the parliament considered, our inferences about MP behavior may be considerably biased.

Similarly, if a parliament only publishes roll calls which have been requested by particular actors, it becomes important to understand the reasons which lead an actor to ask for a recorded vote. Only if this motivation is completely unrelated to the research question at hand, can we expect unbiased inferences from the subset of votes we can study. This, however, seems a rather unrealistic assumption to make, as the careful analysis of one year's worth of legislative work in the

⁶The detailed country specific information appears in table 7 in the appendix. This table relies on a rather eclectic set of sources, and thus should only be considered as illustration.

European Parliament by Gabel and Carrubba (2004) and Carrubba, Gabel, Murrah, Clough, Montgomery and Schambach (forthcoming) proves. These authors can show, that the recorded votes differ along several dimensions (e.g., committee origin, procedure, etc.) from the remaining votes in the EP.

However, while congressional scholars (e.g., Poole and Rosenthal, 1997, 56) appeared to be aware at least in part of possible problems of selection, this caution largely disappeared in most comparative studies. Thus scholars studied the dominant conflict lines in parliament using various methods and also the cohesion of parties without taking into account the ways in which the data employed were generated. While often a shameful reference to the problem appears in empirical studies to this problem, it is hardly addressed directly.

Important attempts in this direction appears in the work on the European parliament (EP). As discussed below, in the EP roll call votes have to be requested by the party groups. Their decision to call for a vote, however, is hardly random, and thus the data available to researchers is quite clearly a possibly biased subset of all EP votes. Why this subset might be biased is nicely theoretically argued by Carrubba and Gabel (1999) in a model attempting to explain the occurrence of roll call votes in the European parliament. Quite clearly, the expectancy of the party group leadership is of tantamount importance, putting into question many insights about the party groups' cohesion.

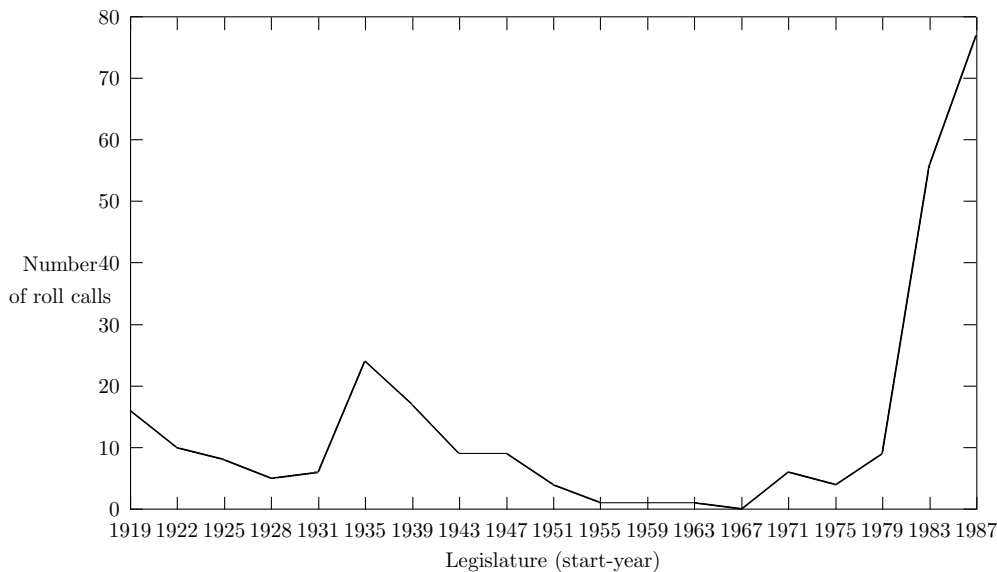
Gabel and Carrubba (2004) and Carrubba, Gabel, Murrah, Clough, Montgomery and Schambach (forthcoming), based on a careful analysis of all votes having taken place in 1997 in the European parliament, also demonstrate that roll call votes are quite different in many relevant characteristics from the overall set of votes in the European parliament. Such differences may affect many conclusions reached on the cohesion of the party groups (e.g., Kreppel, 2002; Hix, Noury and Roland, 2005; Hix, Noury and Roland, 2006 forthcoming) or the dimensionality of the political space in the European parliament (e.g., Hix, 2001; Noury, 2002; Hix, Noury and Roland, 2006).⁷

⁷Gabel and Carrubba (2004) offer a detailed comparison of roll call votes and the remaining votes having occurred in the European parliament.

4 Roll call votes and selection bias: Swiss empirics

The analysis of roll call votes in the Swiss parliament has been hampered for a considerable time by their infrequent nature. An early study (Vasella, 1956) covering the years 1919 (introduction of proportional representation as electoral system for the lower house) until 1953 could only unearth 108 recorded and published votes. A more recent study (Lüthi, Meyer and Hirter, 1991) covering 1971-1989 analyzed 134 votes to assess the cohesion of parties in the National Council. Recorded and published votes are even rarer in the upper house, since Von Wyss's (2003) study finds only four such votes. Only more recent studies (e.g. Jeitziner and Hohl, 1997; Hermann, Leuthold and Kriesi, 1999; Kriesi, 2001; Hug and Schulz, 2006 forthcoming) rely on larger sets of recorded and published votes.

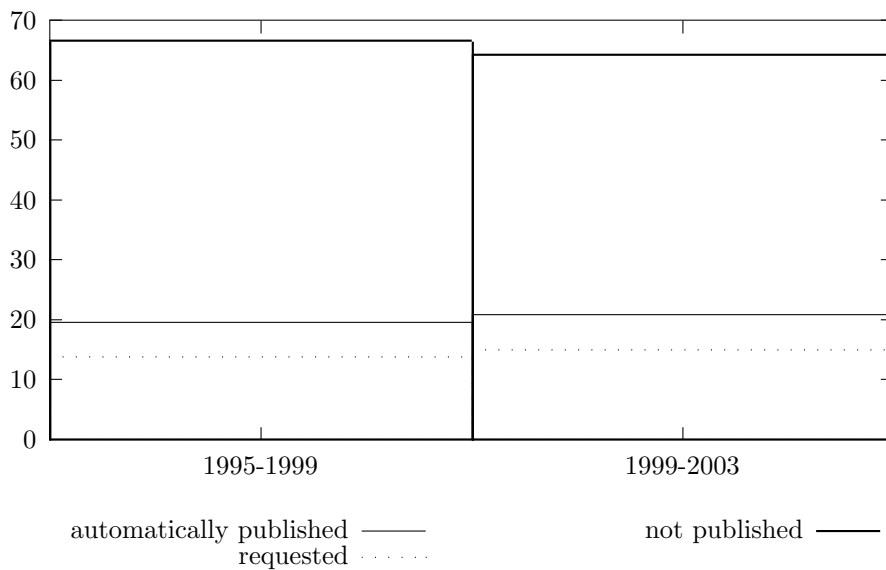
Figure 1: Recorded and published votes 1919-1991



The reason for this is that until 1994 the only way in which votes in the lower house could be published was if a certain number of members of parliament requested a roll call vote. All remaining votes were by show of hands and not recorded. In 1994 the lower house introduced an electronic voting system that records all votes by the MPs. While all votes are recorded, only a subset thereof is published. More precisely, only votes on emergency measures, final votes, and

total votes are published automatically. In addition, as before 1994 30 members of parliament may request that a roll call, which is published, is taken. Thus, not surprisingly, in the legislative period between 1991 and 1995 576 roll call votes were published, between 1995 and 1999 945, and finally between 1999 and 2003 1171.

Figure 2: Share of automatic and requested votes in the National Council 1995-1999 and 1999-2003



These numbers for the most recent legislative periods are dramatically higher than those of earlier periods. Figure 1 demonstrates that quite a few roll call votes occurred in the inter-war period, but after World War II, the number declined rapidly. Only with the late 1960s the possibility to request recorded votes seems to have been rediscovered (Lüthi, Meyer and Hirter, 1991). Interestingly enough, the introduction of the electronic vote and the resulting increase in published votes, seems to have been foreshadowed by a dramatic increase in requests for recorded votes in the 1980s.

As figure 1 already illustrates, the number of roll call votes has increased quite dramatically. Figure 2 underlines this trend and emphasizes, that both the share of requested roll calls and the share of automatic roll calls has increased. The increase in the former may only be explained by a decrease of votes on details of particular bills, parliamentary motions, etc., which are not subject to automatic

publication. The increase in the latter, following the trend depicted in figure 1 demonstrates that MPs have found a liking for demanding recorded votes.

The information depicted in figure 2 relies on a unique dataset, namely information on all parliamentary votes recorded in the Swiss lower house in two legislatures. This dataset covers not only those votes recorded and published because they were requested or required, but comprises information on all MPs' voting decisions.⁸ Hence, this dataset allows us to directly assess the likely biases introduced in empirical analyses if only a subset of votes is considered. For this I will focus on the cohesion of the party groups present in the lower chamber of the Swiss parliament.⁹

The main party groups are formed around the parties represented in the executive, namely the Christian-democrats (CVP), the Radicals (FDP), the People's Party (SVP), and the Social-democrats (PS). Of lesser importance, numerically at least, are the Greens (GPS), the Liberals (PLS), and the party group of the Alliance of Independents and the Evangelical Party (LdU/EVP). Finally, one party group only existed in the legislature between 1995 and 1999, and then disappeared from the political scene, namely the Freedom party (formerly known as the Car drivers' party).¹⁰

Earlier studies of party cohesion (e.g., Vasella, 1956; Lüthi, Meyer and Hirter, 1991) highlighted the comparatively rather high party discipline. This contrasts with the often attempted assimilation of the Swiss political system with presidential democracies (e.g., Persson and Tabellini, 2003), which are often characterized by low party discipline. As noted above, however, these studies rely on a very small, and possibly biased subsample of votes in the lower house of the Swiss parliament.

Table 2 reports the average values of the Rice-Index for the major parties from Vasella (1956) and Lüthi, Meyer and Hirter (1991) while updating these numbers with the more recent legislative periods. As noted above, in the legislative periods covered in the first four columns, the Rice-Index can only be computed for roll

⁸The Swiss *Parlamentsdienste* made this dataset available to us, under the condition of respecting the confidentiality of the individual votes. Hence, I cannot make accessible the data used and can only offer averages and other summaries of the data used.

⁹Obviously, biases are also to be expected in dimensional analysis of roll call votes, as the rather powerful analysis of the European parliament by Gabel and Carrubba (2004) and Carrubba, Gabel, Murrah, Clough, Montgomery and Schambach (forthcoming) illustrates.

¹⁰Good overviews over the political parties can be found in Ladner (1999), Ladner and Brändle (2001) and Ladner (2004).

call votes requested by MPs. In the legislative period between 1991 and 1995 until spring 1994 this was still the case, while starting with the spring 1994 legislative session, final votes, total votes and votes on urgent measures were automatically published. Finally, for the last two legislative periods reported in table 2 the Rice-Index is based on all votes in the Swiss lower house.

Overall, the picture transpiring from table 2 supports the conclusion of other scholars emphasizing the rather high party discipline in the Swiss lower house. When looking at the trend over time we find no overarching trend, but clearly see some trends over time, which seem related to the set of votes on which the cohesion index was calculated. With the exception of the Social-democrats (SP) and the smaller parties we find a peak in the average Rice-Indices in the 1991-1995 legislative period. But only in this period are the Rice-Indices based on a combination of requested roll calls and automatically published votes. Hence, we need to look more closely at the way in which party cohesion depends on the type of vote.

To assess whether employing only requested votes to assess party discipline is problematic, I compare the various types of votes for two legislatures. Thus, in table 3 I report the mean values of the Rice-Indices for all party groups present in the 45th (1995-1999) and 46th (1999-2003) legislature. More precisely, in columns 2 and 3 I report the mean Rice-Indices for votes that are recorded though not published. In columns 4 and 5 I list the mean Rice-Indices for the automatically recorded and published votes, while columns 6 and 7 list the same values for the requested votes. Finally, in the last four columns I report the overall averages as well as the results of a F-test for equal means across the three categories of votes in parliament.

Table 2: Party cohesion over time

party group	1920- 1953 (n=108)	1971- 1983 (n=22)	1983- 1987 (n=56)	1987- 1991 (n=87)	1991- 1995 (n=674)	1995- 1999 (n=2790)	1999- 2003 (n=3262)
Social-democrats	0.95	0.91	0.89	0.92	0.92	0.94	0.95
People's party	0.81	0.84	0.74	0.84	0.89	0.86	0.88
Christian-democrats	0.76	0.63	0.60	0.68	0.85	0.80	0.78
Radicals	0.69	0.75	0.73	0.69	0.85	0.80	0.83
Liberal party		0.78	0.98	0.96	0.93	0.90	0.93
Greens				0.94	0.94	0.94	0.97
Communists (POCH/PSA/PdA)		1.00	0.96	0.98	1.00		
Alliance of independents/Evangelical party		0.79	0.80	0.91	0.97	0.87	0.94

Quite clearly, table 3 shows some interesting patterns. First of all, for almost all party groups the average party cohesion scores vary systematically and markedly among the different types of votes. Only for three parties, namely the People's party (45th legislature), the Greens (both legislatures), and the Alliance of independents (46th legislature)¹¹ does the nature of the votes not appear to affect systematically the level of party cohesion (last two columns in table 3). For the remaining parties we find a persistent pattern. Party cohesion is systematically highest for those votes that are automatically recorded and published. Cohesion is much lower in unpublished votes and even more so in votes requested by a set of MPs.

This clearly illustrates that relying on a subset of roll call votes biases our inferences on the cohesion of party groups. In the present case, it appears that the automatically published votes that comprise final and total votes, as well as votes on urgency measures, are votes for which conflict has already been resolved in earlier stages of the legislative process.¹² Given that in all remaining votes intra-party conflict is higher, published votes give hardly an accurate picture.

The finding that roll call votes requested by MPs are the most divisive for party groups suggest that of the two mechanisms discussed above the selection effect seems to dominate. That is, MPs request roll call votes if party groups are divided. Ideally, we would like to assess whether the identity and party affiliation of the MPs requesting a roll call affects the cohesion of party groups differently.

¹¹In this last case, however, the very small number of votes used to determine the Rice-index is probably the main explanation for the lacking difference.

¹²Obviously, though initially not obvious to me, it might also be the case that in final votes parties engage much more in whipping their members and thus achieve a higher party discipline. I thank Gail McElroy vor suggesting this interpretation to me.

Table 3: Party cohesion in different votes: Mean Rice-Indices

Legislature: party group	Publication of vote										Total			
	no		automatically		requested		45th		46th		46th mean (s.d.) n	45th F-test p	46th F-test p	
	45th mean (s.d.) n	46th mean (s.d.) n	45th mean (s.d.) n	46th mean (s.d.) n	45th mean (s.d.) n	46th mean (s.d.) n	45th mean (s.d.) n	46th mean (s.d.) n						
Radicals	0.78 0.28 1855	0.81 0.27 2084	0.92 0.20 546	0.96 0.14 327	0.71 0.30 389	0.82 0.27 851	0.80 0.28 2790	0.83 0.26 3261	84.72 0.00	47.748 0.00				
Christian- democrats	0.76 0.29 1855	0.76 0.29 2084	0.98 0.10 546	0.97 0.11 327	0.71 0.31 389	0.76 0.31 851	0.80 0.28 2788	0.78 0.29 3260	159.874 0.00	83.75 0.00				
Social- democrats	0.93 0.18 1855	0.94 0.17 2084	0.95 0.15 546	0.97 0.12 327	0.97 0.12 389	0.95 0.16 851	0.94 0.17 2790	0.95 0.16 3259	7.057 0.00	5.222 0.01				
People's party	0.86 0.25 1855	0.88 0.21 2084	0.87 0.25 546	0.90 0.21 327	0.87 0.23 389	0.86 0.22 851	0.86 0.24 2790	0.88 0.21 3262	0.948 0.388	5.897 0.003				
Evangelical party	. 0.29 1855	0.83 0.29 2084	. 0.16 546	0.96 0.16 327	. 0.27 389	0.84 0.27 851	0.85 0.28 2790	0.85 0.28 3202	29.474 0.00					
Greens	0.93 0.18 1855	0.96 0.15 2084	0.94 0.17 546	0.97 0.13 327	0.94 0.18 389	0.98 0.12 851	0.94 0.18 2786	0.97 0.14 3245	0.337 0.714	2.854 0.058				
Liberal party	0.89 0.23 1855	0.92 0.22 2084	0.95 0.17 546	0.97 0.13 327	0.87 0.23 389	0.93 0.20 851	0.90 0.22 2774	0.93 0.21 3238	18.462 0.00	8.38 0.00				
National action	1 0 1855	0.71 0.41 2084	1 0 546	0.84 0.31 327	1 0 389	0.73 0.39 851	1 0 1779	0.73 0.40 2732		13.827 0.00				
Swiss democrats	0.86 0.31 1855	. . . 2084	0.92 0.24 546	. . . 327	0.86 0.32 389	. . . 851	0.87 0.30 2573	0.87 0.30 3257	7.493 0.00					
Freedom party	0.95 0.19 1855	. . . 2084	0.92 0.22 546	. . . 327	0.95 0.17 389	. . . 851	0.94 0.20 2676	0.94 0.20 2676	4.085 0.017					
Alliance of inde- pendents	. . . 1855	. . . 2084	. . . 546	1 0 327	. . . 389	0.89 0.27 851	0.89 0.27 2770	0.94 0.20 11		0.818 0.389				
Alliance of independents evangelical	0.85 0.28 1855	. . . 2084	0.96 0.16 546	. . . 327	0.85 0.29 389	. . . 851	0.87 0.27 2770	0.87 0.27 2770	36.036 0.00					

5 Roll call votes and selectivity

To fix these problems of selection biases, theoretical information on the selection process is necessary. This information then can be used to correct for possible selection biases through the estimation of a selection equation. Unfortunately, our dataset covering all votes in the Swiss lower house does contain very little contextual information. First of all I cannot identify the MPs having called for a roll call vote. Second, the content of the various votes is sketchy at best. Tentative analyses on the subset of votes for which I have some content information suggests that requested votes differ systematically from those not published. Hence, roll call votes are much more likely on “Bundesbeschlüsse,” for instance, than on the other types of votes. On the other hand, votes on specific articles of new laws are very infrequent among roll call votes. This type of information, combined with possible additional information, can be used to correct our inferences both on the cohesion of party groups and the conflict lines present in parliaments.¹³

To see the way in which this could be done, the following simple setup seems useful. Assuming only binary decisions (omitting abstention and non-votes) with $y \in \{0, 1\}$ (with 1=yea and 0=nay) most research questions dealing with roll calls can be framed in the following two equations:

$$y_i = \begin{cases} 1 & \text{if } y_i^* > 0 \\ 0 & \text{if } y_i^* \leq 0 \end{cases} \quad (2)$$

$$Y^* = X\beta_X + W\beta_W + Z\beta_Z + \epsilon \quad (3)$$

In matrix notation X stands for the policy positions (possibly unobserved) of the MPs, W for variables related to party discipline (and possibly vote characteristics) and Z for constituency and other factors possibly explaining the votes of MPs. Equation 3 we can also highlight what the two questions often asked in studies on roll-call votes wish to achieve. Studies on the dimensionality of the parliamentary policy space attempt to identify X and its effect (β_x) on the individual MP’s voting decisions.

¹³Hug and Wisler (1998), Brehm (2000), and Hug (2003) illustrate how this can be done in different contexts.

Studies on party discipline attempt to assess the relative weight of W (thus β_W) in explaining the vote decisions of MPs. If parties were completely cohesive, $\beta_Z = \mathbf{0}$, while β_X should only differ from $\mathbf{0}$ in so far as members of the same party share their ideological position.

With the small inconvenience that we do not observe X , normally, equation 3 could easily be estimated to find answers to the questions raised above. An additional problem relates, however, to the availability of the data used to estimate equation 3. As table 1 illustrated many parliaments do not provide the necessary information for all parliamentary votes. Provided that some random process leads to request for published roll-calls, using this subset of data would again cause no problems for estimating equation 3.

Given that the occurrence of a roll-call vote whose results will be published is not random, we may suspect that there are some systematic elements which help us explain its occurrence ($r_i = 1$ if roll-call occurs, $r_i = 0$ else):

$$r_i = \begin{cases} 1 & \text{if } r_i^* > 0 \\ 0 & \text{if } r_i^* \leq 0 \end{cases} \quad (4)$$

$$R^* = V\beta_V + \theta \quad (5)$$

with V comprising characteristics of the votes in question. Assuming that equation 5 accurately describes the occurrence of roll calls, we know that

$$y_i = \begin{cases} y_{obs} & \text{if } r_i^* > 0 \\ . & \text{if } r_i^* \leq 0 \end{cases} \quad (6)$$

Hence we can estimate equation 3 only for observations for which $r_i^* > 0$. At least since the seminal work by Heckman (1976) it is well known that in presence of data characterized by equations 3 and 5, estimating the former equation without considering the latter may result in biased estimates. More precisely, Heckman (1976) demonstrated that as long as $\sigma_{\epsilon, \theta} \neq 0$ estimating equation 3 on the observed data suffers a problem closely related to omitted variable bias.

Returning to the examples cited above, there is ample evidence that the equations 3 and 5 almost by definition will exclude variables being relegated into the

respective error terms. Most likely (and I provide evidence for this below), the two error terms contain in part similar elements. Taking the work by Gabel and Carrubba (2004) and Carrubba, Gabel, Murrah, Clough, Montgomery and Schambach (forthcoming) again as example, the fact that bills from particular committees of the EP are never subject to roll call votes (at least for the period they consider) is certainly also related to the likely decisions of the MEPs. Similarly, factors influencing a request for a roll-call vote but not included in equation 5 (e.g., subjective importance of a bill) are likely also to affect the voting decisions of MEPs (i.e., equation 3). Hence, the assumption $\sigma_{\epsilon,\theta} \neq 0$ is very unlikely to hold.

Stating the problem in the terms used above also suggests possible solutions. Quite clearly models of selection bias (e.g., Heckman, 1976; Maddala, 1983; Achen, 1986; Dubin and Rivers, 1990; Breen, 1996) allow us to address the problems in estimating equation 3 quite directly. On the practical level, however, equation 3 is often not our prime interest, at least to determine the dimensionality of a policy space or to assess the cohesion of party groups.

For the former problem, it is obvious that in order to determine X and β_X without possible selection bias we would need a full set of observations on Y . This full set of observations could be generated by estimating equations 3 and 5 on the observed portion of the data (i.e., most likely W for all votes and Z for all legislators, while omitting X) and use these estimates to make predictions on the portion of Y which remains unobserved. This imputed data could then be used to determine the dimensionality of the policy space employing the various techniques discussed, for instance, by Poole (2005). Obviously, this imputation step would have to be carried out several times, given our uncertainty in the imputation stage.¹⁴ Even more attractive would obviously be an integrated approach, i.e., estimating the dimensionality of the policy space while simultaneously addressing the selection bias issue. Most likely, such an endeavor would only be feasible in a Bayesian framework.¹⁵

For the second practical problem, namely to assess party cohesion while taking

¹⁴An alternative would obviously be to impute the whole datasets employing *Amelia* (e.g. Honaker, Joseph, King, Scheve and Singh, 1998).

¹⁵Interestingly, a comparison of the policy space generated by all recorded votes and those published in the Swiss parliament failed to highlight any significant differences (see Hug and Schulz, 2006 forthcoming). This, however, is likely due to the fact that for all bills at least one roll call vote is recorded, given the specific rules employed in this legislature.

into account problems of selection bias, equations 3 and 5 can be more directly employed. When studying party cohesion, for instance by employing the well-known Rice-Index (Rice, 1925) it can be noted that under the assumption of binary votes having this index for party groups as dependent variable simply implies an aggregation of equation 3 over the j party groups:¹⁶

$$\bar{Y}^j = \bar{X}^j \beta_X + \bar{W}^j \beta_W + \bar{Z}^j \beta_Z + \bar{\epsilon}^j \quad (7)$$

Multiplying both sides by 2 and subtracting 1 yields on the left-hand side simply the Rice index.¹⁷ Specifying our empirical model in this fashion also highlights two issues of importance. First of all, assuming that equation 3 is the correct empirical model, estimating equation 7 has to take account of the fact that we are in the presence of heteroskedasticity due to the aggregation of the individual votes. Second, we also need to be aware, that due to the aggregation several explanatory variables (namely X , W and Z) only vary across party groups or across votes. Hence, the variance-covariance matrix is most likely a little bit more complicated than what is normally assumed in a classical linear regression model.¹⁸

Using data from three legislatures of the Swiss lower house (45th: 1995-1999, 46th: 1999-2003, 47th: 2003-) I estimated equation 7 as transformed to have the Rice-index as dependent variable in conjunction with equations 4 and 5 as a simple Heckman selection model.¹⁹ In equation 5 I used as variables to explain the occurrence of a roll-call the type of vote.²⁰ In equation 7 I used as unique independent variables dichotomous indicators for all party groups except the liberal one. To account for possible contamination across party groups in a single vote, I allowed for clustered errors per vote.

¹⁶Here I obviously gloss over the fact that I have not yet specified how equation 3 relates to equation 2. Normally this link would be provided by a probit or logit function, for what follows, the assumption is however that it is a linear relationship. This is only done for presentational purposes.

¹⁷This works only, however, if the dependent variable Y in equation 3 corresponds to the majority vote of each party group. This also requires the appropriate changes in signs of the independent variables.

¹⁸For one, it seems prudent to allow for clustered errors across individual votes.

¹⁹Given the independent variables I employ their transformation is not required (see below).

²⁰In the appendix I provide a table of the various categories coded in the dataset I used.

Table 4: Heckman model on Rice Index (1995-1999) (excluding automatically published votes)

	b (s.e.)
Christian-democrats	-0.163 (0.020)
Freedom party	0.086 (0.015)
Green party	0.070 (0.015)
Radicals	-0.167 (0.017)
Social-democrats	0.100 (0.014)
People's party	-0.000 (0.016)
constant	0.887 (0.050)
fiscal restraint	0.084 (0.342)
detailed discussion	0.447 (0.297)
urgent measure	0.786 (0.750)
opening vote6	1.098 (0.339)
motion	0.384 (0.335)
motion of order	-0.245 (0.397)
parliamentary initiative	1.038 (0.322)
postulat	-0.148 (0.449)
motion to committee	1.028 (0.333)
constant	-1.447 (0.294)
ρ	-0.063 (0.144)
σ	0.232 (0.006)
λ	-0.015 (0.034)
Number of obs	15610
Censored obs	13005
Uncensored obs	2605
Wald $\chi^2(6)$	363.29
Prob > χ^2	0.0000
Log pseudo-likelihood	-6698.589

This very sparse model performs to differing degrees for the three legislatures. The selection model fails to perform terribly well, predicts correctly, however, quite a few additional cases in the legislative period between 1999 and 2003. Not surprisingly, the party group indicators in the outcome equation clearly show that the cohesion among the party differs considerably.

Interesting in this context is, however, that on the basis of the estimation results of the Heckman model predictions may be generated for the whole set of party-group vote pairs. The average of these predictions may then be compared to the set of actually observed values of the Rice-Index in the published votes and the Rice-Index of all votes (given that for the Swiss parliament we have available also this information).

Table 5: Rice Index (1995-1999) (excluding automatically published votes)

party group	all votes Rice-Index (n)	all published votes Rice-Index (n)	predicted (Heckman) Rice-Index (n)
Christian-democrats	0.751 (2228)	0.703 (373)	0.721 (2230)
Freedom party	0.947 (2136)	0.952 (358)	0.970 (2230)
Greens	0.935 (2229)	0.936 (375)	0.954 (2230)
Liberals	0.890 (2218)	0.866 (374)	0.884 (2230)
Radicals	0.764 (2230)	0.699 (375)	0.717 (2230)
Socialists	0.939 (2230)	0.966 (375)	0.984 (2230)
People's party	0.858 (2230)	0.866 (375)	0.884 (2230)

Table 5 provides an illustration of these predictions for the legislature 1995-1999. In the first column we have for each party group the value of the Rice-Index calculated for all votes (except those automatically published). In the second column appear the values of the same index but calculated only for the requested roll-call votes. And finally in the third column we have the Rice-Index predictions

based on the Heckman selection model. Clearly, these latter predictions are for some party groups closer to the “true” values in the first column than those calculated without corrections for the selection bias. The corrections, however, do not work for all party groups equally well. In addition, the corrections I present in table 5 are those that yielded the best results.²¹ Given the sparseness of the empirical model estimated, it is still encouraging to note that most estimates corrected for selection biases are better estimates. By construction, however, all corrections of the initial cohesion scores will go in the same direction (positive in the present case). Extensions of the analysis presented here, should attempt to go beyond this first cut.

Obviously an even harder test would be to estimate this model with an incidental truncation model. Hug (2003) shows, however, that quite a strong correlation between the error terms is required to make this model a valuable alternative. The results from the Heckman model used here suggest that this is unfortunately not the case.

6 Conclusion

Roll call votes are increasingly used in comparative studies of various aspects of legislatures. Such comparative work has, however, to be attentive to the fact that roll call votes occur under various institutional provisions. Provided that the institutional provisions restrict in some ways roll call votes or make them public only under particular circumstances, we need to worry about possible selection biases.

While Gabel and Carrubba (2004) and Carrubba, Gabel, Murrah, Clough, Montgomery and Schambach (forthcoming) were able to demonstrate that roll call votes in the European parliament differ systematically along several dimensions from the remaining votes, I attempted to demonstrate the problems of selection bias by employing a unique data source. Relying on a dataset comprising information on all votes by MPs in the Swiss lower house for two legislative periods, I am able to demonstrate that for most parties requested roll calls and automatically published votes differ systematically in terms of party cohesion from the remaining votes that are not published.

²¹This implies that the predictions for the Rice-Index in the other legislatures are worse.

Taken together with the theoretical argument concerning the requests for roll calls in the European parliament by Carrubba and Gabel (1999), these studies clearly suggest that selection effects are very likely in roll calls, provided not all votes are recorded and published. Hence, our research effort should address much more directly these issues of selection biases in roll call studies, especially in those with a comparative dimension. Neglecting these issues is likely to lead to biased inferences over important aspects of the legislatures studied.

Appendix

In table 6 I report the distribution of votes over the various categories of all votes. Table 7 reports detailed information on the institutional provisions for the recording of votes in the parliamentary chambers in 92 countries that appears in a summarized fashion in table 1 of the main text.

Table 6: Types of votes in 45th, 46th and 47th (partial) legislatures

	45th	46th	47th
annulment		6 0.2%	
fiscal restraint	105 3.8%	140 4.3%	13 1.1%
detailed discussion	1666 59.7%	1749 53.6%	784 69.1%
motion of discussion	31 1.1%	8 0.2%	
urgent measure	17 0.6%	7 0.2%	5 0.4%
opening vote	57 2.0%	86 2.6%	22 1.9%
declaration		1 0.0%	
total vote	366 13.1%	470 14.4%	97 8.6%
motion	90 3.2%	240 7.4%	36 3.2%
motion of order	67 2.4%	71 2.2%	17 1.5%
parliamentary initiative	94 3.4%	113 3.5%	47 4.1%
petition	2 0.1%	7 0.2%	3 0.3%
postulat	36 1.3%	102 3.1%	23 2.0%
motion for reconsideration	1 0.0%		
motion to committee	71 2.5%	29 0.9%	27 2.4%
final vote	181 6.5%	213 6.5%	52 4.6%
cantonal initiative	6 0.2%	20 0.6%	8 0.7%
total	2790	3262	1134

Table 7: Provisions for roll calls in national parliaments

Country	Chamber	Publication ²²				
		No Public	Secret	all	some	Yes roll calls
Algeria	National People's Assembly	X	for elec- tions			
Argentina	Senate				roll call	at the re- quest of 1/5 of MPs present/ Majority of those present (Art.205)
	Chamber of Deputies				roll call	at the request of 1/5 of MPs present /10% of deputies present (Art.190)
Australia	Senate				if di- vision occurs	
	House of Represent- atives				if di- vision occurs	
Austria	Federal Council				roll call	if demanded by President or 5 MPS
	National Council				roll call	if demanded by President or 5 MPS
Bahamas	Senate/ House of Assembly				recorded in minutes if re- quested recorded in minutes if re- quested	

<i>continued</i>	Country	Chamber	Publication				
			No Public	No Secret	Yes all	Yes some	Yes roll calls
	Belgium	Senate				not for secret votes	
		Chamber of Representatives				not for secret votes	
	Bolivia	House				roll call	Majority of those voting (Art.107)
		Senate				roll call	Majority of those voting (Art.116)
	Brazil	Federal Senate				roll call	requested by members; Majority of those present (Art.294)
		Chamber of Deputies				roll call	requested by members; 6%, or party leaders representing 6% of members (Art.185)
	Bulgaria	National Assembly	X				
	Cameroon	National Assembly				for public votes	
	Canada	Senate				roll call	request of at least 5 MPs
		House of Commons				roll call	request of at least 5 MPs
	Cape Verde	People's National Assembly	X	for elections			
	China	National People's Congress	X				
	Colombia	House				roll call	Majority of those present (Art. 146)

<i>continued</i>	Country	Chamber	Publication				
			No		Yes		
			Public	Secret	all	some roll calls	
		Senate				roll call	Majority of those present (Art. 146)
	Comoros	Federal Assembly				roll call	Roll call is decision of President of Assembly, at request of Govt, or the cttee concerned, or when the collective responsibility of Govt is at issue
	Congo	People's National Assembly	X	X			
	Costa Rica	Legislative Assembly /Unicameral	X				
	Cuba	National Assembly of People's Power				roll call	
	Cyprus	House of Representatives	X	X			
	Czechoslovakia	Chamber of Nations	X	X			
		Chamber of the People	X	X			
	Democratic Yemen	Supreme People's Council	X				
	Denmark	Folketing				roll call	if requested in writing by 17 members or if President (chairman) decides

<i>continued</i>	Country	Chamber	Publication				
			No		Yes		
			Public	Secret	all	some	roll calls
	Ecuador	Unicameral (100 Members)				roll call	10% of legislators (Art.70)
	Egypt	People's Assembly				roll call	for special majority, on request of Speaker, Prime Minister or 30 Members, or uncertainty from other methods
	El Salvador	Unicameral (84 Members)				roll call	Majority of those present (Art.37)
	Fiji	Senate			X		
		House of Representatives			X		
	Finland	Eduskunta			X		
	France	Senate				for public vote	
		National Assembly				for public vote	
	Gabon	National Assembly	X				
	German Dem. Republic	People's Chamber	X				
	Germany	Federal Council				roll call	if requested by a State and for election of Council President / recorded vote only if it is demanded by at least five per cent of the House
		Federal Diet					

<i>continued</i>	Country	Chamber	Publication				
			No		Yes		
		Public	Secret	all	some	roll calls	
	Greece	Chamber of Deputies				roll call	recorded vote only if it is demanded by at least five per cent of the House
	Guatemala	Unicameral (140 Members)				roll call	6 legislators (Art.95)
	Hungary	National Assembly			X		
	Iceland					roll call	individual MP, chairman, government or government minister
	India	Council of States			X		
		House of the People			X		
	Indonesia	House of Representatives	X	X			
	Ireland	Senate			X		
		Dail			X		
	Israel	The Knesset				roll call	if requested by at least 20 Mps
	Italy	Senate				roll call (names and secret ballot (names only))	Minimum number of MPs = 20, parliamentary party or in situations defined by the Standing Orders

<i>continued</i>	Country	Chamber	Publication				
			No		Yes		
			Public	Secret	all	some	roll calls
		Chamber of Deputies				roll call (names and vote); secret ballot (names only)	Minimum number of MPs = 20, parliamentary party or in situations defined by the Standing Orders
	Ivory Coast	National Assembly	X	X			
	Japan	House of Councilors			X		
		House of Deputies			X		
	Jordan	Senate				open ballots	
		House of Deputies				open ballots	
	Kenya	National Assembly			X		
	Kuwait	National Assembly				roll call	bills, decrees, treaties, for special majorities or when requested by govt, president or 10 Mps
	Lebanon	National Assembly			X		
	Liechtenstein	Diet	X				
	Luxembourg	Chamber of Deputies			X		
	Malawi	National Assembly				if division occurs	
	Malaysia	Senate				for division	

<i>continued</i>	Country	Chamber	Publication				
			No Public	Secret	all	Yes some roll calls	
	Mali	House of Representatives National Assembly				for division	
	Malta	House of Representatives			X (unless the House orders otherwise)		
	Mauritius	Legislative Assembly			X		
	Mexico	Chamber of Senators	X	for elections			
	Monaco	Chamber of Deputies National Council	X	for elections	X		
	Mongolia	Great People's Khural					
	Nauru	Parliament				for division	
	Netherlands	First Chamber				roll call	individual MP
		Second Chamber				roll call	individual MP
	New Zealand	House of Representatives			X		
	Nicaragua	National Assembly	X				

<i>continued</i>	Country	Chamber	Publication				
			No		Yes		
			Public	Secret	all	some	roll calls
	Norway	Storting				roll call	if requested by majority of MPs, in situations defined by the constitution, or in situations defined by the stnading orders
	Panama	Unicameral (71 Members)				roll call	Majority of those present (Art.196)
	Philippines	National Assembly				roll call on 3rd reading of a Bill	if requested by 1/5 Members
	Poland	Diet				roll call	at request of President or 30 Members but not used in the last 30 years
	Portugal	Assembly of the Republic	X				
	Republic of Korea	National Assembly				for public votes or decision by Assembly	
	Romania	Grand National Assembly	X	X			
	Rwanda	National Development Council		X			
	St Vincent	House of Assembly				if division occurs	

<i>continued</i>	Country	Chamber	Publication				
			No		Yes		
			Public	Secret	all	some	roll calls
	Senegal	National Assembly				for public votes by ballot	
	Solomon Islands	National Parliament					
	Somalia	People's Assembly	X				
	South Africa	House of Assembly			X		
		House of Representatives			X		
		House of Delegates			X		
	Spain	Senate					
		Congress of Deputies					
	Sri Lanka	Parliament				public	
	Sweden	Riksdag			X		
	Switzerland	States Council				roll call	requested by 10 members
		National Council				roll call	if requested by 30 members
	Syrian Arab Republic	People's Council					
	Thailand	Senate				roll call	
		House of Representatives				roll call	
	Tunisia	Chamber of Deputies			X		
	Uganda	National Assembly				for divisions	

<i>continued</i>	Country	Chamber	Publication				
			No Public	Secret	all	Yes some roll calls	
	Union of Soviet Socialist Republics	Soviet of Nationalities	X				
		Soviet of the Union	X				
	United Kingdom	House of Lords			X		
		House of Commons			X		
	United Republic of Tanzania	National Assembly	X	for elections			
	Uruguay	House				roll call	1/3 of those present (Art.93)
		Senate				roll call	Rules allow, but do not specify procedure to request, recorded vote (Art.100)
		Joint Session (130 Members)				roll call (Constitutional requirement, manual)	Recorded vote required on motion to override presidential veto (Art.141)
	USA	Senate			X		
		House of Representatives			X		
	Vanuatu	Parliament			X		
	Venezuela	Unicameral (165 Members)				roll call	Majority of those present (Arts.120, 125)
	Yugoslavia	Federal Chamber	X	for elections			

<i>continued</i>	Country	Chamber	Publication			
			No Public	Secret	all	Yes some roll calls
		Chamber of Re- publics and Provinces	X	for elec- tions		
	Zaire	Legislative Council	X	for elec- tions		
	Zambia	National Assembly			X	
	Zimbabwe	Senate				only in journal of the House
		House of Assembly				only in journal of the House

References

- Achen, Christopher H. 1986. *Statistical Analysis of Quasi-Experiments*. Berkeley: University of California Press.
- Amorim Neto, Octavio. 2002. Presidential Cabinets, Electoral Cycles, and Coalition Discipline in Brazil. In *Legislative Politics in Latin America*, ed. Scott Morgenstern and Benito Nacif. Cambridge: Cambridge University Press chapter 3, pp. 48–78.
- Attina, Fulvio. 1990. “The Voting Behaviour of European Parliament Members and the Problem of the Europarties.” *European Journal of Political Research* 18:557–579.
- Bartels, Larry M. 1991. “Constituency Opinion and Congressional Policy Making: The Reagan Defense Buildup.” *American Political Science Review* 85(2 June):457–474.
- Bowler, Shaun, David M. Farrell and Richard S. Katz, eds. 1999. *Party Discipline and Parliamentary Government*. Columbus: Ohio State University Press.
- Bowler, Shawn. 2000. Parties in Legislatures: Two Competing Explanations. In *Parties Without Partisans*, ed. Russell J Dalton and M.P. Wattenberg. Oxford: Oxford University Press pp. 157–179.
- Breen, Richard. 1996. *Regression Models: Censored, Sample Selected or Truncated Data*. Thousand Oaks: Sage.
- Brehm, John. 2000. “Alternative Corrections for Sample Truncation: Applications to the 1988 and 1990 Senate Election Studies.” *Political Analysis* 8(2):183–199.
- Brzinski, Joanne Bay. 1995. Political Group Cohesion in the European Parliament, 1989-1994. In *The State of the European Union, Vol.*, ed. Carolyn Rhodes and Sonja Mazey. London:: Longman pp. 135–158.
- Carey, John M. 2004. “Visible Votes: Recorded Voting and Legislative Accountability in Latin America.” Unpublished paper, April 2004.
- Carrubba, Clifford J. and Matthew Gabel. 1999. “Roll-Call Votes and Party Discipline in the European Parliament: Reconsidering MEP Voting Behavior.” Paper prepared for presentation at the American Political Science Association Annual Meeting, September 2-5 Atlanta.
- Carrubba, Clifford J., Matthew Gabel, Lacey Murrell, Ryan Clough, Elizabeth Montgomery and Rebecca Schambach. forthcoming. “Off the Record: Unrecorded Legislative Votes, Selection Bias, and Roll-Call Vote Analysis.” *British Journal of Political Science* .
- Cox, Gary W. 1987. *The Efficient Secret: The Cabinet and the Development of Political Parties in Victorian England*. Cambridge: Cambridge University Press.

- Depauw, Sam and Shane Martin. 2005. "Legislative Party Discipline and Cohesion in Comparative Perspective." Paper presented at the ECPR Joint Sessions of Workshops, 14-19 April, Granada.
- Desposato, Scott W. 2003. "Comparing Group and Subgroup Cohesion Scores: A Nonparametric Method with an Application to Brazil." *Political Analysis* 11:275–288.
- Desposato, Scott W. 2005 Forthcoming. "Correcting for Bias in Rice Cohesion Scores." *British Journal of Political Science* .
- Dubin, Jeffrey A. and Douglas Rivers. 1990. Selection Bias in Linear Regression, Logit and Probit Models. In *Modern Methods of Data Analysis*, ed. John Fox and Scott J. Long. Newbury Park: Sage pp. 410–442.
- Gabel, Matthew J. and Clifford J. Carrubba. 2004. "The European Parliament and Transnational Political Representation: Party Groups and Political Conflict." *Europäische Politik* .
- Gallagher, Michael. 1988. Introduction. In *Candidate Selection in a Comparative Perspective*, ed. Michael Gallagher and Michael Marsh. London: Sage Publications pp. 1–19.
- Harmel, Robert and Kenneth Janda. 1982. *Parties and Their Environments: Limits to Reform*. New York: Longman.
- Hazan, Reuven Y. 2003. "Introduction Does Cohesion Equal Discipline? Towards a Conceptual Delineation." *Journal of Legislative Studies* 9(4):1–11.
- Heckman, James J. 1976. "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models." *Annals of Economic and Social Measurement* 5(4):475–492.
- Heckman, James J. and James M. Jr. Snyder. 1997. "Linear Probability Models of the Demand for Attributes with an Empirical Application to Estimating the Preferences of Legislators." *The Rand Journal of Economics* 28(0 special issue):S142–S189.
- Hermann, Michael, Heiri Leuthold and Hanspeter Kriesi. 1999. "Die politische Landkarte der Schweiz." *Das Magazin* (40 (9.10.1999)).
- Hix, Simon. 2001. "Legislative Behaviour and Party Competition in the European Parliament: An Application of Nominate to the EU." *Journal of Common Market Studies* 39(4 Nov):663–688.
- Hix, Simon, Abdul Noury and Gérard Roland. 2005. "Power to the Parties: Cohesion and Competition in the European Parliament, 1979-2001." *British Journal of Political Science* .
- Hix, Simon, Abdul Noury and Gérard Roland. 2006. "Dimensions of Politics in the European Parliament." *American Journal of Political Science* 50(2).

- Hix, Simon, Abdul Noury and Gérard Roland. 2006 forthcoming. *Democracy in the European Parliament*. Princeton: Princeton University Press.
- Honaker, James, Anne Joseph, Gary King, Kenneth Scheve and Nainihal Singh. 1998. "Amelia: A Program for Missing Data." Cambridge: Department of Government, Harvard University (<http://polmeth.calpoly.edu/papers98/king98e.pdf>).
- Hug, Simon. 2003. "Selection Bias in Comparative Research. The Case of Incomplete Datasets." *Political Analysis* 11(3):255–274.
- Hug, Simon and Dominique Wisler. 1998. "Correcting for Selection Bias in Social Movement Research." *Mobilization* 3(2):141–161.
- Hug, Simon and Tobias Schulz. 2006 forthcoming. "Left-Right Positions of Political Parties in Switzerland." *Party Politics* .
- Interparliamentary Union. 1986. *Parliaments of the World. A Reference Compendium*. London: MacMillan Press.
- Jackman, Simon. 2004. "What Do We Learn from Graduate Admissions Committees? A Multiple Rater, Latent Variable Model, with Incomplete Discrete and Continuous Indicators." *Political Analysis* 12(4):400–424.
- Janda, Kenneth. 1980. *Political Parties*. New York: Free Press.
- Jeitziner, Bruno and Tobias Hohl. 1997. "Measuring Political Preferences: Ratings for Members of the Swiss National Council." *Revue suisse de science politique* 3(4):1–27.
- Jones, Mark P. 2002. Explaining the High Level of Party Discipline in The Argentine Congress. In *Legislative Politics in Latin America*, ed. Scott Morgenstern and Benito Nacif. Cambridge: Cambridge University Press chapter 6, pp. 147–184.
- Kreppel, Amie. 2002. *The European Parliament and Supranational Party System. A Study in Institutional Development*. New York: Cambridge University Press.
- Kriesi, Hanspeter. 2001. "The Federal Parliament: The Limits of Institutional Reform." *West European Politics* 24(April 2):59–76.
- Ladner, Andreas. 1999. Das Schweizer Parteiensystem und seine Parteien. In *Handbuch der Schweizer Politik*, ed. Ulrich Klöti, Peter Knoepfel, Hanspeter Kriesi, Wolf Linder and Yannis Papadopoulos. Zürich: Verlag Neue Zürcher Zeitung pp. 213–260.
- Ladner, Andreas. 2004. *Stabilität und Wandel Von Parteien und Parteiensystemen : Eine Vergleichende Analyse Von Konfliktlinien, Parteien und Parteiensystemen in Den Schweizer Kantonen*. Wiesbaden: VS Verlag für Sozialwissenschaften.
- Ladner, Andreas and Michael Brändle. 2001. *Die Schweizer Parteien im Wandel. Von Mitgliederparteien zu professionalisierten Wählerorganisationen?* Zürich: Seismo.

- Levitt, Steven D. 1996. "How Do Senators Vote? Disentangling the Role of Voter Preferences, Party Affiliation, and Senator Ideology." *American Economic Review* 86(3):425–441.
- Loewenberg, Gerhard, Peverill Squire and D. Roderick Kiewiet, eds. 2002. *Legislatures. Comparative Perspectives on Representative Assemblies*. Ann Arbor: University of Michigan Press.
- Loewenberg, Gerhard and Samuel C. Patterson. 1979. *Comparing Legislatures*. Boston: Little, Brown.
- Loewenberg, Gerhard and Thomas C. Mans. 1988. "Individual and Structural Influences on the Perception of Legislative Norms in Three European Parliaments." *American Journal of Political Science* 32(1 (Feb.)):155–177.
- Londregan, John. 2000. *Legislative Institutions and Ideology in Chile*. New York: Cambridge.
- Lüthi, Ruth, Luzius Meyer and Hans Hirter. 1991. Fraktionsdisziplin und die Vertretung von Partiukulärinteressen im Nationalrat. In *Das Parlament - "Oberste Gewalt des Bundes"?*, ed. Parlamentsdienst. Bern: Haupt pp. 53–71.
- Maddala, G.S. 1983. *Limited Dependent and Qualitative Variables in Econometrics*. Cambridge: Cambridge University Press.
- Morgenstern, Scott. 2003. *Patterns of Legislative Politics : Roll Call Voting in Latin America and the United States*. Cambridge: Cambridge University Press.
- Nacif, Benito. 2002. Understanding Party Discipline in the Mexican Chamber of Deputies: The Centralized Party Model. In *Legislative Politics in Latin America*, ed. Scott Morgenstern and Benito Nacif. Cambridge: Cambridge University Press chapter 9, pp. 254–286.
- Noury, Abdul G. 2002. "Ideology, Nationality and Euro-Parliamentarians." *European Union Politics* 3(1):33–58.
- Persson, Torsten and Guido Enrico Tabellini. 2003. *The Economic Effects of Constitutions (Munich Lectures in Economics)*. Cambridge: MIT Press.
- Poole, Keith. 2005. *Spatial Models of Parliamentary Voting*. New York: Cambridge University Press.
- Poole, Keith A. and Howard Rosenthal. 1997. *Congress. A Political-Economic History of Roll Call Voting*. Oxford: Oxford University Press.
- Rice, Stuart A. 1925. "The Behavior of Legislative Groups: A Method of Measurement." *Political Science Quarterly* 40(1):60–72.
- Saalfeld, Thomas. 1995. On Dogs and Whips: Recorded Votes. In *Parliaments and Majority Rule in Western Europe*, ed. Herbert Döring. New York: St. Martin's Press pp. 528–565.

- Skjaeveland, Asbjorn. 1999. "A Danish Party Cohesion Cycle." *Scandinavian Political Studies* 22(2):121–136.
- Vasella, Marco. 1956. *Die Partei- Fraktionsdisziplin als staatsrechtliches Problem*. Winterthur: Verlag P.G. Keller.
- Voeten, Erik. 2000. "Clashes in the Assembly." *International Organization* 54(2):185–215.
- Von Wyss, Moritz. 2003. Die Namenabstimmung im Ständerat: Untersuchung eines parlamentarischen Mythos. In *Nachdenken über den demokratischen Staat und seine Geschichte. Beiträge für Alfred Kölz*, ed. Isabelle Häner. Zürich: Schulthess pp. 23–47.