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Comparing Cosponsorship and Roll-Call Ideal Points

We use bill cosponsorship and roll-call vote data to compare legislators' revealed preferences in the U.S. House of Representatives and the Argentine Chamber of Deputies. We estimate ideal points from bill cosponsorship data using principal-component analysis on an agreement matrix that included information on all bills introduced in the U.S. House (1973–2000) and Argentine Chamber (1983–2002). The ideal-point estimates of legislators' revealed preferences based on cosponsorship data strongly correlate with similar estimates derived from roll-call vote data. Also, cosponsorship activity in the U.S. House has lower dimensionality than cosponsorship has in the Argentine Chamber. We explain this lower discrimination as a function of individual- and district-level factors in both countries.

The comparative analysis of legislative voting behavior has enjoyed a resurgence of interest in the last decade (Carey 2006; Morgenstern 2004; Sieberer 2006). New statistical techniques and the greater availability of data now allow researchers to map legislative coalitions, explore party discipline, and explain political realignments in multiparty systems (see, for examples, Alemán and Saiegh 2007; Amorim Neto, Cox, and McCubbins 2003; Clinton, Jackman, and Rivers 2004; Desposato 2005; Haspel, Remington, and Smith 1998; Hix, Noury, and Roland 2006; Hug and Schulz 2007; Jones and Hwang 2005a; Londregan 2000; Morgenstern 2004; Poole 2005; and Rosenthal and Voeten 2004). Efforts to understand voting behavior in legislatures across Europe and Latin America not only expand our knowledge about lawmaking and legislative parties, but also promise to shed new light on the forces that shape legislators' preferences within different institutional contexts.

Roll-call voting is, however, only one of many different types of position-taking behaviors that legislators employ to reveal their preferences to fellow legislators, the executive, and voters (Mayhew 1974). Legislators also speak on the floor, draft amendments, and sponsor legislation. These (and other) diverse political activities illustrate the many choices legislators make while in office and provide researchers with multiple data sources that can be utilized to estimate policy preferences.

For this article, we focused on legislators' positions as recovered from bill cosponsorship data and the link between these ideal points and those recovered from roll-call votes. As other articles that appeared in a previous special section of *LSQ* have documented (Carruba, Gabel, and Hug 2008; Rosas and Shomer 2008), different types of legislative activities pose various methodological challenges to researchers interested in recovering ideal-point estimates. For example, cosponsoring is a voluntary activity that only discloses the positive predisposition of a legislator toward a bill. Cosigning a legislative initiative describes a positive inclination toward the future location of a policy vis-à-vis the current status quo, but not cosigning a bill could reflect a negative inclination toward the bill, a lack of knowledge about the proposal, or a lack of interest. Therefore, while yea votes (instances of cosigning) provide a wealth of information, nay votes (failures to cosign) are considerably less informative for retrieving ideal-point estimates. In this article, we provide an alternative strategy to deal with the asymmetry between yeas and nays in cosponsorship data and to obtain ideal-point estimates from this type of legislative activity. A first objective of this article is, therefore, to explore the methodological problems associated with the estimation of ideal points using cosponsorship data.

A second objective is to compare the ideal-point estimates retrieved from different types of legislative activities. This interest stems from our presumption that individual incentives behind different legislative activities could substantively affect the nature of the preferences we retrieve. It is unclear whether or not legislators' ideal points as recovered through different data sources provide information that reflects the same fundamental positions. Closer proximity between the ideal points retrieved from both types of activities, which we define here as "ideological consistency," should be differently affected by partisan and institutional constraints.

This issue has been addressed in recent work on the U.S. Congress. For instance, Highton and Rocca (2005) have analyzed bill cosponsorship and roll-call data related to abortion policy in the 101st period in the U.S. House of Representatives, arguing that "similar underlying causes" drive legislative behavior for both activities (311).[1] We do not know, however, if this finding extends beyond abortion policy or to other points in time. It also is unclear to what extent we should expect the close association between bill cosponsorship and roll-call voting to appear in other legislatures throughout the world. Since legislators are more likely to be susceptible to partisan pressures when they cast a floor vote than when they choose partners to sponsor bills, and because U.S. political parties are generally considered to be comparatively weak in terms of discipline, it is reasonable to question if a similarly close association between cosponsorship and voting would be present in most of the parliaments of the world.

Our empirical analysis employs bill cosponsorship and roll-call vote data from the U.S. and Argentine lower houses. The United States and Argentina possess similar constitutional frameworks, but they differ notably in terms of the electoral rules used to elect members and the structure and functioning of their legislative party system (Jones et al. 2002). In contrast to United States legislators, and more like those elsewhere in the world, Argentine legislators depend heavily on decisions made by party leaders to determine their political careers. Argentine legislators are therefore much less independent and less focused on the preferences of voters in their districts than are their U.S. counterparts. As a consequence, legislative parties in Argentina are usually considered to be highly disciplined compared to U.S. parties. The ensuing comparative analysis of these two legislatures helps provide a better understanding of the link between voting and co-sponsoring under distinct partisan and institutional contexts.

Our analysis provides three noteworthy findings. First, the ideal-point estimates based on cosponsorship data strongly correlate with ideal-point estimates derived from roll-call vote data for both the U.S. House and the Argentine Chamber. We used principal-components analysis on properly generated agreement matrices and found that the correlation between ideal-point estimates obtained from cosponsorship data and those generated from roll-call vote data is greater than 0.9 for the United States and greater than 0.7 for Argentina. Second, cosponsorship activity in the U.S. House has lower dimensionality than in the Argentine Chamber. This difference may reflect the lesser prominence of ideology as a determinant of the legislative behavior of Argentine legislators (Jones and Hwang 2005b), a hypothesis that we explicitly address in section 4. Finally, the results highlight less within-party discrimination in the Argentine Chamber of Deputies than in the U.S. House of Representatives when ideal points are based on roll-call vote data. This finding is the result of two institutional features common in developing-country legislatures: high party discipline and a relatively modest number of roll-call votes. In sum, this article shows that there are significant advantages to using both cosponsorship and roll-call data to gain deeper insight into the robustness of different ideal-point estimates. Moreover, as we will show in section 4, comparing different ideal-point estimates *within* and *across* legislatures provides greater leverage for understanding how different legislative activities affect the nature of the preferences revealed by legislators.

Section 1 reviews the extant literature on the connection between bill cosponsorship and floor voting. Section 2 outlines our estimation strategy for extracting ideal points from bill cosponsorship data. Section 3 compares the ideal-point estimates extracted from bill cosponsorship and roll-call vote data in the Argentine and U.S. Congresses. In section 4, we take advantage of the new information obtained from cosponsorship data to explore differences *within* and *across* countries in the preferences of individual legislators across legislative activities. Section 5 concludes.

1. Cosponsoring and Roll-Call Votes

What drives cosponsorship patterns? The discipline's answers to this question have been varied. Mayhew (1974) notes that U.S. legislators engage in position taking via speeches, newsletters, interviews, roll-call votes, and bill cosponsorship. He views cosponsoring as a signal to voters, with few costs and potentially large benefits, particularly when constituents are attuned to such policy efforts. Other authors share a similar view of cosponsoring as primarily a position-taking device with constituents in mind (consider, for example, Balla and Nemacheck 2000, Campbell 1982, and Koger 2003). Balla and Nemacheck (2000) studied cosponsorship patterns in managed health care legislation in the 105th Congress and found evidence that legislators use cosponsorship to take positions that are popular with important constituencies. Similarly, Koger (2003) has shown that electoral motives have a strong influence on a member's decision to cosponsor. As Kessler and Krehbiel (1996) point out, if cosponsorship is considered another means of position taking, then "electoral-connection theories predict a close correspondence between legislators' ideological predispositions (or, by extension, those of their reelection constituencies) and the content of the legislation they choose to cosponsor" (555).

A competing body of work presents cosponsorship as primarily a signaling device with fellow legislators, not constituents, as the primary targets (Kessler and Krehbiel 1996; Wawro 2000). In a related vein, Fenno (1989, 1991) and Light (1992) have depicted cosponsoring as a tool to provide information to other legislators with the aim of coalition building. Yet even within this perspective, cosponsorship is a means of communicating ideological content.

Krehbiel (1995), for instance, maintains that "legislators cosponsor measures whose anticipated policy consequences they like relative to the status quo, and they choose not to cosponsor measures whose anticipated policy consequences they dislike relative to the status quo" (910). Panning (1982) analyzed cosponsorship patterns in the Senate during the early 1970s and presented evidence suggesting that "it is ideology, however, rather than party (or region) that most sharply distinguishes the clusters of senators" (602). Looking at the 95th Congress, Campbell (1982) found a similar relationship between ideological tendencies and cosponsorship decisions. Regens's (1989) case study of legislation on acid rain controls also highlights the existence of ideological effects on the decision to cosponsor.

More recently, Highton and Rocca (2005) studied the decision to cosponsor an abortion-related bill in the 101st House. They found that constituent preferences are statistically significant predictors of cosponsorship and that the relationship between constituent preferences and a legislator's position regarding abortion is of a similar magnitude of order for a legislator's cosponsorship and roll-call activity. Highton and Rocca conclude that "one would be hard pressed to make the case that the causes of position taking on roll-call votes are fundamentally different than those for non-roll-call position taking" and "the striking similarity of the two sets of estimates . . . suggests that the behaviors have similar underlying causes" (311).

If this logic is correct, then we should expect legislators' ideal positions as derived from bill cosponsorship data to be correlated with their respective positions recovered through the analysis of roll-call vote data. It is unclear, however, how strong this association should be, since the activities differ in some fundamental ways.

Both voting and cosponsoring allow for strategic behavior by legislators, but we believe that party and institutional constraints operate differently in each case. As Carruba, Gabel, and Hug (2008) note in their contribution to *LSQ*'s special series on measuring policy preferences of legislators, in most countries, recorded roll-call votes tend to be selected by party leaders with a vested interest in what the vote will signal to specific constituencies. Because voting is a public good that affects the value of the party label, vote defection is strongly discouraged and, in some cases, severely sanctioned. Activities that have no immediate policy consequences and do not depreciate the party label are not as tightly monitored by party leaders. Consequently, floor voting choices should more intensely reflect the costs of defection imposed by parties than cosponsoring should. Similarly, party leaders with control over the legislative agenda influence the type of proposals that are reported to the plenary floor, seeking to avoid votes on bills that divide the majority party (Alemán 2006; Cox and McCubbins 2005).

Variation in the influence of partisan leaders, agenda setters, or both is not the only possible explanation for partisan clumping in roll-call votes compared to cosponsorship decisions. Revealed preferences based upon roll-call data might reflect increased pressure on legislators to vote consistently with the preferences of their constituents (relative to their own preferences). At least in the United States, newspapers report the roll-call votes of members of Congress far more frequently than they report cosponsorship decisions. In addition, opposition candidates tend to focus on the voting records of incumbents far more than on incumbents' cosponsorship decisions. This greater amount of information possessed by voters about incumbents' roll-call voting may induce representatives to give greater weight to the preferences of their constituents when voting on the floor than when deciding whether or not to cosponsor a bill (Sulkin and Swigger 2008). Of course, these two stories could be complements rather than substitutes for one another.

Talbert and Potoski (2002), for example, studied the relationship between bill cosponsorship and roll-call voting among U.S. legislators during the 103d and 104th Congresses. In their view, fewer institutional constraints and greater uncertainty affect the pre-floor agenda, resulting in a higher-dimensional structure in bill cosponsorship behavior than that observed in decision making on the floor. They argue floor voting decisions are well represented by a single dimension that captures ideological and partisan features, but that cosponsorship decisions are multidimensional and reflect the various cleavages in American politics. Talbert and Potosi used Poole and Rosenthal's NOMINATE method (1997, 2007) to recover ideal-point estimates for legislators from both roll-call votes and cosponsorship data, and their work highlights these differences in dimensionality.

Studies of cosponsorship in legislatures other than the U.S. Congress are virtually nonexistent, with work by Crisp, Kanthak, and Leijonhufvud (2005) on the Chilean Congress being a rare exception. These authors portray cosponsoring as "an action that signals willingness to share a policy position and the reward (or punishment) that position elicits from voters" (704). Although they do not explicitly test the link between drafting and voting, Crisp and his colleagues expect cosponsorship data and roll-call votes to complement each other.

They also emphasize the wide availability of cosponsorship data—in stark contrast to the limited supply of roll-call data in the legislatures of developing countries—and remark on its considerable utility for comparative legislative research.[2]

These questions about the correspondence between cosponsoring and floor voting are relevant for the general study of legislative institutions throughout the world. If the institutional structure filters only a biased sample of initiatives to the floor, or if partisan pressure on legislators is substantially greater when they are casting a vote on the floor (or if both forces are at work), then we should be able to detect these forces via a lack of correspondence between the ideal points derived from these alternative activities. In the case of Argentina, as we will discuss later, these forces are real concerns. Political parties in Argentina are generally considered to be very disciplined, mainly as a result of the influence that party leaders have over the careers of legislators. Members of the Argentine Chamber of Deputies are elected under closed-list proportional representation (PR), and party leaders generally control both access to the party's ballot and the location of individual candidates on the rank-ordered closed list. Parties also control political careers at the provincial level, where most Argentine deputies continue their political careers after spending a single term in Congress (Jones 2008). Consequently, party leadership demands can induce legislators to follow the party line on roll-call votes when they would prefer to dissent. It is also reasonable to expect the substantial power of the congressional leadership to affect the legislative agenda, influencing the types of issues that reach the plenary floor (Jones and Hwang 2005b). These effects, together with the relatively modest number of roll-call votes in Argentina, limit the amount of information that roll-call votes can provide to discriminate properly among copartisans.[3]

2. Ideal Points from Bill Cosponsorship Data

The question of whether or not bill cosponsorship data and roll-call vote data reflect similar underlying causal factors has not been conclusively answered. Two reasons for the literature's inconclusive response are the limited efforts made to obtain proper ideal-point estimates from cosponsorship data and the restrictions typically made in terms of country, time period, issue area, or some combination thereof being investigated. For this article, we attempted to surmount some of these obstacles.

A crucial decision in the analysis of cosponsorship data involves the classification of nonsponsors. The decision to cosponsor a bill is indicative of support, but the decision not to cosponsor a bill could reflect opposition, lack of interest, lack of knowledge about the bill proposal, or some other institutional restrictions limiting the number of sponsors.[4]

Let us imagine a legislature with eight representatives, L_i. Each legislator has an ideal point, x_i, with a symmetric single-peaked utility function. Each legislator is presented with m roll-call votes offering a choice between a yea and a nay position. A legislator votes "yea" if that legislator's ideal point is closer to the proposal than to the status quo, $y_{i\propto}$ = YEA if $U_{i\propto}(P) > U_{i\propto}(SQ)$, and votes "nay" otherwise, $y_{i\propto}$ = NAY. In the example related in Table 1, eight legislators ranked from the far left (legislator A) to the far right (legislator H) make their preferences between $\propto$ and the status quo explicit in a recorded vote.

Legislators are not compelled to reveal their preferences on every bill proposed to Congress by their fellow representatives. The decision to cosponsor a bill reveals not only the legislator's preference for the proposal over the current status quo, but also a special interest in or importance attached to that particular bill. Moreover, while effective voting implements policy, the cosponsoring of legislation needs to be read purely as a signal to voters, fellow representatives, or both. Because only a subgroup of legislators that actually prefers the bill over the status quo will generally sponsor it, the cosponsorship data will be saturated with zeros, as shown in the three cosponsorship examples presented in Table 1.

It is therefore difficult to distinguish between legislators who prefer the status quo, legislators with no interest in signaling their support for the proposed bill, and legislators unaware that the bill has even been proposed to Congress.

Crisp, Desposato, and Kanthak (2005) have attempted to account for the fundamental incertitude associated with bill cosponsorship by modifying the original NOMINATE code. They introduced a utility function that disaggregates nay votes into two components: one estimating the likelihood that the legislator belongs to the group that rejects the bill (to the left of the cutpoint that separates the yea and nay votes), and one estimating the likelihood that the legislator lacks the interest or knowledge to cosponsor the bill (to the right of the cutline). A difficulty we face when implementing this estimation strategy is that there is generally very little information in each proposed bill to distinguish between the nay cosponsors. In fact, procedures typically employed to analyze roll-call votes, such as NOMINATE, would reject an overwhelming majority of the bills, because, in most cases, there is a very small number of cosponsors. Therefore, even if there is a first

TABLE 1
Three Cosponsoring Alternatives Consistent with Vote for Bill ∝

		Left							Right
	Legislator	A	B	C	D	E	F	G	H
	Vote ∝	0	0	0	1	1	1	1	1
Cosponsor Alternatives	Alt. 1	0	0	0	0	0	1	1	0
	Alt. 2	0	0	0	1	0	1	0	0
	Alt. 3	0	0	0	1	0	0	0	0

dimension that explains most of the relationships generated by the data, almost all bills will include few yea votes from legislators who are ideologically proximate to the cosponsors (but most likely not at the extremes of the ideological spectrum). Most bills will tend to display large numbers of nay votes by legislators with extreme first-dimension scores, and there will be limited information with which to distinguish between positions that indicate rejection and those that reflect a lack of interest or knowledge. High dimensionality will affect both the ideal-point estimates and the classification of legislators into the rejection group.

The alternative approach we propose builds on social-network analysis. Rather than estimating parameters for each individual bill, social-network analysis commonly constructs an affiliation matrix (Table 2), with each cell indicating the number of times that each pair of legislators cosponsor legislation together. We do not use the original (two-mode) dataset, organized as an $X = r \times c$ matrix, with $r = 1, 2 \ldots R$ legislators and $c = 1, 2, \ldots C$ bill initiatives, but instead propose a square affiliation matrix, $A = XX'$. In this affiliation matrix, the diagonal elements describe the total number of projects sponsored by each legislator and the off-diagonal elements describe the number of times that each pair of legislators cosponsors bills together. Table 2 provides the first ten rows and ten columns of an affiliation matrix for the 104th U.S. House. The table shows that there are very significant differences in the total amount of legislation sponsored by each legislator, as well as noteworthy variations in the amount of legislation cosponsored by each pair of legislators.

The ratio of bills cosponsored by each pair of legislators to the total number of bills sponsored by each of them will produce an agreement matrix, $G = a_{ij} / diag\ (a_i)$, as depicted in Table 3. Because each legislator cosponsors a different amount of legislation, the denominator

TABLE 2
Affiliation Matrix: First 10 Rows, 104th U.S. House

	Dingell	Yates	Gonzalez	Brown	Gibbons	McDade	Quillen	Conyers	de la Garza	Hamilton
Dingell (MI-16)	**104**									
Yates (IL-9)	32	**245**								
Gonzalez (TX-20)	25	63	**135**							
Brown (CA-42)	25	95	55	**220**						
Gibbons (FL-11)	17	30	17	26	**96**					
McDade (PA-10)	11	13	10	11	5	**58**				
Quillen (TN-1)	13	20	13	23	13	25	**131**			
Conyers (MI-14)	26	71	42	61	20	7	16	**178**		
de la Garza (TX-15)	21	27	22	25	18	13	18	24	**72**	
Hamilton (IN-9)	20	24	17	26	14	13	25	17	18	**115**

changes and the upper and lower triangles of the new $r \times c$ square matrix, G, are not identical.

In the agreement matrix excerpted in Table 3, for example, we can see that John Dingell (MI-16) will cosponsor 31% of his bills with Sidney Yates (IL-9), but Sydney Yates will only cosponsor 13% of his bills with John Dingell. In the new agreement matrix, therefore, each observation (row) is informed about the share of legislation cosponsored with every other (column) legislator. Transposing this matrix will not produce sensible results, because the shares are normalized by the row totals.

The agreement matrix provides all the information required to estimate ideal points from the cosponsorship data. There are a number of alternative statistical models that can be used to estimate ideal points from the agreement matrix.[5] For simplicity, we chose principal-component analysis (PCA) with *R 2.6* software, with calculations performed using singular-value decomposition[6] on the centered and log-transformed agreement matrices, G. Note that, because the agreement matrix is not symmetric, rotating the matrix and comparing the left and right singular vectors will not produce similar results.[7] We retrieved the first two rotated factors.

TABLE 3
Agreement Matrix: First 10 Rows, 104th U.S. House

	Dingell	Yates	Gonzalez	Brown	Gibbons	McDade	Quillen	Conyers	de la Garza	Hamilton
Dingell (MI-16)	**1.000**	0.310	0.240	0.240	0.163	0.106	0.125	0.250	0.200	0.192
Yates (IL-9)	0.130	**1.000**	0.260	0.390	0.122	0.053	0.082	0.290	0.110	0.098
Gonzalez (TX-20)	0.190	0.470	**1.000**	0.410	0.126	0.074	0.096	0.310	0.160	0.126
Brown (CA-42)	0.110	0.430	0.250	**1.000**	0.118	0.050	0.105	0.280	0.110	0.118
Gibbons (FL-11)	0.180	0.310	0.180	0.270	**1.000**	0.052	0.135	0.210	0.190	0.146
McDade (PA-10)	0.190	0.220	0.170	0.190	0.086	**1.000**	0.431	0.120	0.220	0.224
Quillen (TN-1)	0.100	0.150	0.100	0.180	0.099	0.191	**1.000**	0.120	0.140	0.191
Conyers (MI-14)	0.150	0.400	0.240	0.340	0.112	0.039	0.090	**1.000**	0.130	0.096
de la Garza (TX-15)	0.290	0.380	0.310	0.350	0.250	0.181	0.250	0.330	**1.000**	0.250
Hamilton (IN-9)	0.170	0.210	0.150	0.230	0.122	0.113	0.217	0.150	0.160	**1.000**

3. Comparing Ideal Points

To examine the link between legislators' positions as derived from roll-call vote data and those from cosponsorship data, we employed information on all bills introduced in the Argentine Chamber of Deputies between 1983 and 2002 and all bills introduced in the U.S. House of Representatives between 1973 and 2002. The Argentine dataset, constructed from data provided by the *Secretaría de Información Parlamentaria* of the Argentine Congress, includes the name of each cosponsor on 125,768 bills introduced by legislators. The United States dataset was created by Fowler (2006) for his study on cosponsorship networks in the U.S. Congress and includes 283,994 bills. We eliminated from both samples all bills with only one sponsor (i.e., with no cosponsor), which left a sample of 48,122 bills for the Argentine Congress and 127,713 bills for the U.S. Congress. The relatively comprehensive character of the data helps ensure that the results of the analysis are not a function of sample bias or period effects. Table 4 summarizes this information.

TABLE 4
Number of Sponsors by Bill in Argentina (1984–2003) and the United States (1974–2004)

Argentina				United States			
Number of Sponsors	Number of Bills	Percent	Cumulative Percent	Number of Sponsors	Number of Bills	Percent	Cumulative Percent
1	77,646	61.74	61.74	1	156,281	55.03	55.03
2	15,653	12.45	74.18	2	32,252	11.36	66.39
3	8,828	7.02	81.20	3	11,858	4.18	70.56
4	6,143	4.88	86.09	4	8,815	3.10	73.67
5	4,714	3.75	89.84	5	6,112	2.15	75.82
6	3,375	2.68	92.52	6	5,147	1.81	77.63
7	2,367	1.88	94.40	7	4,286	1.51	79.14
8	1,776	1.41	95.81	8	3,786	1.33	80.47
9	1,312	1.04	96.86	9	3,385	1.19	81.66
10	1,048	0.83	97.69	10	2,965	1.04	82.71
11	728	0.58	98.27	11	2,700	0.95	83.66
12	562	0.45	98.72	12	2,414	0.85	84.51
13	455	0.36	99.08	13	2,213	0.78	85.29
14	430	0.34	99.42	14	2,195	0.77	86.06
15	460	0.37	99.78	15	2,069	0.73	86.79
16	65	0.05	99.84	16	1,761	0.62	87.41
17	30	0.02	99.86	17	1,640	0.58	87.99
18	22	0.02	99.88	18	1,580	0.56	88.54
19	24	0.02	99.90	19	1,515	0.53	89.08
20	19	0.02	99.91	20	1,349	0.48	89.55
21	18	0.01	99.93	21	1,314	0.46	90.01
22	20	0.02	99.94	22	1,300	0.46	90.47
23	11	0.01	99.95	23	1,275	0.45	90.92
24	2	0	99.95	24	1,673	0.59	91.51
25	8	0.01	99.96	25	2,817	0.99	92.50
26	3	0	99.96	26	810	0.29	92.79
27	6	0	99.97	27	756	0.27	93.05
28	2	0	99.97	28	702	0.25	93.30
29	7	0.01	99.97	29	636	0.22	93.53
30	6	0	99.98	30	612	0.22	93.74
>30	28	0.02	100	>30	17,776	6.26	100
Total	125,768	100		Total	283,994	100	
Total >1	48,122			Total >1	127,713		

As Table 4 makes clear, a majority of bills in both Congresses have relatively few cosponsors. In Argentina, the mean number of cosponsors during the 1983–2002 period was 2.4, and 90% of the bills initiated by legislators had fewer than 5 cosponsors. In the United States, the mean number of cosponsors during the 1973–2002 period was 8.6, and 90% of the bills had fewer than 20 cosponsors.

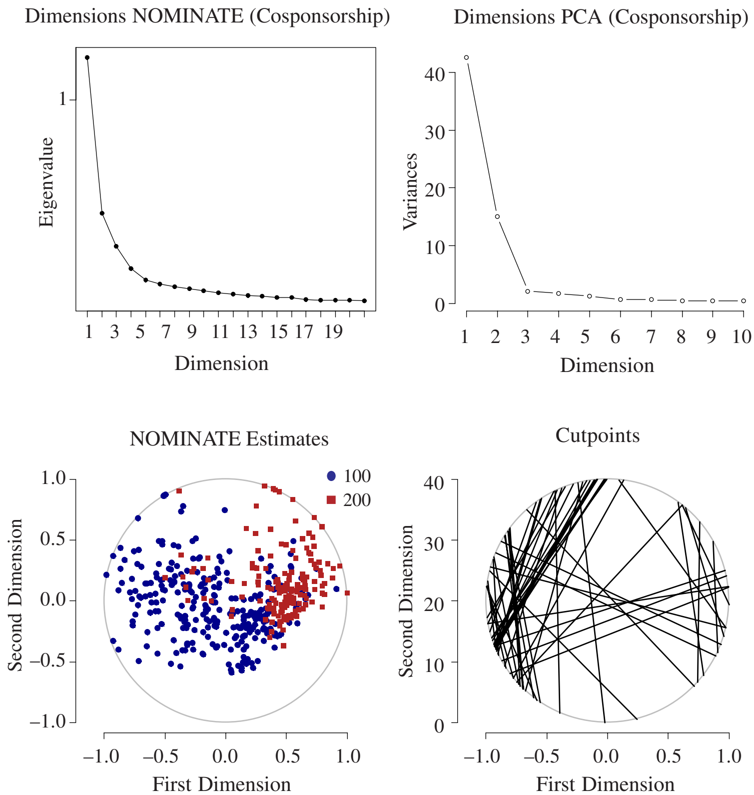
After computing the agreement matrix for each congressional period for both countries, we ran principal-components analysis with singular-value decomposition using *R 2.6*. We then took the first two rotated factors and rescaled these first two factors to values between [–1, 1]. The PCA estimates are rotationally invariant, so, consistent with standard practices for the U.S. Congress, we fixed Democrats to the left of the political spectrum (negative numbers) and Republicans to the right of the political spectrum (positive numbers). During the 1983–2002 period, the Argentine party system was dominated by two political parties, the Partido Justicialista (PJ, or Peronists) and Unión Cívica Radical (UCR, or Radicals). For Argentina, we fixed the Radicals' scores to the left of the first dimension and the Peronists' scores to the right of the first dimension.[8]

To compare these estimates with ideal points derived from roll-call data, we utilized NOMINATE scores provided by Keith Poole (2005) for the U.S. House of Representatives, and IDEAL scores provided by Jones and Hwang (2005a) for the Argentine Chamber of Deputies. The cosponsorship estimates for each legislator, *i*, in congressional period, *j*, and country, *k*, were then merged with the corresponding roll-call data. The descriptive results of the two sets of estimates are presented in Table 5 and in Figures 1 and 2.

As expected, dimensionality is higher when we map positions using cosponsorship data instead of roll-call data. Yet cosponsorship results reveal relatively low dimensionality. For the United States, the first two dimensions explain between 70% and 90% of the variance in the cosponsorship data. For Argentina, the first two dimensions explain between 40% and 50% of the variance observed. In periods usually characterized by a high level of polarization in the U.S. Congress, such as the 97th through the 107th Congresses (Poole and Rosenthal 2007), the variance explained by the first two dimensions is an impressive 90%.[9]

Our finding that the first two dimensions explain the vast majority of the variance in the United States cosponsorship data contrasts with Talbert and Potoski's (2002) conclusions that patterns of cosponsorship are characterized by five or more dimensions. This discrepancy is due to the different methodologies selected to deal with zero-inflated cosponsorship data. A brief discussion will help clarify some alternative

FIGURE 1
NOMINATE and PCA Estimates
on Cosponsorship Data from the 96th U.S. House



statistical solutions we do not explore in this article but that could be investigated in the future. Talbert and Potoski applied the NOMINATE algorithm to the bill-specific data, which is saturated with zeros and treats the decision not to cosponsor a bill as akin to a vote against a bill on the floor. Since the vast majority of bills have relatively few cosponsors, applying this algorithm to the two-mode cosponsorship matrix results in most cutpoints being set at spatial extremes. For example, if we use the cosponsorship data from the 96th U.S. House and set the decision to cosponsor as a yea and the decision not to cosponsor as a nay, then NOMINATE will first drop 55% of bills (2,126 bills out of 3,893) because of a small number of yea votes. Using the remaining 1,767 bills

TABLE 5
Correlation between Ideal-point Estimates from Roll-Call (NOMINATE, IDEAL) and Cosponsorship Data: Argentina and the United States

Argentina			United States		
Year	Congress	House	Year	Congress	House
1990–1991	108–109	0.777	1973–1974	93	0.848
1992–1993	110–111	0.830	1975–1976	94	0.856
1994–1995	112–113	0.721	1977–1978	95	0.864
1996–1997	114–115	0.810	1979–1980	96	0.865
1998–1999	116-117	0.777	1981–1982	97	0.880
2000–2001	118–119	0.738	1983–1984	98	0.885
2002–2003	120–121	0.746	1985–1986	99	0.906
			1987–1988	100	0.908
			1989–1990	101	0.939
			1991–1992	102	0.912
			1993–1994	103	0.934
			1995–1996	104	0.930
			1997–1998	105	0.945
			1999–2000	106	0.936
			2001–2002	107	0.942

Note: There are not enough roll-call votes to estimate ideal points in Argentina between the 102d and 107th Congresses.

will produce estimates with higher dimensionality and cutpoints set at the extremes.[10] As shown in the top left corner of Figure 1, the number of relevant dimensions found using NOMINATE on the cosponsorship data is four. The top right corner of Figure 1 shows that the PCA estimates using the agreement matrix have only two relevant dimensions. In the bottom right of Figure 1, we display the cutlines produced by using NOMINATE on the cosponsorship data. As expected, most lines representing cosponsoring decisions cut the two-dimensional space at the extremes.

Our estimation strategy has many similarities to Poole's (2005) optimal scaling procedure, running single-value decomposition on the agreement matrix between each pair of cosponsors. This strategy does not provide bill-specific information, but we used all the available data (1,644 in the previous example) and the results are robust to declines in the mean number of cosponsors.[11] As one can see from Table 5, the level of association between results from the first dimension of the roll-call data and the first dimension of the PCA-cosponsorship scores is extremely high. For the United States, the lowest correlation between roll-call ideal points and PCA-cosponsorship scores is 0.848 in the 93rd Congress, with a mean correlation of 0.903 when all congressional periods are considered. The level of association between the roll-call ideal points and PCA-cosponsorship scores in Argentina is slightly lower than in the United States, with a mean correlation of 0.771 and a low of 0.721 for the 1994–1995 period.

Figures 2 and 3 provide visual representations of these associations, plotting the estimates from roll-call data against those obtained from the bill cosponsorship data. A slope of $b = 1$ would indicate similar underlying causes for roll-call and cosponsorship behavior. It would also suggest the lack of a partisan effect on roll-call votes vis-à-vis cosponsorship. A slope of $b < 1$ would indicate lower discrimination in roll-call data, a result consistent with regular partisan unity in roll-call votes. A slope of $b > 1$ would occur if cosponsorship data provided less intraparty discrimination than roll-call data did.

As Figures 2 (Argentina) and 3 (United States) make abundantly clear, there is a strong association in both countries' lower chambers between estimates relying on bill cosponsorship data and roll-call vote-based estimates. Overall, the mapping of legislators reveals a preference distribution close to $b = 1$. In both countries, the distribution of parties is unchanged by the method of estimation. The distribution of legislators' ideal points in the United States, however, more closely resembles a diagonal distribution than the distribution of ideal points in the Argentine case. In the Argentine case, within-party correlation is not as high as it is in the U.S. case. The more-limited pool of roll-call votes in Argentina and stronger partisan effects combine to reduce the level of intraparty discrimination found in the Argentine roll-call data.[12] In the next section, we will return to this problem, showing that high party discipline in voting results in low levels of within-party discrimination in roll-call estimates. This finding also emphasizes the importance of within-Congress comparisons that take advantage of data retrieved from different types of legislative activities.

Figures 2 and 3 also include a series of lines representing the slopes for the major political parties in each country: Democratic (dashed line) and Republican (solid line) for the United States, and Peronist (solid line) and Radical (dashed line) for Argentina. In Figure 3, the estimated slopes for both Republican and Democratic representatives are below 1. Interestingly, the slope for Republican House members during the period from the 101st Congress to the 103rd Congress is smaller than the slope for the Democratic members, which indicates less within-party discrimination in roll-call votes during this

FIGURE 2
Association between Roll-Call Cosponsorship Ideal-Point Estimates, Argentina House, 1990–2002

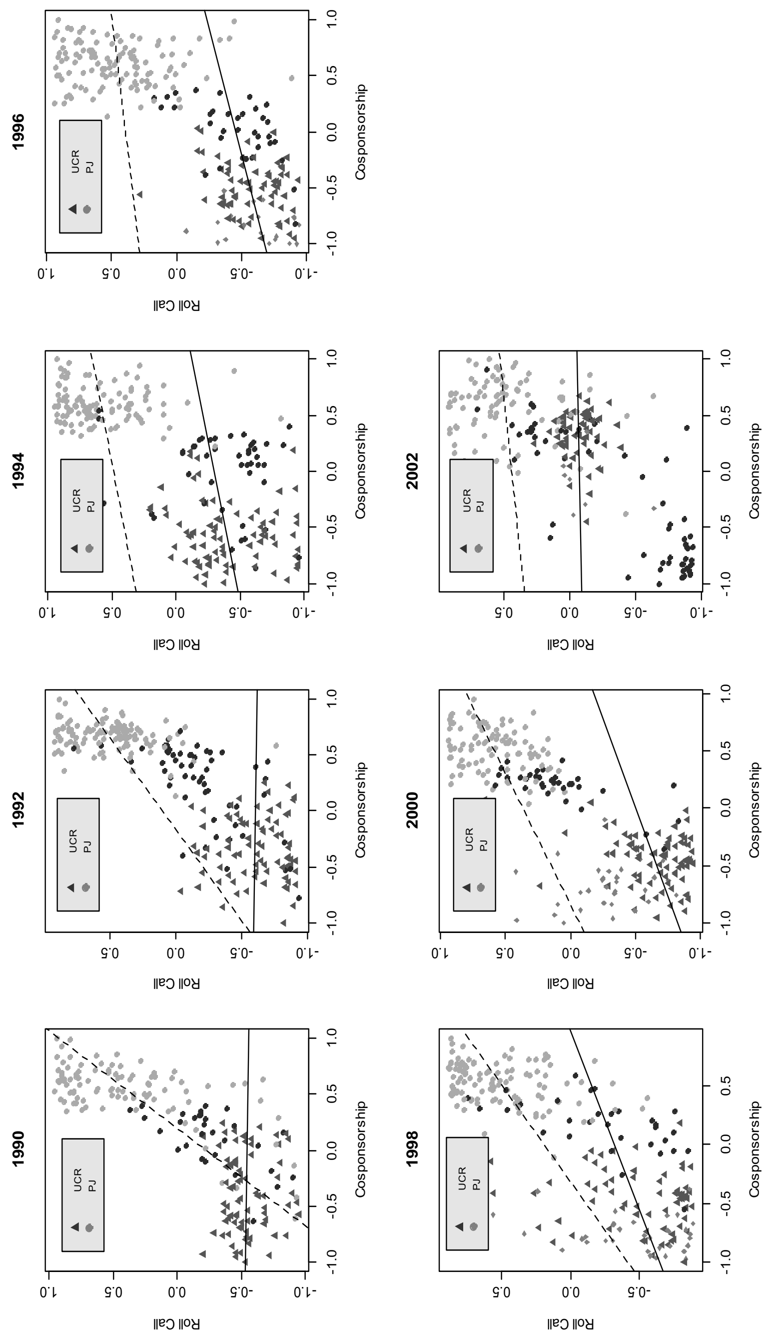


FIGURE 3

Association between Nominate and Cosponsorship Ideal-Point Estimates, U.S. House, 1973–2002

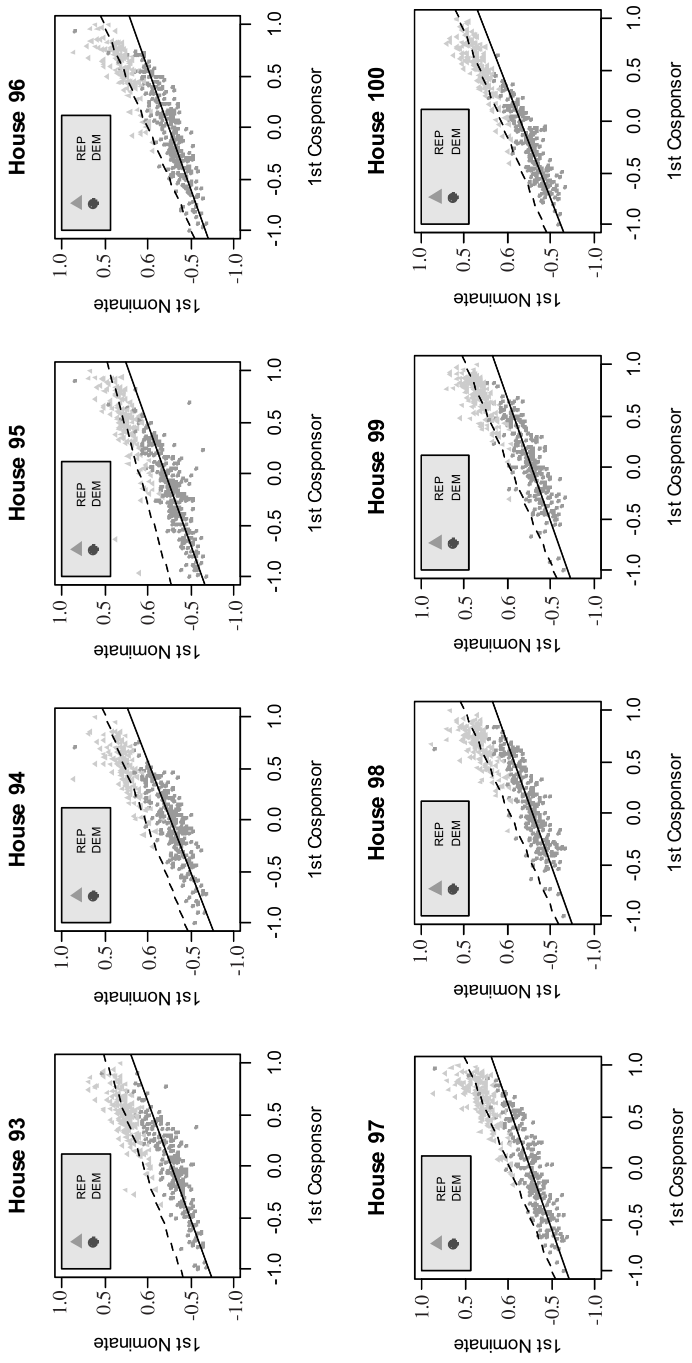
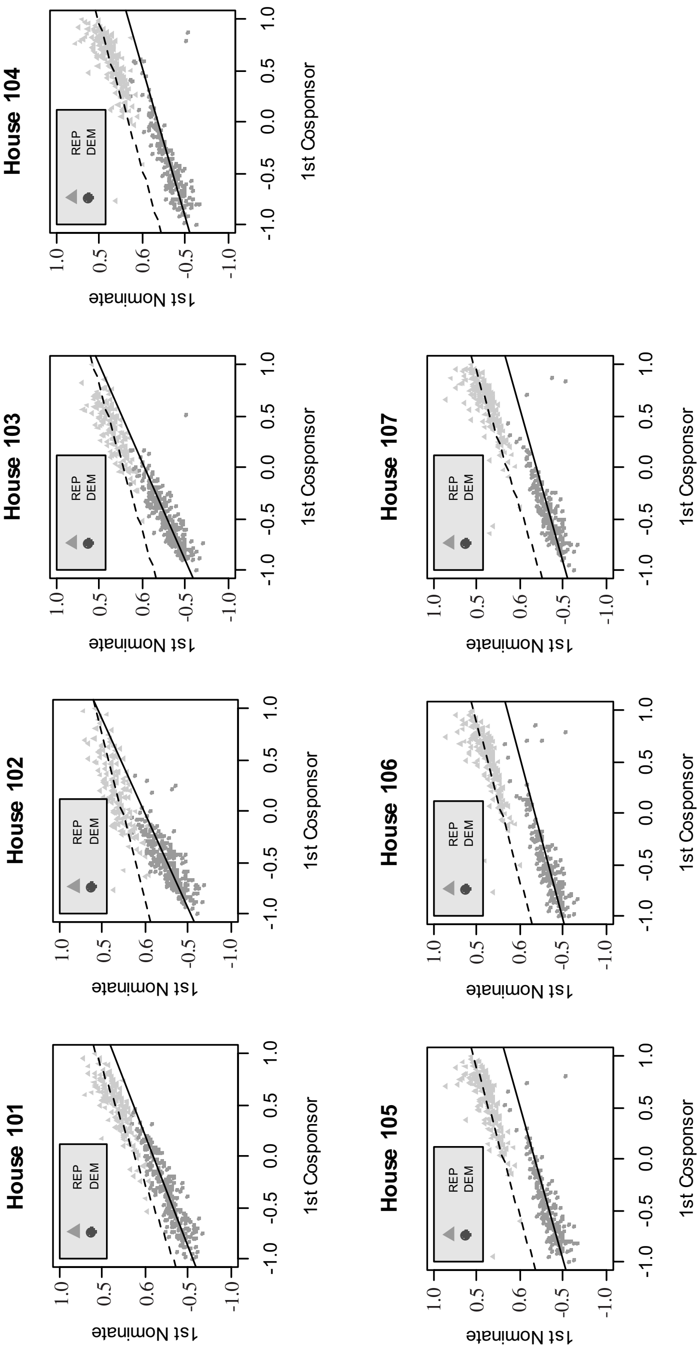


FIGURE 3
(continued)



period. In the case of Argentina's Chamber of Deputies, the slopes are much flatter, since roll-call votes provide much less within-party discrimination than in the U.S. House.

In short, our method of estimating ideal points from cosponsorship data provides results that are highly correlated with those provided by roll-call analyses. This correlation validates our strategy of focusing on the agreement matrix derived from cosponsoring choices to map individual preferences. As expected, cosponsorship data tend to reflect greater dimensionality and discriminate more within parties than do the roll-call data. The next section addresses these differences in greater detail.

4. Explaining Differences between Roll-Call and Cosponsorship Estimates

In this section, we examine variation in the association between the ideal-point estimates obtained from roll-call vote data and those obtained from bill cosponsorship data. By explaining the differences between these two sets of estimates, we hope to illustrate how substantive debates may be addressed by conducting controlled comparisons of estimates within and across Congresses.

We begin by considering the proximity between the two sets of estimates as indicative of higher ideological consistency across legislative activities. Consider, for example, a legislator whose ideal point is on the center-right when roll-call data is analyzed, but on the center-left when cosponsorship data is used. The divergence between these two ideal points provides information about contextual differences across legislative activities that influence how the preferences of legislators are revealed to fellow members and the constituents. To explain the level of ideological consistency across legislative activities, we constructed a dependent variable measuring the absolute difference between the roll-call and the cosponsorship estimates. Covariates positively associated with our dependent variable indicate lower ideological consistency across activities (that is, a wider gap between cosponsorship and roll-call estimates), while negative estimated coefficients indicate higher ideological consistency.

The key independent variables tap some of the various competitive pressures on legislators: length of tenure in the legislature, the partisan makeup of the legislative district, the legislator's margin of victory and, in Argentina, the effective number of political parties. We expected ideological consistency to be associated with electoral vulnerability in the United States but not necessarily in Argentina. U.S.

representatives in more-competitive districts should be less likely to succumb to partisan pressures when voting, because vulnerable representatives will tend to need to communicate consistent ideological content to their constituents across different types of activities, to a greater extent than will their less-vulnerable colleagues.

The political futures of legislators in Argentina tend to be in the hands of party leaders at the provincial (district) level, who generally play a decisive role in the ranking of candidates under the country's closed-list PR rules (Jones et al. 2002). Consequently, their legislative behavior will be less sensitive to electoral competition at the district level.[13]

The independent variables include partisan-, individual-, and district-level characteristics (Calvo and Escolar 2005; Levendusky, Pope, and Jackman 2007; Lublin 1999). Data limitations forced us to restrict our analysis to the U.S. House for the 93rd through 104th Congresses (1973–1996) and the Argentine Chamber for the 108th through 121st Congresses (1990–2003).

First, we included aggregate-level information on electoral competitiveness. *Margin of Victory* describes the vote-share difference between the two major parties in each United States single-member district, and the distance between the party that was the plurality winner and the party that was the first runner-up in the Argentine multimember electoral districts.[14] Because the political future of U.S. representatives is closely linked to electoral performance in their districts, we expected Margin of Victory to influence legislators' choices. In particular, we expected members elected with small margins of victory to communicate consistent ideological preferences across different types of activities. We did not expect Margin of Victory to affect the voting behavior of the Argentine legislators, since their political futures are not closely linked to the voting public. We also tested for competitive pressures in Argentina with a variable describing the log of the effective number of competitive parties (*ENCP*) in the district (Laakso and Taagepera 1979). As with Margin of Victory, we did not expect district-level competition to significantly affect ideological consistency. In the United States analysis, we added an additional variable measuring the long-term partisanship of a district's constituents (*District Partisanship*).

Second, we incorporated controls that capture individual legislator characteristics. We expected legislators holding the more-prominent party posts to enforce, and comply with, party discipline to a greater extent than their more-junior colleagues. Similarly, we expected legislators belonging to the majority party in the legislature to be more likely to vote with their party. Unity in floor votes prevents the majority from being rolled by the minority and enhances the value of the party label (Cox and McCubbins 2005). We included a variable indicating the (logged) number of years served in Congress to account for *Tenure* effects, as well as a dummy variable denoting *Majority* party membership. For Argentina's Chamber, we included an additional variable indicating whether or not the legislator belonged to the same party as the governor in their district. In Argentina, provincial governors are generally considered the district (that is, provincial) party bosses, and they control substantial financial resources and can affect the careers of elected and potential legislators (Jones 2008; Jones et al. 2002). As with members of the majority, we thought legislators who report to an incumbent governor should display lower ideological consistency and face more constraints in their vote choices.

We also included, as a control variable, a measure of the legislator's level of ideological *Extremism*. For both countries, we expected legislators who take extreme positions to be less susceptible to party pressure when voting, which would contribute to consistency across different types of activities. Lastly, we included dummies for each congressional period and, in light of the multiparty Argentine context, party dummies as well. For reasons of space, these period and party dummies are not reported here.

Results from the ordinary least squares regression analysis appear in Table 6. Consistent with our expectations, in the United States House, both Margin of Victory and District Partisanship are positively associated with larger differences between the roll-call and the cosponsorship estimates. Thus, the more-competitive districts promote higher ideological consistency across legislative activities. Both variables reflect the idea that unsafe districts and, consequently, higher sensitivity to district-specific demands, are linked with greater consistency between both types of legislative activities. In the case of Argentina, neither Margin of Victory nor the effective number of parties is statistically significant. Consistent with research describing the functioning of the Argentine political system in general, and the country's legislative parties in particular (Jones and Hwang 2005b; Spiller and Tommasi 2007), our results present the voting behavior of legislators in Argentina as unaffected by district-level factors.

The variable describing membership in the majority party is positive and significant in both the United States and Argentine legislatures, indicating, as hypothesized, the presence of more-intense partisan effects for majority party legislators. Tenure has a positive and statistically significant effect only in the United States, with longer

TABLE 6
Explaining the Difference between
Roll-Call and Cosponsorship Estimates

Argentina, 108th to 121st Congress			United States, 93d to 104th Congress		
Variables	Model 1	Model 2	Variables	Model 3	Model 4
Same Party Governor	—	.008 (.016)			
Tenure (*ln*)	–.014 (.011)	–.014 (.011)	Tenure (*ln*)	**.011***** (.002)	**.011***** (.002)
Majority	**.054***** (.017)	**.054***** (.018)	Majority	**.033***** (.004)	**.031***** (.004)
Margin of Victory	–.002 (.067)	.010 (.067)	Margin of Victory	**.077***** (.014)	**.067***** (.015)
ENCP (*ln*)	–.044 (.029)	–.042 (.029)	District Partisanship (D)	—	**.005*** (.002)
Extremism	**–.043*** (.024)	**–.047*** (.024)	Extremism	**–.118***** (.013)	**–.126***** (.013)
Intercept	.433 (.13)	.430 (.13)	Intercept	.211 (.009)	.217 (.009)
Adj R^2	0.1095	0.1045	Adj R^2	0.204	0.205
N	1,634	1,634	N	3,780	3,779

Note: Ordinary least squares estimates with standard errors in parentheses. Fixed effects for each Congress and party (Argentina) omitted from the table.
$^{*}p < .1$; $^{**}p < .05$; $^{***}p < .01$.

tenure reducing the correspondence between cosponsorship and roll-call ideal points. For Argentina, however, the estimate is not statistically significant and, in fact, is in the opposite direction. Both the Chamber's very low rates of reelection (approximately 20% during the 1990–2003 period) and the lower discrimination in roll-call voting could be responsible for these results (Jones and Hwang 2005b). Lastly, as expected, extreme ideological positions increase the consistency between the two sets of estimates for both countries' lower chambers.

5. Conclusion

In the legislative literature, a number of alternatives exist for identifying the spatial preferences of individual legislators through the analysis of roll-call votes (Clinton, Jackman, and Rivers 2004; Poole and Rosenthal 1997). In the United States, where roll-call votes are plentiful, scholars have devoted considerable effort to collecting the data and estimating the preferences of almost all legislators for virtually every congressional period since practically the dawn of the American democracy (Poole 2005). In the majority of countries outside of the United States, however, roll-call vote data is generally meager and, especially in the developing world, not commonly available for periods prior to the 1990s. Yet roll-call votes are only one of many potential data sources that can be utilized to estimate legislative preferences.

Bill cosponsorship, we argue, provides a wealth of information that is readily available and can provide sensible ideal-point estimates. Over the past decade, United States congressional scholars have shown an increased interest in the cosponsorship activity of legislators (consider Fowler 2006, Kessler and Krehbiel 1996, Talbert and Potoski 2002, and Wilson and Young 1997). In part, this new attention reflects an overt recognition by scholars of the need to understand how different types of legislative activities shape the behavior and preferences of legislators (see, for example, Hill and Hurley 2002, Maltzman and Sigelman 1996, and Mayhew 2000). In this same spirit, our article examines the voting and cosponsoring behavior of legislators in the United States and Argentina, proposes a new technique to derive ideal-point estimates from cosponsorship data, and measures what factors affect correspondence across these legislative activities.

We have demonstrated that different types of legislative activities can affect how legislators reveal their preferences, since the political constraints associated with various activities may be significantly different. The constraints imposed by party leaders on floor votes, for instance, are considered to be more stringent than those imposed on cosponsored bill initiatives. To examine empirically the link between roll-call vote and bill cosponsorship patterns, we used data from Argentina and the United States. The comparative measures we created using data from both legislative activities provide ample evidence that the same underlying causes shape the cosponsoring and voting behavior of legislators in the United States and Argentina. On a methodological level, we have shown that using principal-components analysis on properly transformed agreement matrices produces well-behaved ideal-point estimates with low dimensionality. In the U.S. House, the correlation between NOMINATE scores and PCA estimates from the cosponsorship data is approximately 0.9 for every Congress in the 30-year period under study. In the Argentine case, the correlation between the roll-call scores and the cosponsorship estimates is approximately 0.8 for a 14-year period. We attribute the weaker correlation between these two ideal points among Argentine deputies vis-à-vis U.S. representatives to the much stronger partisan effects in the Argentine Congress, where defection in roll-call voting entails higher political costs for a legislator.

Lastly, we examined the gap between the ideal-point estimates derived from each of the two activities. Members of the majority and non-extremists exhibit greater gaps in both the United States and Argentina. In addition, uncompetitive districts and longer legislative tenure tend to increase the gap in the United States but have no effect in Argentina, where district pressures are lower and turnover rates significantly higher.

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APPENDIX

Descriptive Statistics of the Independent Variables in Table 6, United States and Argentina

Variable	Mean	Std. Dev.	Min	Max
United States				
Margin of Victory	0.198	0.147	0.000	0.500
Extremism	0.299	0.155	0.001	0.867
Tenure *(ln)*	1.812	1.026	0.000	3.954
District Partisanship	0.010	0.977	–2.683	6.033
Majority	0.599	0.490	0	1
Argentina				
Same Party Governor	0.414	0.493	0	1
Majority	0.496	0.500	0	1
Tenure *(ln)*	1.053	0.368	0.693	2.398
Extremism	0.510	0.275	0.001	0.960
Margin of Victory	0.140	0.099	0.001	0.569
Effective Number of Competitive Parties	3.325	1.135	1.592	9.964

NOTES

All replication materials and code can be downloaded from http://calvo.polsci.uh.edu/.

1. Panning (1982) presents a similar perspective: members of Congress tend to cosponsor bills with members who are ideologically proximate.

2. In related work on the Argentine Congress, Alemán and Calvo (2008) studied the effects of cosponsorship on fellow legislators and investigated the link between cosponsorship and legislative success. They found that cosponsorship tends to increase the likelihood of a bill's success. Crisp, Desposato, and Kanthak (2005) concentrated on estimating the number of cosponsors in six presidential democracies and found that greater electoral competition tends to decrease the propensity to cosponsor.

3. The potential problem of bias in roll-call vote samples for countries that have few such recorded votes (Carruba et al. 2006) is another reason to determine whether or not there is a high correspondence between voting and cosponsoring.

4. In the Argentine Chamber, for example, most bills are limited to a maximum of 15 cosponsors.

5. A normal specification to draw ideal points using a Bayesian IRM model in WinBUGS 1.4.3 can be obtained from the authors upon request.

6. We employed the *prcomp* command in *R 2.6.1*, which uses singular-value decomposition to estimate the relevant factors. As a further test, we also ran the *svd* and compared the left and right singular vectors, *u* and *v*. The correlations between the left and right singular vectors for the 97th to 108th U.S. Houses were 0.89, 0.91, 0.94, 0.92, 0.93, 0.93, 0.93, 0.93, 0.93, 0.94, 0.94, 0.93, 0.94, 0.94, 0.92, and 0.93. Sample code to compute the agreement matrices and run the described models can be downloaded from http://calvo.polsci.uh.edu.

7. If, instead of using the agreement matrix (cosponsorship shares), we used the affiliation matrix (cosponsorship counts), then the upper and lower triangles of the matrix would be identical and transposing the matrix would produce identical results. That duplication does not occur when the shares are normalized by row.

8. Unlike the U.S. parties, both Argentina's main parties have factions that occupy locations across the ideological spectrum (Jones and Hwang 2005b). Our decision to fix the Radical members on negative numbers and Peronist members on positive numbers is not necessarily a reflection of the parties' ideological positions.

9. Interestingly enough, the amount of variation explained by the first two dimensions in the Argentine Senate is consistently higher than the variation explained by the first two dimensions in the Argentine Chamber. The amount of variation explained by cosponsorship data in the U.S. House, by contrast, is higher than that explained in the U.S. Senate. The reason for Argentina's reversed scenario is the different compositions of the Argentine House and Senate. In effect, the lower district magnitudes of the Argentine Senate resulted in only two prominent legislative delegations, the Peronists and Radicals, occupying an overwhelming majority of the Senate seats between 1983 and 2002 (Jones and Hwang 2005b). The somewhat higher district magnitudes in the Argentine Chamber resulted in a more-fragmented partisan makeup, with a greater number of political parties occupying different regions of the policy space. Therefore, higher dimensionality in the Argentine Chamber seems to reflect position taking by deputies within regions of the ideological spectrum. The more-polarized nature of the

Argentine Senate results in a larger amount of variation being explained by the first two dimensions.

10. Because bills in the United States tend to have more cosponsors than bills in Argentina, NOMINATE generally drops close to half of the bills and produces more sensible estimates of cosponsorship. These estimates have higher dimensionality than results from the agreement matrix and cutpoints, and they still tend to be located on the extremes.

11. Testing the performance of NOMINATE on simulated data, we observed that as the number of cosponsors declines, NOMINATE produces biased estimates. This finding is particularly important for the Argentine data, which have an average of 2.4 cosponsors per bill. The differences should be less dramatic for the United States data. The simulation code is available from the authors upon request.

12. Partisan discipline is so tight, in fact, that to improve discrimination, Jones and Hwang (2005a) coded deputies who were present but abstained from voting as nay voters. There is solid evidence that deputies often leave the floor rather than vote against their party, leading to substantive differences in estimates, as we discuss later in this article.

13. The mean reelection rate in Argentina during the 1983–2003 period was 22%, ranging from a high of 24% to a low of 15% (Jones 2008).

14. Argentina has 24 multimember districts (corresponding to the 23 provinces and federal capital), which renew one-half of their legislators every two years. For Argentine Chamber elections, the median district magnitude is 3 and the mean is 5.

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