The Fruit of Jefferson’s Dinner Party:
Roll Call Analysis of the Compromise of 1790
with Substantive and Relational Constraints*

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May 21, 2002

*This paper was prepared for presentation at the 2002 Midwest Political Science Association Annual Meetings, Palmer House, Chicago, IL.
Abstract

The “Compromise of 1790” – in which it is alleged that legislative gridlock in the First House (1789-1791) was resolved by a deal in which Southern states conceded to the assumption of states’ Revolutionary War debt by the federal government in exchange for locating the Capitol along the Potomac – is one of the earliest and most colorful examples of log rolls in American politics. While extensive archival research has reconstructed a finely-grained picture of the politics involved, several important questions about the compromise remain. Most fundamental is whether the voting record actually supports the hypothesis that a compromise was reached sometime in mid June. If the compromise involved vote trading, then strong supporting evidence would consist of voting patterns consistent with legislators considering votes on assumption and the seat of government as independent of each other before the date the deal was struck, and then following this date, voting as if the individual policy dimensions were interrelated. Using substantive information about the roll call votes and relational information about the agenda to specify a model in which bill locations are identified we implement a Bayesian analysis (using MCMC methods). This procedure allows us to test whether or not the log roll effected voting itself. The estimation differs from standard roll call analysis procedures, in that we incorporate substantive information about the content and relational information about the order of votes into the statistical model. We find evidence of a log roll involving assumption and the Public Debt Funding bill, but no evidence that the assumption question was resolved via a log roll. We also find that the final outcome was quite centrist.
It was observed, I forget by which of them, that as the pill [assumption of the state debts] would be a bitter one to the Southern states, something should be done to smoothe them; and the removal of the seat of government to the Potowmac was a just measure, and would probably be a popular one with them, and would be a proper one to follow the assumption.

—Thomas Jefferson summarizing the outcome of his dinner party in mid-June 1790 (Ellis (2000),49)

1 Introduction

In this paper we seek to make two distinct contributions. The first is historical – we seek a better understanding of the legislative politics surrounding the alleged “Compromise of 1790.” The two issues involved in the log roll were the questions as to whether the federal government would assume the Revolutionary War debt of the states, and the temporary and permanent location of the seat of government. Although there is no dispute that a meeting took place between the principals at Jefferson’s residence, historians examining primary source material are divided as to whether the Compromise was ever consumated. By examining the actual roll call voting behavior of the members, we hope to help resolve the controversy.

Our second objective is methodological. We present an approach to roll call analysis with several advantages over existing approaches. We demonstrate the procedure and its resulting advantages by analyzing the roll call voting on these two policy issues that were central to the first two sessions of the First House (1789-1791). Our approach directly incorporates substantive information about the nature of policies being voted upon, as well as information about the relationship between the proposals associated with various roll call votes. Use of the information recovers a spatial representation of the First House which provides insight into how legislators viewed the policy issues they were voting on, and how these views changed throughout the two years of deliberation and voting.

In terms of the substantive insights resulting from our investigation, we recover strong evidence that in late June of 1790, legislators perceived a strong relationship between the the Funding Act and the selection of a permanent and temporary seat of government. However, our results are at odds with the conventional story in one important respect. We find that when voting on the capital bill, legislators anticipated only the effect in terms of passage of the funding bill. They did not anticipate that passage of the capital bill would also result in the assumption of state Revolutionary War debts.
This finding suggests that the alleged Compromise between assumption and a Southern capital is not supported by roll call data and a theory of spatial voting. We also find evidence that the legislative voting was more a product of sectional than ideological concerns. Finally, despite all of the contentious debate and failed attempts at policy change, the final resolution of these two policy questions was quite centrist relative to the legislators’ preferences.

The use and importance of roll call analysis as a means to answer questions such as these is well understood by historians. As Bowling notes in his treatise on the First Congress, “the technique, when used in conjunction with the congressional debates, the letters to and from congressmen, and with a clear understanding of each of the votes involved in the analysis, can provide the historian with information and useful insights which do not readily occur to the human eye and mind” (Bowling, 365). Roll call analysis is a valuable contribution to the interpretation of primary source material, for as Cooke notes in his refutation of the Compromise “If one’s research is underpinned by acceptance of the traditional account [the Compromise occurred], his reading of contemporary letters and debates will seem to provide ample documentation. On the other hand, if one starts by questioning the account, he soon finds that available evidence renders it suspect” (Cooke (1970), 524). Given the advances in roll call analysis over the cluster block methods (Bowling, 1968), multi-dimensional scaling (Hoadley, 1980), and factor analysis (Aldrich and Grant (1993)) employed by previous scholars of the period, a re-examination is clearly in order.

The statistical analysis of roll call voting in political science is due largely to the work of Keith Poole and Howard Rosenthal. Using their NOMINATE scaling techniques produces a spatial representation of legislator ideal points which is loosely consistent with the large theoretical literature on the spatial model (Downs (1957); Davis and Hinich 1970; Enelow and Hinich (1984)). Well known alternatives such as Heckman and Snyder (1997) (who assume a different parameterizations of utility functions and latent error term distributions) and bayesian simulation approaches of Clinton, Jackman and Rivers (2001) and Martin and Quinn (2002) all share essential similarities.

\[\text{In fact, Cooke goes on to posit that Jefferson, who was the only participant in the Compromise to leave a record of the bargain (Cooke (1970),524), may have had a motivation to appear consequential. As Cooke notes, "Jefferson had contributed to the success of assumption, it is true, but so, too, had others. His exaggerated account of the bargain may also be attributed, in Brant’s phrase to ‘Jefferson’s deep hunger for posthumous fame’ (Cooke (1970) 545).} \]

\[\text{The fact that the various estimators (as well as interest group scores) yield estimates that are highly correlated for Congressional roll call data has increased confidence that these measures capture a real feature of legislatures. Consequently, great strides have been made in testing theoretical models of legislative politics in the study of American politics using ideal points (e.g., Krueger (1998)).} \]
tably, they all rely on only the matrix of roll call votes to estimate a spatial representation of legislators.

Londregan (2000) notes that problems may result from the coarseness (or “chunkiness”) of the data – particularly in small legislatures – and takes a step toward incorporating substantive information about the identity of proposers in the estimation procedure. Clinton and Meirowitz (2001) demonstrate that in order for the resulting ideal point estimates to be interpretable in terms of the spatial model, it is necessary to include information about the order of votes. Including such information is costly for scholars as the necessary information is not readily available. However, so long as the analyst is only concerned with the behavior of ideal point estimates in large legislatures such as Congress (Poole and Rosenthal, 1996), ignoring this additional information does not appear to be terribly consequential. However, if one is concerned with understanding legislative preferences and politics over a narrow set of votes, standard ideal point estimates may be of limited use and incorporation of more information may be worth the cost of data collection and model customization.

Krehbiel and Rivers’ (1988) investigation of strategic voting in a small amendment agenda is an example of the use of including more information, although the approach they adopt is limited to agendas involving only a few votes. This paper develops a different methodology for incorporating information in roll call analysis. Our starting point is the random utility model that is a primitive to existing procedures. We depart from existing procedures in two ways: The main departure is that: (1) we use substantive information about the proposals being voted upon to constrain the policy location of individual policies to represent movements in only one issue dimension where appropriate, and (2) we constrain the coordinates of proposal locations so as to capture the logical relationship between different votes in the agenda (as in Clinton and Meirowitz (2001)). We call the first constraint substantive and the second one relational. Imposing both constraints allows us to recover a representation of the policy space in which the underlying dimensions are exogenous and clearly identified. In other words, we use substantive information about the proposals being voted upon to identify (a particular rotation of) the policy space. So doing has the benefit of allowing us to interpret the estimates directly in terms of the policy questions of interest (assumption and residence) rather than a more ambiguous “general ideology” dimension (for example).

In terms of the First House, we focus only on votes dealing with assump-

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3In fact, the results of this paper show that the correlation between the ideal point estimates of a models that include and exclude this information in the primary dimension is quite high – .97. The correlation in the second dimension is not quite as satisfying – .67.
tion of state war debts by the federal government and the location of the seat of government. The House, and not the Senate, is the proper chamber to focus attention on because “it was in the House, and not in the Senate, that the assumption vote arranged in the dinner bargain took place” (Bowling (1971), 632). A reading of the House of Representative Journal (1977) reveals that no resolutions or amendments dealt explicitly with both issues. Careful reading of the Journal also allows us to determine which votes dealt with which issue and how the yea and nay locations associated with roll call votes varied across votes. Although the former is apparent from the name of the proposals being voted upon, information about the the latter is gleamed from careful study of the agenda. Treating the issues of assumption and residence as uni-dimensional issues allows us to parameterize a spatial model in which each vote is over either a vertical change (seat of government) and/or a horizontal change (debt assumption). The residence dimension can be though of as measuring the latitude of the capital, and the assumption dimension can be thought of as grossly measuring the degree to which the federal government would assume individual state debts. If legislators vote sincerely (an assumption consistent with standard ideal point estimation procedures) – comparing only the random utility from the yea and nay outcomes at each vote – then yea and nay coordinates of any roll call vote can only differ in one dimension.

The classic explanation of the Compromise of 1790 (Bowling (1968, 1971), Risjord(1976)) is that at some point in mid-June of 1790 a log roll agreement resolving these two issues was reached. Since legislators anticipate a relationship between passage of a policy in one policy area with passage of policy in the other policy area, after the log roll we should observe that legislators evaluate policies that substantively affect only one dimension (i.e., explicitly deal with only either the residence or assumption question) as affecting the status quo in both dimensions,. In other words, a solution to the residence question also implies a solution to the assumption question. This intuition suggests that we can integrate the measurement of roll call behavior with a test to asses whether the observed roll call data is congruent with the historical interpretation.

By relaxing the constraint that each vote represents a change in only one dimension for votes occurring after the date of supposed log roll, we can investigate the extent to which the roll call record is consistent with the view that legislators viewed these votes as movements in both dimensions. Our analysis supports the claim that a log roll between the two issues occurred and that this deal was reached sometime between June 14th and 20th. However, the log roll is better characterized as a vote-trade over the Funding Act and the location of the seat of government. The log roll does not appear to have involved the more contentious question of assumption. In voting
on the seat of government legislators seemed to anticipate the movement resulting from the funding act, but they did not anticipate (or equate passage of the capital bill with) the movement resulting from eventual assumption. The recovered ideal points are better explained by sectional concerns (i.e., the state from which a representative hails) than ideological concerns (i.e., whether the legislator is perceived as pro or anti Federalist). Moreover, we find that the final outcome of the First Congress is quite similar to that of the starting location and quite central relative to legislative preferences. This is not an artifact of identifying assumptions, but rather a comforting conclusion that the outcome reached is not an example of agenda manipulation that resulted in a non-centrist outcome.

The outline of the paper is as follows. In section 2 we provide some background on the residence and assumption issues dealt with in the First House. Section 3 presents the model that incorporates substantive and relational information about the votes. In section 4, we present and interpret a statistical test of the presence of the log roll (i.e., the Compromise of 1790). Section 5 interprets the ideal point and proposal location estimates, highlighting findings about geographic and pro/anti Federalist cleavages. We also examine whether the log roll was used to achieve a non-centrist outcome. Section 7 concludes.

2 The First House

The First Congress saw the first real test of the fledgling American government, as the stability of the union seemed to hang in the balance on every vote regarding important issues. Two policy issues in particular dominate the writings and attention of the participants and contemporary scholars – the location of the capitol and the extent to which the federal government would repay the Revolutionary War debts incurred by the states. As President Washington observed in private correspondence to the Marquis de la Luzerne:

The two great questions of funding the debt and fixing the seat of government have been agitated, as was natural, with a good deal of warmth as well as ability. These were always considered by me as questions of the most delicate and interesting nature which could possibly be drawn into discussion. They were more in danger of having convulsed the government itself than any other points.

Although there was a consensus that the nation had to maintain a favorable credit rating for future economic prospects and that the future of the republican government hinged on being able to reach a decision on issues as charged as the funding of debt, the question of funding the debt involved several issues of disagreement. The first source of contention regarded the treatment of federal debts. By 1790 the federal debt was more than $54,000,000, with foreign creditors owed $11,710,37 and the remaining $42,414,085 owed domestically largely to speculators who had bought the notes of debt from the original creditors for a fraction of their paper value. Secretary of State Alexander Hamilton and James Madison disagreed strongly on the issue. Hamilton argued that speculators should be treated as the original creditors and paid face-value of the notes (thus preserving property rights). Madison insisted that speculators should only receive the current market value of the notes, with the residual balance being paid to the original creditors.

A second, more divisive debate arose over the question of whether the debts of individual states would be assumed by the federal government. Representatives from states that had accrued relatively large debts, and possessed clear records and documentation (such as Massachusetts) strongly favored assumption. Representatives of states that did not owe much debt (such as Virginia), or who had already paid off their debt (such as Connecticut) adamantly opposed the assumption. Complicating matters was the fact that it was clearly understood that the resolution of the question would also have clear implications for the nature of the federalist system. In particular, proponents of a weak federal government feared that the assumption of state debt would strengthen the fiscal power of the federal government.

A second major issue addressed by the First House was the determination of the permanent and temporary location of the seat of government – which initially resided in New York. Although seemingly mundane, the question was considered by some observers to be the more significant challenge:

The second [session of the first Congress] will be more important and more delicate: it will decide about the money and the army..... A third object, much less interesting may give a more perceptible shock to the new confederation. It is the eternal discussion about the residence. (Louis-Guillaume Otto, the Charge d’affaires of France, O’Dwyer (1964)).

One reason that the location of the capitol was a contentious issue is that it was believed that the capitol would generate significant revenue for the area surrounding it. As Bowling notes, “The state in which the capital was located was bound to have greater influence over the decisions and patronage of the federal government than distant states” (Bowling, 156).
Consequently, representatives favored a permanent seat of government that was close to their constituency. The lines of division were clear, with northern representatives favoring a location on the Delaware near Trenton, or in New York and southern representatives arguing for a location along the Potomac. Because of these geographic preferences, the debate also exacerbated existing north/south differences between the former colonists.

The temporary location of the capitol was also an issue of contention because legislators believed that the location of the temporary capitol would influence the location of the permanent seat of government. In particular, the Pennsylvania delegation argued vigorously for Philadelphia as the temporary seat of government because they believed that once the government located there, it was unlikely to leave. Bowling recounts a letter of Representative White (VA) in which he characterizes the citizens of Philadelphia as showing “an almost childlike anxiety for the removal of Congress’ to their city” (Bowling (1968), 160).

Inspecting the roll call votes of the Congress indicates that these two issues generated many failed policies on narrow margins. In fact, half of all the recorded votes in the First House dealt explicitly with these two issues. Historical scholarship argues that by June of 1790 – in the midst of the first House – an impasse was reached. The divisions were so deep on the two issues that Madison considered forcing an adjournment to allow passions to cool, as “prominent men in both the North and the South began to question the viability of the Union and raise the possibility of a civil war.” (Bickford and Bowling (1989), 67).

In mid June of 1790, Jefferson held a dinner party at which Hamilton, Madison and Jefferson arranged for a log roll between the assumption of Revolutionary War debt and the location of the capitol – the “Compromise of 1790.” It is at this point that historians disagree. Some argue that the Compromise discussed at the dinner table was indeed enacted (Bowling (1968,1971), Risjord (1976)), and others argue that there is no evidence that the residence and assumption questions were related. This view is best articulated by Cooke, who argues:

Thus, the bargain over the residence was arranged by Pennsylvania and Virginia congressmen before the famous dinner meeting; the crucial bargain over assumption did not involve the residence but a reallocation of the amount of state debts to be assumed and a compromise on the interest rate to be paid on the funded debt (Cooke (1970), 525).

Consequently, a goal of this paper to determine which account is correct.
3 Estimation of Roll Call Voting Behavior in the First House

Standard preference estimation techniques utilize a roll call matrix $H$. Entry $h_{it}$ denotes the vote by legislator $i$ on roll call $t$, with $h_{it} = 1$ if legislator $i$ votes for the proposal being considered in roll call $t$ and 0 otherwise. Abstentions or absences are treated as missing data. The matrix $H$ is of dimension $L \times T$, where $L$ denotes the number of legislators casting votes in the First House (66) and $T$ is the number of roll call votes that are recorded (109). While the First House recorded 106 roll call votes, only 46 involve the residence or assumption question. Since our interest is in the possibility of a log roll between these two issues, we consider only those votes that deal with either the location of the Capitol or the federal government’s assumption of the states’ Revolutionary War debt. Note that this reduction does not affect our ability to characterize the roll call voting on these two issues, as the omitted votes have no obvious relationship to the included votes.

Standard estimation procedures assume that legislators have separable spatial preferences – implying that estimation of ideal points on any subspace of the policy space without consideration of the additional issue dimensions is not problematic (Enelow and Hinich, 1984). We assume that legislators have Euclidean preferences over some finite dimensional policy space $\mathbb{R}^n$. We estimate the projection of legislator ideal points on the two policy issues (dimensions) of interest: the amount of state Revolutionary War debt assumed by the federal government, and the temporary and permanent location of the Capitol. We focus only on these dimensions. Legislator $i$’s ideal point in the assumption, location subspace is denoted by $x_i \in \mathbb{R}^2$. The elements of this (column) vector $x_i$ are: $(x^1_i, x^2_i)$ – denoting the ideal point of legislator $i$ in the first (assumption) and second (capital) dimensions respectively. The notation $\theta_t \in \mathbb{R}^2$ denotes the location of a policy proposal in the space – consisting of both an assumption solution and a capitol solution (although there is no need for the actual proposal to explicitly deal with both issues). We assume that legislator utility functions are quadratic, meaning that:

$$u_{it}(\theta_t) = -(x_i - \theta_t)(x_i - \theta_t)'$$

We also follow standard assumptions and assume that legislators vote for proposal $t$ if the utility resulting from the proposal under consideration ($\theta_t$)
is greater than that resulting from the policy that results from the rejection of $\theta_t$ (i.e., $\psi_t$). Mathematically:

$$ prob(h_{it} = 1) = prob(\varepsilon_{it} < u_{it}(\theta_t) - u_{it}(\psi_t)) $$

where $\varepsilon_{it}$ is a random variable representing noise in the relationship. Letting $F(\varepsilon_{it})$ denote the distribution function of the iid noise term (which we assume to be normal), the probability of observing a roll call vote by legislator $i$ in favor of proposal $\theta_t$ in roll call $t$ is given by:

$$ prob(h_{it} = 1) = F(u_{it}(\theta_t) - u_{it}(\psi_t)) $$

Although it is possible to estimate the model using no other information (Poole & Rosenthal (1992), Poole (2001), Heckman Snyder (1996), Clinton, Jackman & Rivers (2001)), additional information about the content of the proposals being voted upon as well and information about the agenda are available and easily incorporated. To highlight the importance of accounting for each – particularly for the limited question that we are interest in – we demonstrate the contribution of each to our ability to characterize roll call voting in a cumulative fashion.

### 3.1 Including Substantive Information About the Proposals

If we ignore the information contained in the legislative agenda, we can re-express the utility differential for legislator $i$ on roll call $t$ as:

$$ u_{it}(\theta_t) - u_{it}(\psi_t) = -(x_i - \theta_t)'(x_i - \theta_t) + (x_i - \psi_t)'(x_i - \psi_t) + \epsilon_{it} = \alpha_t + \beta_t x_i $$

where $\alpha_t = -\theta_t'\theta_t + \psi_t'\psi_t$ and $\beta_t = 2(\psi_t - \theta_t)$. In the item-response literature, $\alpha_t$ is known as the item-difficulty parameter and $\beta_t$ is known as the item discrimination parameter (Johnson and Albert, 1999). These have straightforward interpretations for the roll call estimation problem. The item difficulty parameter indicates the propensity for legislators to vote “yea” on vote $t$ independent of their ideal points $x$, and the item discrimination parameter indicates the extent to which a roll call vote is a function of legislators ideal point. To make this point explicit, consider the extreme cases of $(\alpha_t, \beta_t) = \{(1, 0), (0, 1)\}$. In the first case, every legislator has a positive utility differential regardless of their ideal point (because $\beta_t = 0$). Consequently all legislators vote “yea” on the roll call. In the second case, legislators vote strictly according to their ideal point, as whether $\mu_{it} < 0$ depends only on $x_i$. 
As Jackman (2001) notes, it is in this sense that $\beta$ can be interpreted as a indicating whether a roll call is related to the ideal points. The item-discrimination parameter $\beta$ is statistically significant (or “loads” to employ factor analytic terminology) if the votes on the roll call are cast in a manner related to the distribution of ideal points. If $\beta_t = 0$, this indicates that voting on roll call $t$ is unrelated to the ideal point distribution. For a multiple dimensional issue space the vector $\beta_t$ can be interpreted as denoting the dimensions in which the ideal point positions in that dimension structure the observed roll call voting (if any).

With this standard specification (often called a cutpoint model because of the fact that $\alpha_t/\beta_t$ represents the cutpoint/cutting plane for roll call $t$), it is straightforward to incorporate substantive information about the proposals being voted upon. To orient the space we assume that all votes before the assumed compromise date are decided only in terms of the relevant issue. In other words, we assume that prior to the compromise, voting on debt-related bills is related only to preferences on the debt dimension (dimension 1), and voting on capitol related-related bills is related only to preferences on the capitol dimension (dimension 2). This constraint is identical to the assumption that prior to the possible log roll, the voting on the two issues was separable and that the legislation in question only dealt with one issue at a time (a reasonable conclusion based on reading the House Journal and letters of the participants). In terms of the estimation, this involves constraining $\alpha_t^2 = \beta_t^2 = 0$ if $t$ is a roll call pertaining to the assumption of state debt and $\alpha_t^1 = \beta_t^1 = 0$ if $t$ is a roll call pertaining to the capital location. For roll calls following the Compromise – which historians such as Bowling and Ellis identify as occurring between June 13th and 26th, 1790 (Bowling (1968), 184) – we do not impose these constraints and we allow both item discrimination parameters to be non-zero.

An immediate benefit of employing this additional information is that by using substantive information about the proposals being voted upon to identify the space provides an extensive ability to interpret the resulting estimates. In particular, instead of having to struggle to understand what the recovered dimensions represent (perhaps using the methods outlined in Jackman 2001), the estimates are readily interpretable. Positive values in the first dimension represent pro-assumption and positive values in the second dimension represent preferences for a northern capitol. Utilizing this historical/substantive information about the proposals to orient the issue

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Note that although it is possible to impose fewer constraints (i.e., impose the constraint on only a subset of those roll calls that occur prior to the compromise), the desirability of the constraint is untestable. The constraint is imposed because if we believe that the spatial voting model is correct and that the issues are substantively unrelated, the constraint must be true.
space thereby provides for an easier interpretation of the resulting ideal point estimates.\footnote{In contrast, in previous roll call analysis of the First House (Hoadley (1980), Aldrich (1995)), it is unclear how to interpret the resulting estimates in terms of legislator positions on the residence and assumption questions. Aldrich notes the basic problem when in discussing NOMINATE estimates of the First House he states: “estimated dimensions are not interpreted, and a part of this exercise will be to demonstrate that their first dimension is, or can be inferred as, the great principle dimension” (Aldrich (1995), 83). It is not at all clear what issues comprise the “great principle dimension,” nor how to extract legislator preferences on assumption and residence from such generic estimates. The problem becomes particularly difficult if we believe that the issue space contains 20 dimensions as Aldrich and Grant (1993) argue.}

More importantly, explicitly defining the issue spaces using this substantive information permits a test for the presence of a log roll by determining which dimensions are relevant for proposals voted upon after the Compromise. Measurement and testing are integrated in this approach because in the absence of a log roll, we would expect that roll calls dealing with the location of the capitol would be decided only in terms of the capitol dimension (as there is no linkage between the capitol decision and the debt decision) and the roll calls dealing with the assumption of state revolutionary war debt would be decided exclusively in the debt dimension. Note that without incorporating substantive information into the specification, such a test is not possible because it is impossible to know what the recovered dimensions represent (e.g., instead of being defined by assumption and residence, the dimensions may be defined (for example) by sectionalism (northern vs. southern) and general ideology (federalist vs. anti-federalist)).

Recalling that dimension 1 denotes solutions to the assumption question and dimension 2 addresses the residence question (with the item discrimination parameters for roll call \(t\) denoted \((\beta_1^t, \beta_2^t)\)) the following hypothesis can be tested:

<table>
<thead>
<tr>
<th>Issue</th>
<th>No Log roll</th>
<th>Log roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt Bill</td>
<td>((\beta_1^t \neq 0, \beta_2^t = 0))</td>
<td>((\beta_1^t = 0, \beta_2^t \neq 0), (\beta_1^t \neq 0, \beta_2^t \neq 0))</td>
</tr>
<tr>
<td>Capitol Bill</td>
<td>((\beta_1^t = 0, \beta_2^t \neq 0))</td>
<td>((\beta_1^t \neq 0, \beta_2^t = 0), (\beta_1^t \neq 0, \beta_2^t \neq 0))</td>
</tr>
</tbody>
</table>

Table 1: Log Roll Predictions for Cutpoint Model

If the log roll occurs, we would expect that at least one debt bill or a capitol bill will involve a positive parameter of the wrong type.\footnote{Note that without defining the dimensions as we have using substantive information about the proposals being voted upon, such a claim could not be sustained because it would be impossible to reject the alternative interpretations that the recovered dimensions are both relevant to the solution of both questions (as would be the case if the dimensions represented sectional and ideological preferences for example).} That is, if the log roll occurred then for at least one vote preferences in both dimensions...
should appear relevant. In contrast, if the log roll did not occur, outcomes in the debt and capitol dimensions should remain unrelated and bills dealing with the debt will continue to be decided solely in terms of the legislators preferences in the debt dimension.

Estimation of the model produces estimates of the item parameters summarized in Table 2. Recall that what is being measured is whether a log roll dealing with the residence question (for example) after the supposed log roll is resolved in a manner related to the legislator preferences only in the Debt dimension, only in the Capitol dimension, or both (neither being the excluded possibility). Recall that so doing merely requires determining whether the item-discrimination parameter in the given dimension is non-zero (indicating that roll call voting is related to preferences in that dimension – conditional on preferences in the other dimension).

<table>
<thead>
<tr>
<th>Issue</th>
<th>Debt Dimension</th>
<th>Capitol Dimension</th>
<th>Both</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capitol Bill</td>
<td>7 %</td>
<td>7 %</td>
<td>86 %</td>
<td>14</td>
</tr>
<tr>
<td>Debt Bill</td>
<td>50 %</td>
<td>13 %</td>
<td>13 %</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 2: Distribution of Significant Item Discrimination Parameters in the Cutpoint Model

It is evident, especially for proposals dealing with the location of the Capitol, that legislator preferences in both dimensions influence legislators’ voting decisions. This is inconsistent with the claim that proposals dealing with the location of the Capitol are decided strictly in terms of legislator preferences in the Capitol dimension. Instead, the results suggest that preferences on the assumption of state Revolutionary War debt are equally influential in determining where to locate the Capitol.

3.2 Including Relational Information About the Proposals

Although the evidence in the previous section supports the claim that a log roll occurred, there is reason to believe that assumptions made by the estimation model conflict with the assumptions of the spatial voting model. As Clinton and Meirowitz (2001) note, the legislative agenda provides an additional source of information that can be utilized – particularly in this case. For example, consider the substance of the first two proposals with recorded votes in the agenda. The resolution under consideration was proposed by Goodhue (VA) on September 3, 1789 and read:

Resolved: That the permanent seat of the general government, ought to be on some convenient place on the east bank of the
river Susquehanna, in the state of Pennsylvania, and that until the necessary buildings be erected for the purpose, the seat of government ought to continue at the city of New York (VI, pg 1863).

The first roll call involves the amendment by Lee (VA) on September 7, 1789 to strike the words “east bank of the river Susquehanna, in the state of Pennsylvania” and insert “banks of the river Potomac in the state of Maryland” in its place (Legislative History VI:1863). In terms of the notation defined above, \( \theta^2_1 \) represents the number in the Capitol dimension (i.e., the second dimension) associated with a resolution that places the Capitol in Maryland alongside the Potomac. A vote against the amendment was a vote for the original Goodhue resolution. Consequently, \( \psi^2_1 \) represents the location in the Capital dimension for a resolution placing the permanent capitol in Pennsylvania alongside the Potomac. Lee’s resolution failed 21-29.

The second roll call vote was also on September 7th. Vining (DE) proposed an amendment to: strike “permanent” in the first line, strike “on some convenient place on the east bank of the river Susquehanna, in the state of Pennsylvania, and that until the necessary buildings be erected for the purpose, the seat of government ought to continue at the city of New York,” and insert “the borough of Wilmington, in the state of Delaware” (Legislative History VI:1863). This implies that \( \theta^2_2 \) represents the location of the amended resolution (i.e., establish Wilmington as the permanent and temporary location of the Capitol) and \( \psi^2_2 \) represents the location of the unamended Goodhue resolution.

Note that a vote against either the first or second proposals is a vote for Goodhue’s original resolution. In other words, whereas the location associated with voting “yea” differs (representing the fact that the Lee and Vining amendments differed), the location associated with voting “nay” in each roll call was identical – representing a vote for the unamended Goodhue resolution. Mathematically, this implies that \( \psi^2_1 = \psi^2_2 \).

However, the model of the previous section estimated above (which is simply the standard cutpoint model with additional information used to define the dimensions) does not utilize this information. In fact, it allows for \( \psi_1 \) and \( \psi_2 \) to differ even though inspection of the agenda reveals that they represent the same point in the ideological space. Failure to impose this

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9Strictly speaking, the cutpoint model does not estimate the location parameters because they are not identified (except in NOMINATE because of parametric assumptions). Instead, the models estimate item parameters which are functions of the location parameters (i.e., for roll call t \( \alpha_t = \theta^2_t - \psi^2_t, \beta_t = 2(\psi_t - \theta_t) \)). However, even so, the model does not account for the fact that we know that \( \psi_1 = \psi_2 \) (for example) when estimating \( \alpha_t \) and \( \beta_t \).
constraint is consequential – leading to parameter estimates that are not interpretable in terms of the spatial model and an inability to determine the dimensionality of the policy space (Clinton and Meirowitz [2001]). However, given that we know the sequence and nature of the actual proposals being voted upon, it is possible to use this additional information in the estimation by imposing constraints of the type described in the previous section.

Incorporating information about the agenda involves examining the historic record to identify how each roll call vote affected the other proposals in the legislative agenda. In other words, for each roll call vote it is necessary to identify the proposal location associated with failure. To identify this relational information, we rely upon the information contained in the various recordings of the First House – aggregated in the Documentary History of the First Federal Congress (de Pauw et. al., 1977). Knowing these relationships enables us to express the location \( \psi_t \) associated with voting “nay” on roll call \( t \) with a previous successful “yea” policy (\( \theta_{t-1} \) for example). In addition there are several votes for which the yea location \( \theta_{t} \) is identical with some previous yea location \( \theta_{t-k} \).

To see the relationship between nay locations and previous successful yea locations, consider the 5th and 6th recorded roll call votes on the residence question. The 5th roll call vote was the fifth proposed amendment to the Goodhue resolution on September 7th. The previous four (including those by Lee and Vining noted above) were unsuccessful. The fifth amendment was by Stone (MD) to strike “east bank” and insert “banks.” \( \theta_5^2 \) therefore represents the amended Goodhue resolution and \( \psi_5^2 = \psi_1^2 \) represents the original unamended Goodhue resolution. The amendment passed 26-25. The 6th roll call vote was on an amendment by Lee (VA) to insert “or Maryland” after “in the state of Pennsylvania.” Since the Stone amendment passed, a vote against the Lee amendment is a vote for the (once) amended Goodhue resolution. In other words, \( \psi_6^2 \) represents the location in capital dimension of the resolution that permits the permanent Capitol to be in Pennsylvania on either bank of the Susquehanna River and \( \theta_6^2 \) represents the location of the resolution that also permits the Capitol to locate in Maryland. Note that the status quo in the 6th roll call, \( \psi_6^2 \), is identical to the location of the successful “yea” proposal in the fifth roll call, \( \theta_5^2 \).

Incorporating information about the agenda therefore requires inspection of the legislative history to identify the mappings \( y(t) : \{1, 2, \ldots, 46\} \rightarrow \{1, 2, \ldots, 46\} \) and \( n(t) : \{1, 2, \ldots, 46\} \rightarrow \{1, 2, \ldots, 46\} \). These mappings determine the index of the yea and nay locations that are relevant for roll call \( t \). Using this information reduces the number of estimated proposals from 46 x 2 (46 roll calls and a yea (\( \theta \)) and nay (\( \psi \)) location for each) to 46 – as one location of every roll call is determined by some other roll call (except in the first roll.
call which is simply chosen to be the origin). Accordingly,
\[
prob(h_{it} = 1) = F(u_{it}(\theta_y(t)) - u_{it}(\theta_n(t))).
\]

Including information about the substantive content of the proposals being voted upon and defining the dimensions being estimated requires adopting a slightly different constraint than that used in the cutpoint model discussed above. In particular, instead of constraining item discrimination parameters, we impose the constraint on the proposal locations directly. In other words, we constrain how yea locations $\theta$ are permitted to change the status quo prior to the Compromise. For example, if roll call $t$ is on the residence question, then $\theta_{y(t)}^1 = \theta_{n(t)}^1$ (in other words the yea an nay locations differ only in the dimension of relevance). Following the Compromise, we permit proposals to change the status quo in both dimensions. We also use priors on a few proposals prior to the log roll to orient the space such that higher numbers in the capitol dimension represent more northern capitols and positive numbers in the debt dimension represent a greater amount of assumption of war debts.

4 Testing for the Absence of the Compromise

While our basic test (in Section 3.1) involving the substantively (but not relationally) constrained model supports the hypothesis that the log roll occurred, the more refined substantive and relationally constrained model is better suited for analysis of this question. The logic behind our test in this section is quite similar, as we investigate the extent to which post compromise votes involve bill location changes in the unaffected dimension. Finding that proposals dealing with the capitol represent changes only in the capitol dimension (or neither) represents evidence for the claim that no log roll occurred. In contrast, finding that proposals attempt to move the status quo in the debt dimension or both dimensions represents evidence in support of the claim that a log roll occurred. To implement this test therefore requires determining whether proposals after the supposed date of the log roll attempt to change the status quo in manners consistent with either of the following hypothesis:

**H0**: After June 20th, proposals attempt to move the status quo only in the substantive dimension that the proposal explicitly makes a change in.

**H1**: After June 20th, proposals attempt to move the status quo in substantive dimensions other than that in which the proposal explicitly makes a change.
A strength of the Bayesian simulation methods we employ is that any function of the estimates can be recovered – along with the associated uncertainty. Denoting the location of the status quo in the debt and capitol dimensions as \((q_1, q_2) = (\theta_1^{n(t)}, \theta_2^{n(t)})\) respectively, for proposal \(t\) having coordinates \((p_1, p_2) = (\theta_1^{y(t)}, \theta_2^{y(t)})\), the relevant quantities of interest to test \(H_0\) and \(H_1\) are \(\delta_1^t := q_1^t - p_1^t\) and \(\delta_2^t := q_2^t - p_2^t\). Substantively, finding that \(\delta_1^t = 0\) implies that proposal \(t\) does not represent a statistically significant change in the location of the status quo in the debt dimension. A similar interpretation holds for \(\delta_2^t = 0\) in the capitol dimension. Consequently, evidence for a log roll is provided when \(\{\delta_1^t = 0, \delta_2^t \neq 0\}\) or \(\{\delta_1^t \neq 0, \delta_2^t = 0\}\).

We implement this test by computing the posterior difference between a proposal and status quo for that proposal in each dimension for every proposal. Since some of the proposal parameters are estimated with considerable uncertainty, the ability to account for this uncertainty is both clearly important and straightforward in our approach. Figure 1 summarizes the results by presenting the posterior estimates of this difference in each dimension for each roll call.

![INSERT FIGURE 1 ABOUT HERE]

The vertical dividing line in each of the figures denotes the location of the supposed compromise, and therefore an indication of whether the estimates are constrained or not. The solid (open) character located along the axis in the bottom figure for the first roll call indicates whether 0 was not in the 95% (90%) posterior confidence intervals of the estimated difference. If 0 was not, we infer that the proposal attempted to move the status quo in that dimension.

Interpreting the figure, the proposal associated with the first recorded roll call (i.e., the Lee amendment discussed above) was constrained to affect the status quo in only the capitol dimension. As the boxplot for the first roll call indicates, the posterior difference between the proposal and the status quo in the capitol dimension was positive – representing that the proposal sought to move the status quo in a positive direction in (only) the second dimension. After the Compromise, proposals are permitted to affect the status quo in both dimensions – representing the fact that a vote on the residence question may be influenced by preferences on the assumption dimensions, or that the selection of a particular capitol location may affect the solution of the assumption question. Consider the reported differences for the proposal associated with the 25th roll call. The 25th roll call was a vote on an amendment to S.12 by Boudinot (NJ) on July 9th to locate the capitol along the Delaware River (proposal 25 in Figure 3). A vote against the proposal was a vote for the unamended S.12 (proposal 38 in Figure 3). The boxplots in the upper and lower figures in Figure 1 reveal that the Boudinot amendment...
would be a significant change in S.12 both in terms of the capitol and debt dimensions – even though it only explicitly dealt with the location of the capitol.

Of the 14 proposals dealing explicitly only with the location of the capitol (i.e., roll calls 25-37, 45), only 2 represented movements in only the capitol dimension. 3 proposals represented non-zero changes in both dimensions, 7 proposals dealing explicitly with the capitol moved the status quo significantly in only the debt dimension and 2 proposals did not affect the status quo in a statistically significant fashion in either dimension. Only 1 roll call involved a proposal that attempted to change the status quo only in terms of the capitol dimension. Of the 8 roll call votes on proposals dealing explicitly with assumption (38-44, 46), 3 proposals represented changes to the status quo only in the assumption dimension, 1 proposed changes in both dimensions, and the remaining 4 did not represent a statistically detectable change in either dimension.

Reflecting upon the predictions made in Table 3 in light of these results, it is clear that the evidence against a log roll is not compelling, as of the 16 roll calls involving proposals with detectable changes to the status quo, only 5 are congruent with the predicted behavior of legislators in the absence of a log roll. Two-thirds of the proposals were perceived as changes in either both or the “wrong” dimension – indicating that legislators were aware of the impact that resolving the residence question would have on the solution to the assumption question.

In terms of the historical debate, these initial findings are supportive of the claim that the Compromise was indeed effective. However, since we know the dimensions of the policy space, inspection of the recovered bill locations (posterior medians) is also quite informative with respect to the Compromise. Figure 2 depicts the location of proposals and status quos in the policy space.

The numbers represents the number of the proposal being voted upon, with the initial status quo proposal 1 normalized to be the origin of the space. The numbers of successful proposals (and therefore status quos) are enclosed in a box. To interpret the figure, recall the discussion of the first two roll call votes taken. The origin (proposal 1) represents the location associated with the ultimate rejection of the Goodhue amendment (i.e., no resolution to the residence question). Since Lee’s amendment (proposal 2) amends the Goodhue resolution before the Compromise, it is assumed to affect the status quo (proposal 1) by changing only the location of the capitol. As the proposal fails, when the Vining amendment is considered (proposal 3), it to alters only the location of that status quo in the capitol dimension. The first amendment of Stone (MD) on Sept. 7, 1789 (proposal 6) passes, and
the denoted estimate indicates the location in the issue space of a resolution that locates the Capitol in Pennsylvania on either bank of the Susquehanna River. The estimate of Stone’s second amendment (proposal 7), which tries to include Maryland as a possible location site, indicates that the location of the twice-amended Goodhue resolution is more “southern” than the once-amended resolution – which is exactly the case.

Although such descriptions are informative, it is most informative to examine the behavior of the proposals associated with the actual log roll in traditional accounts. The first proposal to implement the log roll in the House was the passage of S.12 (proposal 38) on July 9, 1790 by a vote of 32-29. A vote against S.12 represented a vote for not deciding the residence question and for holding the next session in Baltimore (proposal 24). It is clear that S.12 should affect the location of the Capitol, and it does indeed change the location of the status quo in a “southern” direction (evidenced by the fact that \( \theta_{g(38)}^2 < \theta_{g(23)}^2 \)). However, it is also the case that passage of S.12 affected the location of the status quo in the assumption question as well. The passage of the funding bill (proposal 39) on July 19, 1790 did not change the status quo in the Capitol dimension, but it did lessen the amount of assumption – consistent with the fact that the proposal neglected the contentious assumption question. On July 26th, 1790, the House considered and passed a Senate amendment that provided for the payment of state debts (proposal 43). As is clear from Figure 3 (and Figure 1), this proposal represented a pro-assumption move (i.e., \( \theta_{y(43)}^1 > \theta_{y(39)}^1 \)). On July 29, 1790, the House voted 33-27 to accept a Senate amendment of the Public Debt bill to pay an interest rate of 3% on the debt (proposal 45).

The behavior of these proposal estimates is of particular interest because they are the critical proposals in the historical debate. The traditional account of the Compromise (Bowling 1968,1971) argues that assumption was passed because of a log roll involving the residence question (i.e., proposal 43 passed because of the passage of proposal 38). A contrary account Cooke (1970) argues that the residence question had no bearing on the assumption question, but that assumption was passed because of a compromise on the amount of interest to be paid to bearers of the debt (i.e., proposal 43 passed because of agreement on proposal 45). It is possible to resolve this controversy through inspection of how these proposals affected the status quo.

The 37th roll call resolved the residence question by passing S.12. This Senate bill was the proposal around which the log roll had supposedly galvanized (Bowling). The fact that this proposal did not merely change the status quo in terms of the capitol dimension, but also changed the status quo in terms of the assumption of state debt supports the interpretation that passing S.12 was seen as also adopting a position on the question of debt assumption.
– which is exactly what a log roll implies. Specifically in figure 3 the points 38 and 39 corresponding with the yea locations for roll calls 37 (passage of S.12) and 38 (passage of the Funding Act) are statistically indistinguishable. In voting for the point labelled 38 against the point labelled 24, legislators understood that S.12 and the Funding Bill would occur if S.12 was passed.

Roll call 42 considered the Senate amendment to the funding bill on July 26, 1790 that would provide for the assumption of the states’ Revolutionary War debts. In contrast to the proposal associated with the roll call on S.12, there is evidence that the amendment did indeed affect the status quo in only the assumption dimension. This is reasonable given that the residence question would appear to have been largely solved by this point. However, the status quo being changed is that associated with the proposal that passed the public debt bill on July 19, 1790 without the assumption (point 39 in the figure). Passage of the amendment to add assumption to the Funding bill results in a dramatic move in the assumption dimension (compare 39 and 43 in figure). This suggests that legislators did not equate passage of S.12 with assumption, because the latter resulted in a dramatic shift. The interpretation here is that when the House voted on the 37th roll call (S.12) legislators understood that passage meant both a conclusion to the capital question as well as the the likely passage of the Funding bill. However the eventual passage of the amendment to include assumption represented by the 43rd roll call, does not seem to have been necessarily related to the resolution of the capital question.

This suggests that historians are right to suggest that the divisive questions of locating the capitol and assuming state debt were related. However, the analysis does not offer support for the claim that passage of S.12 and assumption were intertwined in a clear log roll. Instead there is evidence that the Funding bill and S.12 were involved in a log roll.

Evidence for the alternative explanation is provided by the fact that the proposals providing for the assumption of state debts (proposal 43) and setting the interest rate to be paid at 3% (proposal 45) are statistically indistinguishable – implying that when legislators resolved the assumption question, they perceived that a resolution implied that the interest rate would be set at 3%.

Inspection of the proposal estimates that result from the incorporation of substantive information reveals that both sides of the historical debate over the effectiveness of the Compromise of 1790 contain some truths. In support of the traditional account, we do indeed find evidence of a log roll, although the log roll is over residence and the Public Debt Bill without assumption. Consequently, it is right to suspect that the solution to the two questions were intimately linked, although not in the matter that is traditionally given. We also find evidence for the contrary account of the log roll, which is to say
that voting behavior supports the claim that assumption passed because of a compromise made on the interest rate paid to holders of the debt.

The intermediate conclusion that analysis of roll call behavior yields is that a log roll did indeed occur between the questions of residence and the Public Debt bill, but that it did not involve the question of assumption. Instead, the question of assumption was resolved by a compromise on the interest rate that was to be paid on the debt that was being assumed.

5 Supplementing the Historical Record: Interpreting the Estimates

Useful substantive information about the legislator’s ideal points is also available. In particular, the evidence permits us to assess questions such as: to what extent was the voting primarily driven by sectional or ideological concerns? Additionally, the bill location estimates allow us to answer the question was the log roll required to implement a non-centrist or centrist policy outcome?

Scholars mention several explanations for roll call voting in the First House. One prevalent account is that sectional voting dominated the Congress (Hoadley, 1980) and that the Compromise represents a log roll between northern and southern states. As Bowling notes “The idea of some sort of agreement between the North and South on the two great questions confronting the new government went back at least to 19 March 1790” (Bowling (1968), 178). Sectional differences could provide the basis for a log roll given that most of the Revolutionary War debt was held by northern states and that it is conceivable that they would be willing to forego the economic benefits from a northern Capitol in exchange for relief of their debt. Note that such an explanation locates the basis of such a compromise in the relative amount of benefits accruing to constituencies from such a log roll rather than ideological differences. In other words, a legislator’s vote for the location of the Capitol is determined by the proximity of the location to his district – as the closer the district is the more likely that economic benefits will result.

As Bowling notes, “Every member of Congress worked under the assumption that the capital was bound to enrich not only the area in which it was located, but also all parts of the country tributary to that area...Voting on the capital therefore directly reflected the desires of politicians to enhance the economic interests of their constituencies” (Bowling (1968), 155). Similarly, the assumption question directly affected the amount of subsidies that states (and therefore constituents) received from the federal government.

A second possibility is that legislator ideological differences generated the roll call behavior – with federalists and anti-federalists splitting over the
The question of assumption was central to the federalist/anti-federalist debate because it dealt directly with the relative power of the fledgling federal government over finances. In particular, could the federal government force states to subsidize the accrued Revolutionary War debts of debtor states? Although the federalist/anti-federalist ideology has clear implications on voting relative to the assumption question, it is not at all clear how ideology would affect voting for the residence question.

Using the estimates from the agenda-informed roll call analysis (which imposes the relational and substantive constraints), it is possible to determine which of these two possibilities is more consistent with the observed voting patterns. If voting was driven largely by sectional forces, we would expect that not only would legislators within the same state have very similar voting patterns (given that the benefits being voted upon provided state-level benefits), but also that similarity should be evident between Northern and Southern delegations. Of particular interest are the delegations of Pennsylvania and Virginia, who were particularly influential and active in the politicking (Bowling, 1968). Alternatively, if ideological divisions were largely responsible for the observed voting, we should expect to find relatively cohesive voting among those legislators sharing a common ideology. Resolving which description is more accurate involves determining whether the covariation among sectional or ideological groups is larger.

Figure 3 presents the substantively and relationally constrained ideal point estimates. The estimates are reassuringly similar to the historical understanding. Clymer (PA) and Fitzsimmons (PA) are both centrally located in both dimensions – consistent with the historical record indicating that they were critical deal-makers in the log roll. Lee (VA), a pivotal member in the vote for assumption, is centrally located with respect to assumption, but with clear preferences for a southern capitol. Vining (DE), an active supporter of a Southern capitol, and Boudinot (NJ), an active proponent for assumption, are both extreme in the relevant dimensions.

The estimates are also informative with respect to determining whether voting on the log roll was more the result of sectional or ideological differences. The left figure in Figure 3 describes the ideological split by denoting whether the legislators’ beliefs in 1789 were Federalist (open) or Anti-Federalist (closed). As legislators from each ideology are located throughout

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10 Aldrich and Grant (1993) consider (and reject) this possibility.
11 Note that the legislator ideal point estimates that result are similar, but not identical to, those that result from the cutpoint model that does not impose relational constraints. In particular, the two sets of ideal points correlate at .97 in dimension 1 and .67 in dimension 2.
the issue space, it is clear that ideology is not the primary determinant of roll call voting on the assumption and residence questions. The right hand figure in Figure 3 depicts the sectional split. Northern (southern) representatives are indicated by open (solid) circles, with legislators belonging to the Pennsylvania and Virginia delegations plotted by open and solid boxes respectively. Relative to the evidence of ideological divisions driving the roll call behavior, the evidence is much more congruent with the possibility of sectional voting.

Legislators from northern states generally preferred both the assumption of the debt and a northern capitol – evidenced by the fact that most estimates of members from northern states lie in the first quadrant. In contrast, southern legislators generally preferred a southern capitol and not having to subsidize the primarily northern war debt. The fact that such generalizations are supported by the recovered ideal point estimates is highly suggestive of the role that sectional voting may have played. Thus while the sectional account is imperfect it seems better supported than the Federalist/Anti-Federalist account.

The second question that roll call analysis using substantive and relational constraints allows us to address is whether the log roll was used to secure an extreme or centrist policy outcome. While it is reasonable to expect that a centrist policy would result, particularly in light of the open rule under which the Committee of the Whole operated (House Journal (1977),15) this is an empirical question. Inspection of figure 2 indicates that the final outcome was quite centrist.

6 Discussion

In addressing the Compromise of 1790, we make both methodological and substantive contributions. Although the substantive contributions are solely in terms of increasing our understanding of the nature of the Compromise, the methodological contributions can be fruitfully applied to many other settings. Our approach is motivated by the belief that incorporating substantive and procedural information about the legislative process of interest improves the quality of estimates. There are two kinds of information in particular that are available to scholars – information about the proposals being voted upon and information about the agenda (i.e., the sequence in which the proposals are voted upon). Information about the content of proposals being voted upon can be easily included in such a way so as to make the interpretation of the resulting estimates straightforward – even in terms of actual issue positions (and not just a general “liberal-conservative” dimension). Use of substantive information to identify the issue space provides great leverage in examining the characteristics of voting on very specific issues. Second, information
about the agenda provides information that permits us to understand the relationship between the alternatives being considered in such a manner so as to make the resulting estimates more congruent with the assumptions of the spatial model. The use of substantive information about the proposals being voted on also permits us to unify the tasks of measurement and testing – as we are able to use substantive information to devise a test not only for whether a log roll occurred, but also for what issues the log roll involved.

However, methods are a means to an end and the end that we seek is a resolution to the question of whether a log roll occurred, and if it did, what is the nature of the log roll. Given the ambiguity in the historical record, it is also necessary to examine the actual behavior of legislators so as to not only bring as much information to bear on the question, but also to ensure that the participants’ recollections are congruent with their actual behavior. Analysis of the roll call votes casts no doubt on the hypothesis that a log roll occurred in deciding to pass S.12 locating the capitol alongside the Potomac and passage of the Funding bill. However, the analysis does not support the claim that the passage of the the capital resolved the question of assumption. In voting for the former legislators seemed to be voting for a world with the Funding bill, but not assumption. The assumption question seems to be resolved by a compromise that was made on the amount of interest that would be paid to holders of the debt. We also find evidence that the log roll was used to help pass a centrist rather than extreme policy, suggesting that while difficult the legislation of the first and second session indeed reached moderate solutions to the two problems.
References


Figure 1: Proposal Changes to the Status Quo: The top (lower) figure plots the distribution of posterior differences between the proposal associated with the labelled roll call and the status quo in the assumption (residence) dimension. Differences that are non-zero at 95% (90%) posterior confidence levels are denoted with solid (open) indicators along the axis.
Figure 2: Proposed Assumption and Residence Solutions in the First House
Figure 3: Substantive and Relational Constrained Ideal Point Estimates for the First House (1789-1791)