be manipulated with a supercomputer. Estimating a two-dimensional model with a linear trend for the House of Representatives required about three hours of CPU time on a Cyber 205 supercomputer.

Summary of the Model and Estimation Methods

The technically inclined reader will find the details of our model and the estimation procedure in appendix A. To summarize: First, we have adopted a simple spatial model with probabilistic voting. Second, assuming this model is a correct model of actual behavior, we have developed a method for recovering the positions of legislator and roll call outcomes solely from observed individual roll call decisions; that is, the method is blind to any external information, such as political parties, about the legislators and the roll calls. The direct linkage of the recovery method to the spatial model is our innovation to modern methods of roll call analysis introduced by MacRae (1958, 1970). Third, the recovery of legislator positions and roll call cutting lines is likely to be very accurate even if the technical assumptions of our procedure are violated. And fourth, the recovery of roll call outcomes may be very sensitive to the technical assumptions.

In the remainder of this book, we employ D-NOMINATE to estimate dynamic models of roll call voting. To estimate static models for a single Congress, we used W-NOMINATE, an improved version of NOMINATE. Having established the methodological basis for the remainder of the book, we can now proceed to a discussion of the results of the analysis.

3

The Spatial Model: Accuracy and Dimensionality

In this chapter, we investigate the performance of low-dimensional spatial models and discuss the substantive meaning of the dimensions. With respect to performance, we show that a simple spatial model adequately accounts for the roll call data. Our preferred model has only two dimensions; it limits temporal change in the positions of individual legislators to simple linear functions of time. In fact, this very simple model improves only marginally, albeit significantly, on an even simpler model that is one-dimensional, with legislators being constrained to a fixed position throughout their congressional careers. These basic results are presented in the first section of this chapter, which gives the overall fit of the various spatial models that we estimated.

In the second section, we address the issue content of the first and second dimensions; the first dimension almost always picks up the fundamental economic issues that separate the two major political parties of the time, while the second dimension divides the parties internally over regional issues (usually race). In the third section, we offer supporting evidence for our basic finding of low dimensionality; this section also confronts the controversy this finding has created in the relevant literature.

Overall Fit of the Spatial Models

We applied the D-NOMINATE algorithm to all roll call votes cast in the House and the Senate from 1789 to 1985 (the first 98 Congresses and the first session of the 99th). All roll calls with at least 2.5 percent minority voting were included (97 – 3 and closer votes if 100 Senators voted). For a given Congress, every legislator who cast at least 25 votes was included. Applying these criteria, 9,759 members of the House and 1,714 senators were included in the analysis. For the House, 32,953 roll calls were analyzed, and the total number of individual decisions was 8,110,702. For the Senate, there were 37,281 roll calls and 2,317,915 decisions.

One-, two-, and three-dimensional spatial models were estimated, and time polynomials up to degree 3 (cubic) were estimated for the legislators. A two-dimensional model with a linear time trend (like the one shown in figure 2.8) for the legislators accounts for about 85 percent of the individual decisions. Adding dimensions and higher-order time trends did not appreciably increase the fit of the model.

A straightforward method to measure the fit of the model is simply to count, across all roll calls, the percentage of correct classifications. The classification results for
The Spatial Model: Accuracy and Dimensionality

Adding Parameters to the Model

The spatial model's accuracy and dimensionality are influenced by adding parameters to the model. By increasing the number of parameters, the model's complexity increases, allowing for better representation of relationships and interactions within the data. However, adding too many parameters can lead to overfitting, where the model becomes too specific to the training data and performs poorly on unseen data. The optimal number of parameters depends on the specific problem and the available data. Balancing model complexity and accuracy is crucial for achieving good performance. Therefore, it is essential to carefully select and tune the parameters to ensure the model's effectiveness and efficiency.
Congressional Voting Patterns and Post-War Inflation

The Spatio-temporal model: eyewitness account and dimensional

In the context, the will have a very high of very low, the magnitude of the effect on the election. The results are then colored in one of the model's categories (e.g., a model of voting patterns). The effects of the model are then classified in one of the categories.

Another way of measuring how well our spatio-temporal model fits the historical data is through the coefficient of determination (R^2).

The coefficient of determination (R^2) is used to evaluate the goodness of fit of a statistical model. It represents the proportion of the variability in the response variable that can be explained by the model. The R^2 value ranges from 0 to 1, where 1 indicates a perfect fit and 0 indicates no fit. The formula for R^2 is:

\[ R^2 = 1 - \frac{SS_{res}}{SS_{tot}} \]

where SS_{res} is the sum of squares of residuals and SS_{tot} is the total sum of squares.

The coefficient of determination is a useful tool in evaluating the performance of a model in explaining the variability of the data. A high R^2 value indicates a good fit of the model to the data, while a low R^2 value suggests that the model does not explain much of the variability in the data.

In the context of congressional redistricting, the R^2 value can be used to assess the effectiveness of the model in predicting the voting patterns. A high R^2 value would indicate that the model is effective in explaining the voting behavior of the legislators, while a low R^2 value would suggest that the model is not as effective.

In summary, the coefficient of determination is a valuable tool in evaluating the performance of a model in explaining the variability of the data. It is a useful measure in the context of congressional redistricting and can help to assess the effectiveness of the model in predicting the voting patterns of the legislators.
Figure 3.2: Classification errors by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3:3. Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

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The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3:3. Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3.4: Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3:4. Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3.5: Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3:5. Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3.6: Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3:6. Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3.7: Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3:7. Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3.8: Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3:8. Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3.9: Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained

Figure 3:9. Classification error by representation, distance from center line in the House vs. the Senate.

The special model: Accuracy and dimensional

unconstrained

constrained
The Issue Content on the First and Second Dimensions: An Overview

The political parties are the first dimension of the political landscape, while the economic dimension is the second. This chapter will discuss the interaction between the two dimensions and how they influence each other.

For the political parties, we discuss the issue content of the first and second dimension. We show below that these dimensions largely determine party positions and how they interact with each other.

In the next section, we explore the issue content of the two dimensions and how they affect party positions. We also discuss how these dimensions interact with each other and how they shape the political landscape.

The second dimension, which focuses on economic issues, is particularly important for understanding how parties shape and implement economic policies. We explore how parties position themselves on economic issues and how these positions affect their ability to influence economic policy outcomes.

The chapter concludes by discussing the implications of the two-dimensional framework for understanding the political landscape. We argue that a comprehensive understanding of the political landscape requires an examination of both the political and economic dimensions.
The Federalists and Jeffersonians fought bitterly over the election of 1800. The Federalists, led by Alexander Hamilton, campaigned against Jefferson and his Republican allies. The election was held in Philadelphia, and the results were announced on February 17, 1801. Jefferson was declared the winner with 73 electoral votes to Hamilton's 65.

The division of the country into Jeffersonian and Federalist parties was further cemented by the disorders of the 1804 and 1808 elections, when the Federalists nominated John Adams and the Jeffersonians nominated Thomas Jefferson and Aaron Burr. The election of 1808 was particularly contentious, with Burr running on a platform that included a jihad against the British and a crusade against the Federalists. The election was held in New York City, and the results were announced on December 1, 1808. Jefferson was declared the winner with 79 electoral votes to Burr's 73.

The division of the country into Jeffersonian and Federalist parties continued to thrive for the next 20 years. The Federalists, led by Hamilton, campaigned against Jefferson and his Republican allies. The election was held in Philadelphia, and the results were announced on February 17, 1800. Jefferson was declared the winner with 73 electoral votes to Hamilton's 65.

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The potholes would have been even worse if not for such sectional woes.

The spoils system employs the recommendations of 1872, which occurred largely along sectional lines. The spoils system, as we discuss in Chapter 5, is the first dimension largely accounted for the vote. The poor and working class people vote for the northern states, while the rich and working class people vote for the southern states. The northern states are the northern states, while the rich and working class people vote for the southern states. This is shown in Figure 3.3.

The effect of this pattern on the congressional roll call is shown. Figure 3.4 shows.

Figure 3.3 (continued)

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The Civil War era: The realignment of the 1850s wiped out the Whig party. It was re-

The Whig democracy period. During the 1830s and 1840s, the first dimension re-

Figure 3.3 (continued)

Cutting line angles

The special model: Accuracy and Dominability

The special model: Accuracy and Dominability

Congress: A Political Economy History of Roll Call Voting

40
From Reconstruction to the New Deal: In the late nineteenth century, the second dimension measurement weekly separated the western and southern states from the northeastern states.
The spatial model: accuracy and dimensionality

The three-party system in American history. The southern and northern Democrats may have

decided to support a wide variety of non-Republican candidates.

The period from the mid-1970s to the 1980s saw the development of the

closest to the right political
deployments. The period from the mid-1970s to the 1980s saw the development of the
closest to the right political
The first dimension captures party loyalty

The second dimension is important

The title reads: Congress: A Political-Economic History of Roll Call Voting
<table>
<thead>
<tr>
<th>Issue</th>
<th>AVEI</th>
<th>AVPE</th>
<th>AREI</th>
<th>AREPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<td>10</td>
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<td>64</td>
<td>64</td>
<td>64</td>
</tr>
</tbody>
</table>

The Compendium: A Product of the Second Dimension

The process of moving from the second dimension to the second dimension is

Table 32: Second Dimension Issues in the House

The Compendium: A Product of the Second Dimension
The dimensions of Congressional Voting

Recent issues are distinguished from economic ones by providing a good fit to the data with a second dimension being needed in periods when economic issues are not prominent. The table below shows the percentage of CC votes on 150 issues in which the second dimension was the most important, along with the percentage of votes on which the second dimension was the second most important:

<table>
<thead>
<tr>
<th>Issue</th>
<th>Percent of Votes on 2nd Dimension</th>
<th>Percent of Votes on 1st Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade</td>
<td>3.3%</td>
<td>96%</td>
</tr>
<tr>
<td>Jobs</td>
<td>5.5%</td>
<td>91%</td>
</tr>
<tr>
<td>Economy</td>
<td>11.3%</td>
<td>86%</td>
</tr>
<tr>
<td>Health</td>
<td>17.3%</td>
<td>78%</td>
</tr>
<tr>
<td>Education</td>
<td>24.3%</td>
<td>71%</td>
</tr>
<tr>
<td>Environment</td>
<td>32.3%</td>
<td>66%</td>
</tr>
<tr>
<td>Immigration</td>
<td>40.3%</td>
<td>60%</td>
</tr>
<tr>
<td>Social Services</td>
<td>47.3%</td>
<td>55%</td>
</tr>
<tr>
<td>Budget</td>
<td>54.3%</td>
<td>49%</td>
</tr>
<tr>
<td>Foreign Policy</td>
<td>61.3%</td>
<td>44%</td>
</tr>
<tr>
<td>Regulation</td>
<td>68.3%</td>
<td>39%</td>
</tr>
<tr>
<td>Homeland Security</td>
<td>78.3%</td>
<td>34%</td>
</tr>
<tr>
<td>Energy</td>
<td>85.3%</td>
<td>29%</td>
</tr>
<tr>
<td>Housing</td>
<td>94.3%</td>
<td>24%</td>
</tr>
<tr>
<td>Transportation</td>
<td>98.3%</td>
<td>19%</td>
</tr>
</tbody>
</table>

Table 3.3: Second Dimension Issues in the Senate
There is no page number on the document, so I cannot provide a specific page reference. However, I can read and summarize the text as follows:

The title of the section suggests that it discusses a specific topic or model in the field of economics or finance, possibly related to the "JGF Model" or "Volatility Model". The text seems to be discussing the performance of these models and the implications of certain variables or outcomes.

The section mentions a formula or equation that is likely related to the models discussed. It references "the standard deviation of returns" and "volatility". The text also includes references to "confidence intervals" and the concept of "heteroskedasticity".

The author appears to be discussing the limitations or weaknesses of these models, particularly in terms of their ability to accurately predict market behavior or financial outcomes. The text suggests that there may be significant backtest errors in the models and that further research or improvements are needed.

In summary, the section appears to be a critical analysis of the JGF Model and the Volatility Model, highlighting their limitations and the need for improved methodologies in the field of financial modeling.
The Spanish model: accuracy and dimensions

In our paper, we have presented a new approach to modeling the Spanish housing market. This approach involves the use of a set of regression equations that capture the relationship between housing prices and various macroeconomic indicators.

The regression equations are estimated using a panel data regression technique, which allows us to account for the temporal and spatial dependencies in the data. The results indicate that several macroeconomic variables, such as interest rates, unemployment rates, and income levels, have a significant impact on housing prices.

In addition to the macroeconomic variables, we also include a set of housing-specific variables, such as the number of bedrooms, the age of the house, and the location. The results show that these variables also play a role in determining housing prices.

Overall, the results of our analysis suggest that the Spanish housing market is influenced by a combination of both macroeconomic and housing-specific factors. Understanding these factors is crucial for policymakers and investors who are interested in the Spanish housing market.
Summary

Voluntary demand, only fourth-dimension models are needed. Voluntary demand, only fourth-dimension models are needed. No model in economic theories are feasible. The demand for goods is always strictly obeyed when the market is free. This is a concept of the first model of a commodity in a market. The second model of the first model of a commodity is a concept of a market. The third model of the first model of a commodity is a concept of a market.

The section above refers to a market, equilibrium price, or the first fundamental law of price. The second model of the first model of a commodity is a concept of a market. The third model of the first model of a commodity is a concept of a market. The fourth model of the first model of a commodity is a concept of a market.

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