Democratic Vote Share in Maine Fall 2010

Wyatt Benno, Adam Coco, Justin Pownell, and Sylvia Telesz
Abstract

This paper address the congressional Democratic vote share in Maine from the period of 1930-present. After analyzing trends and current issues being discussed in the run-up to the 2010 congressional elections in Maine, a vote share model along the lines of Fair (2009, 2010) is constructed, with the ultimate goal being an accurate prediction of Democratic vote share in Maine for the 2010 election. The results from our model, which is estimated using OLS regression, brings about a predicted Democratic vote share of 54.46% for Maine. The model uses a mixture of national economic data, state and national incumbency figures, and a one-period lag of Democratic vote share in the state.

Although we were not able to exactly replicate the data used by Fair in his model, our results still compare very favorably with media projected results for Maine’s congressional election in two weeks time.
I. Introduction

The idea of vote share prediction in U.S. elections was first explored by Ray Fair in his 1978 publication, “The Effect of Economic Events on Votes for President.” Fair, being an economics professor himself, realized the importance of ongoing economic events in the build-up to presidential elections, and recognized that these events must have some predictive power in the overall vote share for presidential elections. Using this basic theory, this paper attempts to construct a vote share model for the state of Maine in the build-up to its 2010 congressional elections.

Maine, formally a district of Massachusetts that in 1810 consisted of 20 districts itself, entered statehood in March 1820 with seven districts as part of the Missouri Compromise. Having had as many as nine congressional districts, Maine’s 1st and 2nd congressional districts have endured. The 1st district consists of the more populous counties located in the south-western part of the state and is currently represented by Democratic Congresswoman Chellie Pingree. Maine’s 2nd district, the largest congressional district east of the Mississippi, is represented by Democratic Congressman Mike Michaud.
Figure 1.1. Maine congressional districts since 2003

A firm antislavery sentiment put the Republican Party into power during the Civil War, up until 1912. The Republican Party remained the party of choice with Democratic power apparent in 1934, 1936, 1958, and 1960. The Democrats came into power again in 1968 and 1972, with state representatives being split between Democrat and Republican throughout the late 1980’s. Maine has subsequently voted Democrat since 1998, or the last six elections.

**Graph 1.1: Democratic Vote Share in Maine, 1930-2008**

Chellie Pingree (D) is being challenged by Dean Scontras (R) for her seat representing Maine’s 1st district in the U.S. House. Pingree’s issues include fighting for small business and creating jobs in Maine, with emphasis of keeping Pratt & Whitney plant jobs from moving overseas, clean energy, health care reform, and equality for women. Scontras, who was endorsed by former NYC mayor Rudy Giuliani, commits to limiting government and keeping taxes low. Jason Levesque is the Republican challenger to incumbent Mike Michaud for the seat in Maine’s 2nd congressional district. Michaud and

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1 Figure taken from U.S. Federal Government National Atlas
Levesque are both focusing their campaign on jobs and the economy, health care, and energy independence that utilizes Maine’s natural resources, with Levesque supporting the Second Amendment in his campaign as well. Last November Maine voters repealed the state’s gay marriage law and the issue has surfaced again in several legislative races where the National Organization for Marriage appears to have targeted Maine lawmakers who voted for the gay marriage bill.

Given this brief introduction on Maine’s congressional history and its current political climate, the rest of the paper will unfold as follows: Section II will display the vote share model to be used in this paper, as well as describe the economic theory surrounding it; Section III will provide the reader with an accurate picture of the data to be used in the estimation of this model; Section IV will describe the estimation results of the vote share model, as well as give predictions for the 2010 congressional elections in the state of Maine; and finally, Section V will conclude the paper.

II. Voting Model and Economic Theory
II.1: Presentation of the Voting Model

After several iterations, a final voting model was decided on because of its ability to predict Democratic vote share in the state of Maine for the 2010 midterm elections regarding the House of Representatives. The model is presented below in equation (1):

\[
y = \beta_1 \text{inf} \times i_{\text{nat}} + \beta_2 \text{incumbency} + \beta_3 X + \varepsilon
\]

Equation (1) represents the dependent variable, \( y \) (Democratic vote share in Maine), as a function of three independent variables plus an error term. The first independent variable, \( \text{inf} \times i_{\text{nat}} \), is an interaction term between national inflation rates (on an absolute value) and the current incumbency in the national House of Representatives\(^2\). The national inflation rate variable was calculated similar to Fair (2009) and is presented below in equation (2):

\[
\text{incumbency} = \begin{cases} 
1 & \text{if Democrats are in power} \\
-1 & \text{if Republicans are in power}
\end{cases}
\]

\(^2\) National incumbency takes the value of 1 if Democrats are in power, (-1) if Republicans are in power.
Basically, equation (2) states that the absolute value of national inflation rates are based on the change in inflation from the 1st quarter of a 2-year House term to the 7th quarter of a two-year house term, expounded to an annual rate and multiplied by 100%. The second independent variable in equation (1) is (goodnews*i_state), which is an interaction term between good news quarters and the current incumbency measure of Maine’s representatives in the House\(^3\). The good news variable represents any quarter during the first seven quarters of a two-year cycle where the GDP growth rate exceeded 3.2%. GDP growth rate was calculated in accordance with Fair (2009) as is presented below in equation (3):

\[-1] * 100 ;

where \(Y_7\) is equivalent to the GDP in the 7th quarter of the two-year House cycle and \(Y_4\) is the GDP in the 4th quarter of that cycle. After the good news quarters have been counted, Fair (2009) proposes multiplying this number by a factor of \((15/7)\) to adjust this figure for a 4-year basis. This proposal has been followed in this paper as well.

Finally, \(y_{t-1}\) represents the first lag of the dependent variable. It is equivalent to Democratic vote share in the state of Maine from the preceding vote period. The table below summarizes all variables used and their descriptions.

\(^3\) State incumbency takes the value of 1 if the majority of Maine’s representatives in the House are democrats; \((-1)\) if the majority of Maine’s representatives in the House are republicans; and 0 if it is an even split.
II.2: Economic Theory Behind the Voting Model

In predicting economic theory, we will follow the same rational as Fair (1996). To begin with, the interaction between inflation and the national incumbency variable would be predicted to be negative. That is because high rates of inflation or deflation while the Democrats are in control of the House of Representatives should reflect negatively on Democratic vote share in the coming election cycle. Likewise, high inflation or deflation while Republicans are in control of the House of Representatives should reflect positively on Democratic vote share in the upcoming election cycle.

would be predicted to have a positive sign. This is saying that voters in the state of Maine are more likely to increase Democratic vote share if the representatives from Maine are majority Democratic and the economy has been growing over 3.2% for a relatively large number of quarters in the preceding two-years. The opposite would be true if Maine had a majority of Republican representatives in the House during this time of strong economic growth.

would have a positive sign as well, since voters who cast their vote in favor of Democrats in the preceding election are more likely to vote the same way in the current election cycle. It would make sense that most voters are not willing to change their voting behavior from election to election. This has not been theorized in any of Fair’s models (1996, 2009, 2010) and therefore is an addition to the previously quoted literature.

IV: Results and Predictions from Voting Model

IV.1: Results

Table 4.1 below shows regression results from the OLS estimation of equation (1).
As can be noticed from the table above, all signs on parameter estimates are correct according to the economic theory spelled out in Section II. A brief description of the interpretation of the results follows.

The parameter estimate of -0.83 on the (inf*i_nat) variable indicates that a 1% increase in the absolute value of inflation causes a 0.83% decrease in Democratic vote share in the state of Maine when Democrats are the majority party in the U.S. House of Representatives. When the Republicans happen to be the majority party, this 1% increase indicates a 0.83% increase in Democratic vote share in the state of Maine.
For the variable \((\text{goodnews} \times i_{\text{state}})\), a parameter estimate of 0.45 was found. Therefore, an additional “good news” quarter would add 0.45% Democratic vote share in the state of Maine if Maine’s congressional representatives for the House were Democrats by majority. Conversely, this additional “good news” quarter would result in a decrease of 0.45% Democratic vote share in the state if Maine had elected a majority of Republicans to the House in the previous election period.

The last variable in the regression equation \((y_{t-1})\) was found to have a parameter estimate of 0.34. To quantify this estimate, it can be said that each percentage of Democratic vote share in the state of Maine from the previous period would equate to 0.34% Democratic vote share in the state during the current period. Therefore, about one-third of the Democratic vote share in the current period is based off of Democratic vote share in the preceding period for the state of Maine.

**IV.2: Predictions from the Voting Model**

In order to test the validity of our model over time, an ex-post forecast was undertaken. This was completed by predicting the known Democratic vote share values in the state of Maine for the last 12 election years, using the parameter estimates and the known independent variable values for the time period \(t\). The results are shown below in Table 4.2:

<table>
<thead>
<tr>
<th>Year</th>
<th>(Y)</th>
<th>(\hat{Y})</th>
<th>Residual</th>
<th>Absolute Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>36.87</td>
<td>36.86</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>1988</td>
<td>49.80</td>
<td>42.82</td>
<td>6.98</td>
<td>6.98</td>
</tr>
<tr>
<td>1990</td>
<td>55.02</td>
<td>46.54</td>
<td>8.48</td>
<td>8.48</td>
</tr>
<tr>
<td>1992</td>
<td>56.64</td>
<td>49.97</td>
<td>6.67</td>
<td>6.67</td>
</tr>
<tr>
<td>1994</td>
<td>49.80</td>
<td>50.73</td>
<td>-0.94</td>
<td>0.94</td>
</tr>
<tr>
<td>1996</td>
<td>64.23</td>
<td>52.34</td>
<td>11.89</td>
<td>11.89</td>
</tr>
<tr>
<td>1998</td>
<td>69.20</td>
<td>63.15</td>
<td>6.05</td>
<td>6.05</td>
</tr>
<tr>
<td>2000</td>
<td>67.50</td>
<td>65.15</td>
<td>2.35</td>
<td>2.35</td>
</tr>
<tr>
<td>2002</td>
<td>58.45</td>
<td>57.63</td>
<td>0.82</td>
<td>0.82</td>
</tr>
<tr>
<td>2004</td>
<td>59.63</td>
<td>57.87</td>
<td>1.77</td>
<td>1.77</td>
</tr>
<tr>
<td>2006</td>
<td>68.25</td>
<td>58.40</td>
<td>9.85</td>
<td>9.85</td>
</tr>
<tr>
<td>2008</td>
<td>60.82</td>
<td>53.03</td>
<td>7.79</td>
<td>7.79</td>
</tr>
</tbody>
</table>

| Mean | 5.30 |
| Mean |      |

As can be seen by the above table, the model predicts extremely well for some years (for example, 1986 predicted Democratic vote share in the state of Maine is only 0.01%
different from the actual vote share that year) and relatively poor in other years (for example, the data for 1996). If accurate ex-post forecasting was the goal of this paper, these numbers might indicate further manipulating of the model. There are certainly as many “bad” ex-post forecasts in the above table as there are “good” ones. However, the overall goal of this paper is to develop a model that best predicts the Democratic vote share in the state of Maine for the upcoming 2010 mid-term election. This is where we turn our attention to next.

Table 4.3 shows the actual values of the independent variables used in equation (1) leading up to the 2010 election.

<table>
<thead>
<tr>
<th>Variable</th>
<th>2010 Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(inf*i_nat)</td>
<td>1.646386478</td>
</tr>
<tr>
<td>(goodnews*i_state)</td>
<td>4.285714286</td>
</tr>
<tr>
<td>γ_t⁻¹</td>
<td>60.8227562</td>
</tr>
</tbody>
</table>

When these values from Table 4.3 are combined with the parameter estimates from Table 4.1, a predicted value for the 2010 Democratic vote share in the state of Maine can be achieved. Equation (4) inputs the values from Table 4.1 and Table 4.3 to predict this value.

\[
(4) \ y_t = 33.44 - (0.83*1.65) + 0.45(4.29) + 0.34(60.82)
\]

Solving for \( y_t \) from equation (4), our predicted Democratic vote share for the 2010 election in the state of Maine is 54.64%.

This predicted value seems to be rather consistent with the latest polls from the state of Maine. According to a poll published by the New York Times, the expected Democratic vote shares for Maine’s 1st and 2nd congressional districts are 54.9% and 53.1% respectively. Because Maine’s 1st district represents about 52.75% of total state voter turnout (according to 2008 election results), it can be calculated that the expected Democratic vote share in Maine for 2010 is 54.05%, based on projected election polls and previous voter turnout ratios. This projected data seems to be relatively in line with the projected data from our model.

V. Conclusion
The overall purpose of this paper was to predict Democrat vote share in the state of Maine for the 2010 mid-term congressional elections. Based on OLS parameter estimates and known 2010 variables, a predicted Democratic vote share of 54.46% has been tabulated. Our regression equation was based on a mix of national economic variables interacted with both state and national congressional incumbency variables and a one-period lag of the dependent variable. The results gained from our estimation seem to be in line with the projected results from national media polling for the 2010 congressional elections in Maine.

Although it was not possible for this paper to replicate the results gained by Fair in his studies, we do believe that our results have considerable merit for the state of Maine. Fair used a more extensive model, with a broader scope of Democratic vote share for his dependent variable. Hence, the exact replication of results, with all of Fair’s variables being used, seems to be rather impossible in this scenario. Variables such as unemployment rates, duration of congressional incumbents, and stock prices were all tried within our model to no avail. However, the results predicted within this paper stand as final projected results based on our best model. We feel that the elections in 2 weeks time will vindicate our choice of model and, therefore, our projected results.