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PREFACE: The International Institute of Forecasters, publisher of *Foresight,* is sponsoring a competition awarding a **$1000** prize to the modelers that most accurately forecast the outcome of the **2006** U. **S.** Congressional elections. Competition guidelines are posted at http://politicalforecasting.com. This brief article describes models previously used to forecast midterm elections.

Introduction

As U.S. midterm Congressional elections approach in early November 2006 and forecasters attempt to predict the outcome, it seems an appropriate time to review models of midterm election forecasting as they have developed over the past three decades.

Most models have sought to predict the change in the number of seats between the Democratic and Republican parties, usually with forecasts of the number of seats lost by the president's party. Some models, however, have sought to predict party shares of the generic vote, the total popular vote over all 435 House elections. Both approaches typically assume that support for the president's party will decline at midterm, a pattern that has existed historically, although less so in recent elections.

Survey of Major Midterm Election Forecasting Models

Our survey of the forecasting models is in chronological sequence, so as to reveal the progressive development of the field. It is evident that modelers have built upon each other's work as new concepts and indicators have been introduced. We summarize the models and their forecasts in Table 1, next page.

Table 1. Forecasting Models for Midterm U.S. House of Representatives Elections □

Election Year, Forecaster, (Sample size)	Dependent Variable	Independent variables & sign of coefficients	Forecast	Actual	Error
1974					
Tufte (8)	Vote loss (%) (by President's party) [REP Pres.]	Pres. approval rating (+); Economic growth (+)	8.1% vote loss (calculated from 39.2 REP vote)	6.0% vote loss	-2.1 points
1982					
Jacobson & Kernell (9)	Vote loss converted to to seat loss (by President's party) [REP Pres.]	Pres. approval rating (+); Economic growth (+)	Lose 50 seats	Lost 26 seats	-24 seats
Hibbs (9)	Vote loss converted to seat loss (by President's party) [REP Pres.]	Economic growth (+)	Lose 39 seats	Lost 26 seats	-13 seats
Lewis-Beck & Rice (16)	Seat change (by President's party) [REP Pres.]	Pres. approval rating (+); Economic growth (+); Midterm dummy (-)	Lose 30 seats [a]	Lost 26 seats	-4 seats
Oppenheimer et al (20)	Seat loss (by President's party) [REP Pres.]	Pres. approval rating (+); Economic growth (+); Seat exposure Pres. party (-)	Lose 7 seats	Lost 5 seats	-2 seats
Campbell (10)	Seat loss (by President's party) [REP Pres.]	Pres. approval rating (+); President's vote 2 years prior (-); Trend (+)	Lose 21 seats [b]	Lost 5 seats	-16 seats
Lewis-Beck & Rice (21)	Seat change (President's party) [REP Pres.]	Pres. approval rating (+); Economic growth (+); Pres. party seat exposure (-); Econ. growth x midterm, interactive (+); Time President in office (-)	Lose 18 seats	Lost 8 seats	-10 seats
Campbell (11)	Seat change (President's party) [DEM Pres.]	Pres. approval rating (+); Presidential vote, 2 years prior (-)	Lose 26 seats [a]	Lost 54 seats	+28 seats
Alesina et al (19)	House vote (President's party) [DEM Pres.]	Vote for President's party in House, 2 years prior (+)	48.7% [a][d]	46.4%	+2.3 points
Erikson & Sigelman (9)	Democratic vote [DEM Pres.]	Polls-generic House vote (+); Democratic President (-)	47.4% [a][d]	46.4%	+1.0%
Abramowitz (13)	Democratic seats [REP Pres.]	Poll-generic House vote (+); Democratic President (-); DEM seats-prior session (+)	226 seats (Gain 14 seats) [c]	204 seats (Lost 8 seats)	+22 seats
Erikson & Bafumi (14)	Democratic seats [REP Pres.]	Polls-generic House vote (+); Democratic President (-); DEM seats-prior session (+)	235 seats (Gain 23 seats) [c]	204 seats (Lost 8 seats)	+31 seats
Lewis-Beck & Tien (27)	Seat change (President's party) [REP Pres.]	Pres. approval rating (+); Economic growth (+); Midterm dummy (-)	Lose 8 seats [c]	Gained 8 seats	-16 seats

[a] Post-election out-of-sample prediction.

[b] Forecast reported in Campbell (1987); model described in Campbell (1986) or Oppenheimer et al. (1986).

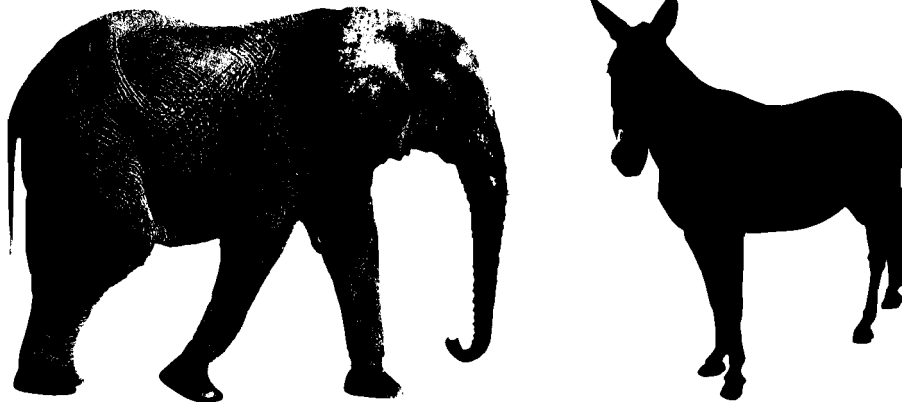□ Forecast wrongly predicted that Democrats would regain control of the House in 2002.

[d] Forecast correctly predicted that Democrats would lose the generic vote in 1994, portending the Republicans' gaining control of the House that year

□ With one exception, the forecasting models and resulting forecasts that we cover are limited to those that have been published. The exception is the set of forecasts for 2002 which appears on the web page of the Elections Section of the American Political Science Association.

□ Actual election results are reported in U. S. Bureau of the Census (1974-2006).

Tufte's Referendum Model

In 1974 Edward Tufte pioneered the use of regression models to forecast midterm elections. Tufte considered midterms to be referenda by voters on the performance of the president, and his forecasting model for the House reflected this assumption. He chose two indicators to predict the share of the national vote received by House candidates of the president's party: the annual growth rate in real disposable personal income per capita, and the president's fall job approval rating as measured by the Gallup Poll. If the economy is doing well, and if voters approve of the president's job performance—itself partly influenced by the health of the economy but also capturing non-economic factors—they support candidates of his party. If not, they vote for the opposition. Tufte's referendum model was seminal, for the economic growth and job approval indicators have been incorporated into most subsequent midterm election models.

the president's term counts only 34% as much as the quarter that follows, so that the impact of prior quarters decays quickly with time. Also, for the 1982 election Richard Brody developed an unpublished model reported by Witt (1983) that included presidential job approval rating as the sole predictor, specifically the change in job performance during the first 14 months of the president's term.

Including All Congressional Elections

In an *ex post* forecast of the 1982 midterm election, Michael Lewis-Beck and Tom Rice (1984). included variants of Tufte's two referendum indicators, but expanded the data set to include House elections during presidential election years, as well as at midterm. Although this increased the number of cases for the equation, it added complexity to the model through a dummy variable to distinguish midterm elections from on-year elections.

Converting Votes to Seats

In practical terms, Tufte's focus on predicting the national popular vote in midterm House elections is of limited value, for the important result is the distribution of House seats between the parties. Jacobson and Kernell (1982) explicitly addressed this issue by converting the predicted House vote, calculated with Tufte's model, into House seats. They did this by simply regressing the percent of Democratic House seats on the Democratic share of the vote.

Deconstructing Tufte's Model

Two other forecasters modified Tufte's model by using only one of his indicators. Douglas Hibbs (1982) relied solely on economic growth. His model used a geometrically weighted growth indicator in which each of the first six quarters of

Adjusting for "Exposed" House Seats

For the 1986 election Bruce Oppenheimer and colleagues (1986) developed a model that included Tufte's presidential approval and economic growth variables but added a "seat exposure" indicator. For the latter the obvious argument is that a party is likely to lose more seats in House elections when it currently holds more seats than usual in the recent past.

Responding to the Party "Surge" Two Years Earlier

James Campbell's (1986,1987) model for the 1986 midterm election introduced a major innovation by incorporating an indicator of "surge and decline" to explain the usual midterm seat loss by the president's party. According to this view, presidential elections are unique for the hoopla of their campaign activity and incessant media coverage,

which increases the public's psychological involvement in the election. In this setting the winning party is the one that succeeds in generating a larger turnout of marginal supporters and in attracting independents. Because midterm elections are less captivating, marginal voters for the president's party may stay home and independents may do likewise or defect to the other party. As a consequence, at midterm the president's party in the House becomes more vulnerable and may lose some seats that it won in the presidential election. Campbell modeled this surge and decline phenomenon by using as an indicator the percent of the vote that the president received two years prior to the midterm. His model also included a referendum component – presidential approval – as well as a trend indicator. This last variable was dropped in a slight revision of the model used to forecast the 1994 election (Campbell 1997).

Adding the President's Time in Office

In *Election Forecasting,* Lewis-Beck and Rice (1992) revised their earlier model. They added an additional specification for economic growth at midterm and an indicator of seat exposure introduced previously by Oppenheimer et al. But the model's principal new feature was a variable that accounted for the point in the president's tenure when the election occurred. The assumption was that the longer the president has been in office, the more House seats his party is likely to lose. Thus, other things being equal, the president's party will likely do worse in his second midterm than in the first, due to his waning influence. The book reported a forecast made with the model in the summer of 1990 and presented contingency forecasts for 1994. However, the 2002 forecast by Lewis-Beck – now collaborating with Charles Tien – was based on the original 1982 model.

Autoregressive Characteristics of the Midterm Decline

For 1994 Alberto Alesina and colleagues (1 996) developed a simple model in which they regressed the national vote for candidates of the president's party in midterm House elections on that same indicator for House elections two years earlier, a presidential election year. Their approach was similar to that of Campbell in that they modeled a midterm decline in the incumbent House vote two years following presidential elections, and generated forecasts from the autoregressive regularities of the historical vote. They did not, however, convert the vote share into House seats. By not including referendum indicators, this model was a significant departure from the longstanding tradition initiated by Tufte.

"Generic Vote" Polls as a Predictor

A 1995 article by Robert Erikson and Lee Sigelman assessed the forecasting value of polls of the "generic vote" in midterm elections. These polls are national surveys in which respondents are asked which party's candidate they intend to vote for in their local Congressional district race. Taken alone polls are poor predictors of the generic vote. However, Erikson and Sigelman demonstrated two modifications that can dramatically increase their forecasting value. First, they averaged poll results for periods of 30 days or more, depending on the forecast horizon. In doing so, they implemented the combination principle, well-known as a means of increasing forecast accuracy (Armstrong 2001). Second, Erikson and Sigelman demonstrated through regression that when the party of the president is taken into account, the combined polls become excellent predictors of the generic vote.

Although their primary interest in the regression model was fitting it to various forecast horizons, Erikson and Sigelman also computed tentative out-of-sample post-election forecasts of the Democratic share of the national House vote in 1994. Remarkably, their most successful prediction was based on polls taken from 300 to 599 days before the election. Their reliance on polls of the generic vote as predictors marked another break with the prevailing referendum approach to midterm election forecasting.

In the 2002 version of the model, Erikson and his new collaborator Joseph Bafumi (2002) predicted both the House generic vote and share of House seats for the Democrats. As

well as polls of the generic vote and party of the president, this version of the model included a third variable, the outcome for Democrats in the previous midterm election – measured as either the prior generic vote or seat change, depending on the model.

Also in 2002 Alan Abramowitz produced a model to predict Democratic House seats that was very similar to that of Erikson and Bafumi. The principal difference between the two was that Abramowitz used the last poll of the generic vote before the election, while Erikson and Bafumi favored the average of generic polls for the last 30 days of the campaign.

The Models in Review

As is evident in Table 1, most of the midterm forecasts were made when a Republican was president. In every such instance, covering four different presidencies, the forecast was too pessimistic for the president's party: Republican candidates won more seats in the House or a larger share of the generic vote than predicted. Specifically, when a Republican was president, seat change forecasts called for Republicans to lose 23 seats on average, whereas the mean loss was only 8. Similarly, the generic vote-loss forecast was about 2% too low for Republicans.

On the other hand, forecasts for the 1994 midterm election, when Democrat Bill Clinton was president, were too optimistic for the president's party. Democratic House candidates won fewer seats and votes than predicted. These findings suggest that models should include an explicit specification for party or similar adjustment.

The pre-1994 election forecast errors tended to be smaller than the errors observed since. The growth in forecast error may reflect a structural change in American politics in 1994, when Republicans re-gained control of Congress for the first time in nearly half a century. The pattern in which the president's party in the House consistently lost seats at midterm has not been holding, making more difficult the task of midterm forecasters who base their predictions on historical data.

Forecasts from even the most accurate models have considerable margin for error. Relatively little data has been used because the data sets begin with elections following World War II. By 2002 there were 14 midterm elections. Earlier models had as few as eight cases.

With a sample this small, the danger of over-fitting the models—tying them too closely to the particular elections studied—is magnified. Also the prediction intervals tend to be wide, an issue that modelers have often overlooked. To deal with the small sample problem, some modelers have included House elections in presidential years, thus doubling the number of cases, but at the cost of adding another variable to distinguish midterm from presidential election years.

Despite the challenges faced by midterm election forecasters, efforts to predict these important elections continue and should become more accurate as techniques are refined and as more cases become available for analysis. Perhaps 2006 will be a significant benchmark on the road to greater accuracy in forecasting midterm elections.

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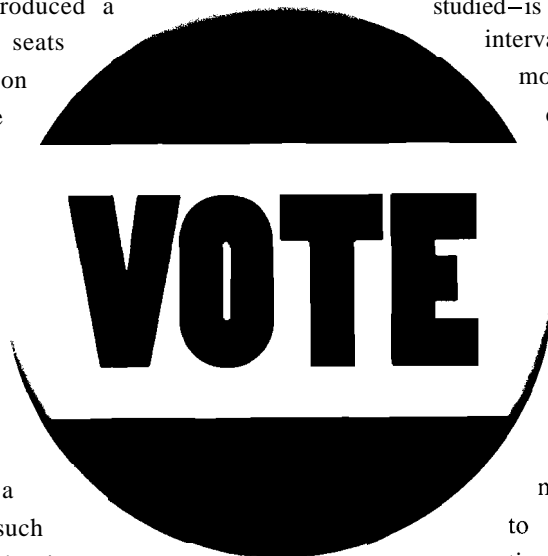
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