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Issue and leader voting in U.S. presidential elections

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ABSTRACT

The "Issues and Leaders" model shows that aggregate votes for President in U.S. elections from 1972 to 2012 can be accurately predicted from people's perceptions of the candidates' issue handling competence and leadership qualities. For the past five elections, the model's ex ante forecasts, calculated three to two months prior to Election Day, were competitive with those from the best of eight established political economy models. Model accuracy substantially improved closer to Election Day. The Election Eve forecasts missed the actual vote shares by, on average, little more than one percentage point and thus reduced the error of the Gallup pre-election poll by 30%. The model demonstrates that the direct influence of party identification on vote choice decreases over the course of the campaign, whereas issues gain importance. The model has decision-making implications in that it advises candidates to engage in agenda setting and to increase their perceived issue-handling and leadership competence.

1. Introduction

Many traditional election forecasting models predict the election outcome based on the state of the economy and the incumbent's popularity months before the start of the general election campaign. When these models are evaluated based on how often they correctly predict the winner of the popular vote, their performance is impressive: they rarely fail. This track record has fostered the dominant view that an election is a referendum on the government's performance (Tufte, 1978). That is, voters are assumed to assess the government's record and reward or punish the incumbent party accordingly. If voters are satisfied, they keep the government in place; otherwise, they vote for the out-party. According to that view, it is not necessary to consider the quality of the candidates' campaigns when making forecasts of the election outcome.

However, none of the established models were designed to predict election winners; they were designed to predict vote-shares. Thus, the deviation of the forecast from the actual election result is the preferred measure for evaluating accuracy. The mean absolute error of eight established models that published forecasts prior to each of the past five elections from 1996 to 2012 was 3.1 percentage points. Given that U.S. presidential elections are often very close, an error of that size can make a difference.[1]

Given the size of the error associated with the models, it is possible that they might miss important information. Evidence from a large body of literature suggests that this missing piece might be information that becomes available during campaigns. Research has found campaign events to have an effect on public opinion (Holbrook, 1994; Shaw, 1999). In a meta-analysis of the effects of viewing presidential debates, Benoit et al. (2003) found that watching debates affects vote preference. Gordon and Hartmann (2013) analyzed television advertisements from the 2000 and 2004 campaigns. They found that the ads had a robust effect, capable of shifting electoral votes in multiple states.

As a matter of fact, incumbents sometimes lose even in healthy economies. Therefore, campaigns may very well

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[1] Over the sixteen elections post World War Two, the mean absolute deviation of the incumbent's two-party vote share from the 50% mark was 4.4 percentage points.

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matter, at least in some elections. Starting from this logic, Vavreck (2009) studied thirteen presidential elections from 1952 to 2000 and found that candidates can increase their chance of winning by effective campaigning. Simply put, when the economy is good, the incumbent should tell voters about it; when the economy is bad, the incumbent should talk about something else. Vice versa, out-party candidates should talk about the economy only in bad times. In healthy economies, out-party candidates should emphasize non-economic issues that favor them.

These findings have led election forecasters to reconsider the minimal effects of campaigns. Nadeau and Lewis-Beck (2012) calculated the impact of campaigns on the accuracy of the average in-sample forecasts of six well-known political economy models from 1952 to 2000.[2] This was done by regressing the error of the model average on Vavreck's classification of each campaign as pro-incumbent or pro-challenger. This approach lowered the error of the average model forecasts by 1.1 percentage points; given the closeness of many elections, this is a considerable improvement in accuracy.

These results suggest that there might be value in developing models that draw on information about campaigns. As well as offering potential improvements upon accuracy, such models could shed light on the impact of campaigns on election outcomes, serve as a guide for party professionals in selecting the best nominee, and help them decide which issues to emphasize in a campaign.

The present study develops a model based on three fundamental factors that shape vote choice in U.S. Presidential elections: party identification, issues, and candidates. The model performs well compared to traditional election forecasting models and has decision-making implications for those involved in campaigns.

2. Traditional election forecasting models

Most of the established election forecasting models are *political economy models*. That is, they include at least one measure of the state of the economy, usually accompanied by one or more political measures. The generic specification of these models reads as:

$$Vote = f(politics, economics)$$

Since the late 1970s, political scientists have developed various versions of election forecasting models. These models were used to test theories of voting, to estimate the effects of specific variables on aggregate vote choice, and, of course, to predict election outcomes.

The models differ mainly in the selection of the economic variable(s). The dominant economic variable used is economic growth, measured in terms of GDP (Abramowitz, 2012; Campbell, 2012) or GNP (Lewis-Beck and Tien, 2012). Other measures used include perceptions of personal income, either retrospective (Holbrook, 2012) or prospective (Lockerbie, 2012), job growth (Lewis-Beck and Tien, 2012), or an index of leading economic indicators (Erikson and Wlezien, 2012a). The choice of the economic variables does not seem to be crucial, as the relationship among the different variables is quite robust.

By comparison, there is somewhat more agreement on the use of political variables, as many models include a measure of presidential approval, measured at different points in time. Other popular variables include whether or not the incumbent president is running and how long the incumbent party has held the White House (Fair, 2009; Abramowitz, 2012). Finally, there are also models that deviate from the classic political economy specification. For example, Hibbs (2012) focuses on economic factors, while Norpoth and Bednarczuk (2012) use only political variables.

It is beyond the scope of this paper to discuss the specifics of each individual model in detail. In addition, most of the models have been revised more or less fundamentally over the past election cycles. For a recent overview of the variables used in these and other models see Holbrook (2010). For a comprehensive access to the literature on election forecasting models see Campbell and Garand (2000) and Lewis-Beck (2005). In order to trace how the models have changed and performed over time, one may want to consult the special issues of *Political Methodologist* 5(2), *American Politics Research* 24(4) and *PS: Political Science and Politics* 34(1), 37(4), 41(4), and 45(4), which published forecasts of the major models prior to each election since 1992.

2.1. Track record

Since the 1990s, forecasts of most established models have been regularly released around Labor Day in the election year. The top section of Table 1 shows ex ante forecasts and corresponding errors of eight models that were available for each of the five elections from 1996 to 2012.[3]

The models' track record in predicting the winner is impressive. Out of a total of fourty forecasts, there were only four cases in which a model's forecast was not on the right side of the 50% mark. In 2012, the models by Fair (2009) and Lewis-Beck and Tien (2012) predicted a victory of Romney. In 2008, the model by Campbell (2012) forecasted a two-party vote-share for McCain of 52.7%. In 2004, the model by Lewis-Beck and Tien (2012) predicted a virtual tie in the popular vote, a forecast that turned out to be the second most accurate of all eight models in that year.

As pointed out in the introduction, the adequate means for assessing the models' accuracy is the absolute error, which measures the percentage points by which the forecast missed the actual outcome. Here, the picture is somewhat mixed. The models' best year was 2012, when the average error was only 1.9 percentage points.[4] In contrast, the models had their worst year in 2000. Although each model correctly predicted Al Gore to win the popular

[2] The six models were the models by Abramowitz (2012), Campbell (2012), Erikson and Wlezien (2012a), Holbrook (2012), Lewis-Beck and Tien (2012), and Norpoth and Bednarczuk (2012).

[3] Most forecasts were derived from the special issues of *American Politics Research*, 24(4) and *PS: Political Science & Politics*, 34(1), 37(4), 41(4), and 45(4). The forecasts from Ray Fair's model were obtained from his website fairmodel.econ.yale.edu.

[4] The average error is the error that one can expect if one would randomly pick one of the eight models.

Table 1
Ex ante forecasts and corresponding errors of eight political economy models and the issues and Leaders model (1996–2012).

Election result	1996		2000		2004		2008		2012		
	54.7		50.3		51.2		46.3		52.0		
	FC	AE	FC	AE	FC	AE	FC	AE	FC	AE	MAE
Benchmark models		4.0		0.6		3.1		5.5		1.4	
Wlezien & Erikson	56.0	1.3	55.2	4.9	**51.7**	**0.5**	47.8	1.5	52.6	0.6	1.8
Abramowitz	56.8	2.1	53.2	2.9	53.7	2.5	**45.7**	**0.6**	50.6	1.4	1.9
Lewis-Beck & Tien	**54.8**	**0.1**	55.4	5.1	*49.9*	1.3	49.9	3.6	*48.2*	*3.8*	2.8
Fair	51.2	3.6	**50.8**	**0.5**	57.5	6.2	48.5	2.2	*49.5*	*2.5*	3.0
Campbell	58.1	3.4	52.8	2.5	53.8	2.6	*52.7*	6.4	**52.0**	**0.0**	3.0
Norpoth	57.1	2.4	55.0	4.7	54.7	3.5	49.9	3.6	53.2	1.2	3.1
Holbrook	57.2	2.5	60.0	9.7	54.5	3.3	44.3	2.0	*47.9*	*4.1*	4.3
Lockerbie	57.6	2.8	60.3	10.0	57.6	6.4	41.8	4.5	53.8	1.8	5.1
Average forecast (mean of individual forecasts)	56.1	1.4	55.3	5.1	54.2	2.9	47.6	1.3	51.0	1.0	2.3
Average error (mean of individual errors)		2.3		5.1		3.3		3.0		1.9	3.1
Issues and leaders model (quasi ex ante)											
Average of 90 to 60 days prior to election day	50.7	4.0	50.8	0.6	54.3	3.1	*51.8*	*5.5*	53.4	1.4	2.9
Election Eve	57.2	2.4	51.0	0.8	52.6	1.3	45.8	0.5	51.3	0.7	1.1

Bold: Most accurate model in election year.
Italics: Model predicted the wrong election winner.

vote, the average error was at its highest value (5.1 percentage points). Across all five elections, the average error was 3.1 percentage points. In comparison, a naïve forecast of predicting that the votes are split equally among the two major parties (i.e., 50%) in each of the past five elections would have yielded an error of 2.4 percentage points, which is 24% lower than the average error of the forecasting models.[5]

There is no clear pattern of which model is most accurate. In each of the five elections, a different model ranked first. Across all five elections, the model by Erikson and Wlezien (2012a) performed best, closely followed by Abramowitz (2012).[6] Of course, combining forecasts improves accuracy (Graefe et al., 2013). The simple average of the eight models' forecasts yielded a MAE of 2.3 percentage points, which is 25% lower than the average error.

2.2. Limitations

To be able to contribute to the substantive literature in election forecasting, it is necessary to understand the limitations of existing models, which have been acknowledged by observers as well as the model forecasters themselves.

2.2.1. Retrospective voting

Many models assume that voting is retrospective. This assumption is supported by a large body of literature that demonstrates the importance of voter evaluations of the incumbent's past performance (e.g., Fiorina, 1981). However, several studies have shown that voters are also prospective in their evaluations of candidates (e.g., Miller and Wattenberg, 1985). Voters have different expectations of their personal, or the nation's, economic future were either candidate to win, and vote for the one under whom they expect to be better off. Prospective evaluations might be even more important than retrospective ones, as people might be more concerned with their future than with their past.

Most extant forecasting models lack an explicitly prospective component. An exception is Lockerbie (2012), who uses a question from the Index of Consumer Sentiment that asks people whether they think they will be better off financially, worse off, or about the same, in a year from now. While this is clearly a prospective measure, it does not directly link the perceived economic conditions to the responsibility of the government.[7] Others incorporate trial-heat polls, which can be expected to also capture prospective evaluations of candidate performance (Erikson and Wlezien, 2012a; Campbell, 2012).

Probably the main reason why many models focus solely on retrospective measures of the state of the economy (such as GDP growth) or the general performance of the government (such as the incumbent's popularity) is that these figures are easy to obtain, especially for historical elections. In addition, this decision is backed by the reasonable assumption that any prospective evaluation is affected by retrospective evaluations. If the economy has been doing well, voters might take this as a positive sign about their future well-being under the same government. That said, it appears promising to develop forecasting models that incorporate prospective measures.

2.2.2. Incumbent centricity

Due to their retrospective nature, many established models imply that vote choice is based on evaluations of

[5] Of course, such a naïve forecast is useless if one is interested in who will win.

[6] Although probably most important, accuracy is not the only criteria for assessing the quality of a forecasting model. Lewis-Beck (2005) provides guidance for how to evaluate forecasting models across four dimensions: accuracy, reproducibility, parsimony, and lead time.

[7] As Lockerbie (2000) points out, the missing connection between the government's actions and the economy might be a problem as this is an important component in studies of voting behavior.

the incumbent's performance. Since most models include the incumbent popularity measure, voters are essentially assumed to ignore the candidate of the challenging party when deciding for whom to vote. This assumption might be reasonable when the incumbent is running. But it is harder to justify in open-seat elections, in which people have been found to vote less retrospectively (e.g., Nadeau and Lewis-Beck, 2001; Miller and Wattenberg, 1985). Campbell (2008) shows that the incumbent popularity measure explains only 21% of the vote variance in open seat elections, compared to 67% in races with the incumbent running. Similarly, Holbrook (2010) finds that the impact of the retrospective variables used in his model (i.e., personal finances and incumbent popularity) is larger in incumbent races than in open-seat elections.

2.2.3. Measurement error

The state of the economy is difficult to measure. Often, there is a large variance between the initial and the revised estimate. For example, on January 30, 2009, the *Bureau of Economic Analysis* at the *U.S. Department of Commerce* initially estimated a real GDP decrease of 3.8 percent for the fourth quarter of 2008. One month later, the figure was revised to 6.2 percent, and, at the time of writing, the latest estimate showed a decrease of 8.9 percent. Revisions of this size are not exceptional. Runkle (1998) analyzed deviations between initial and revised estimates of quarterly GDP growth from 1961 to 1996. Revisions were common. The figures revealed upward revisions by as much as 7.5 percentage points and downward revisions by as much as 6.2 percentage points.

It is clear that such measurement errors can have a large impact on the accuracy of forecasting models. As noted by Holbrook (1996, 509), "forecasting models that rely on second- or third-quarter economic data may not be able to forecast the election at all, at least not with reliable data."

2.2.4. Perceptions of the economy and political context

Models that include structural economic variables such as GDP growth assume that voters can accurately observe changes in the state of the economy and can infer how these changes affect their future well-being. This is a challenging assumption for several reasons. Initial estimates of economic figures often vary widely from actual figures (see above), the media might not always accurately inform the public about the state of the economy (Goidel and Langley, 1995; Hetherington, 1996), and most people are badly informed about economic conditions (Holbrook and Garand, 1996).

In addition, the political interpretation of objective economic measures may vary over time. For example, a GDP growth rate of three percent may appear prosperous in a sluggish economy, in which people's expectations are generally low. By comparison, the same growth rate may seem less impressive during a booming economy. Political economy models cannot account for the variances in the meaning of economic variables depending on the political context.

2.2.5. Non-economic issues

The economy is not the only issue of concern to voters. Depending on the context of a specific election, many other issues influence the vote decision and often voters consider them as more important than the state of the economy. In a cross-national study of 39 elections, Singer (2011) finds that economic issues were more important than other issues during recessions or volatile times. However, the economy was less in focus in times of other government crises, such as terrorist attacks. Lewis-Beck and Rice (1992, 29) summarize Gallup data from polls that ask voters to name the most important problem facing the country. In 29 of the 42 years (i.e., 69%) from 1948 to 1989, non-economic issues (in particular foreign policy concerns) made the top of the list.

As with measuring the state of the economy, estimating the impact of non-economic issues on the election outcome is difficult. The importance of issues varies within and between elections. New issues arise and others become irrelevant. In addition, the small number of observations that are usually available for election forecasting prevent forecasters from adding additional variables to their regression models. Forecasters are thus confined to using the broad measure of incumbent popularity as a shortcut. The underlying assumption is that this measure is a global indicator for the president's personality or his performance to handle issues. In other words, incumbent popularity is endogenous to the campaign, which might be the reason why the variable has been identified as the single best predictor for forecasting U.S. presidential elections (Lewis-Beck and Rice, 1992).

However, the incumbent popularity measure has its limitations. First, as discussed earlier, the measure is retrospective in nature and thus centered around the incumbent. Second, the measure does not explain the why. Why is it that an incumbent is unpopular? Is it because of his ability to handle the issues, his personality, a festering scandal, or some other factor? This is of course no concern if the sole purpose of the model is to forecast. However, models that are based on incumbent popularity cannot provide a decision aid to those involved in political campaigns (see Section 2.2.6). Third, in serving as a proxy for issue handling competence, incumbent popularity also includes the public's perceptions of how the president is handling the economy. Ostrom and Simon (1985) found that incumbent performance is a function of both economic and non-economic factors. After showing that GNP growth is correlated with incumbent performance ($r = 0.48$), Lewis-Beck and Rice (1992, 46) note that "ideally, we would like to take the strictly economic component out of the popularity measure, thus leaving an altered measure of popularity that varied only with noneconomic issues".[8]

2.2.6. Decision-making implications

None of the established models incorporates variables that measure the quality of campaigns. This is not to say that campaigns do not matter. Most model forecasters emphasize their importance, since campaigns inform

[8] An alternative to using incumbent popularity is to create an index of non-economic issues. Although not differentiating between economic and non-economic issues, Graefe and Armstrong (2012) use the index method to simply count the number of issues for which voters favor each candidate. Then, they use the incumbent's final score as the single predictor variable in a linear regression model.

voters about the candidates' policy positions and thus "enlighten" them to their true preferences (Gelman and King, 1993). To some extent, campaigns are assumed to assure that election forecasting models work (Erikson and Wlezien, 2012b). Since the state of the economy is an important issue in most elections, the campaign directs voters' attention to economic issues, which are measured in terms of other economic indicators such as GDP growth.

Even if campaign variables might not be necessary to accurately forecast election winners, there is a downside to foregoing them. There is not much that candidates, parties, and campaign strategists can learn from political economy models other than that incumbents benefit if the economy is doing well, and pay the cost in votes if the economy is doing poorly. Political economy models cannot provide advice on questions such as who to nominate, which issues to emphasize, or which policies to pursue.[9]

3. The Issues and Leaders model

In an effort to address some of these limitations, the present study departs from the traditional work on political economy models and develops a model that is based on a different theory and different data.

3.1. Voting theory and model specification

Three leading factors are known to shape the vote decision in U.S. presidential elections: party identification, issues, and candidates (Asher, 1992, 200). This theory of voting has emerged from a vast body of literature on individual voting behavior, most prominently *The American Voter* by Campbell et al. (1960). Party identification, issues, and candidate evaluations are also the three principal explanatory variables in the valence politics model (Clarke et al., 2011). A generic vote equation can be formulated as:

$$Vote = f(issues, candidates, party\ identification)$$

This is not the first study that aims at developing a forecasting model based on this theory. Lewis-Beck and Rice (1992, 51–55) extended their political economy model, which used GNP growth and incumbent popularity, by two variables to account for party identification and candidate appeal. Party identification was measured as the performance of the incumbent party in midterm House elections. The performance of the incumbent in the primaries was used as a measure of candidate appeal. While the model fit existing data well, it lasted only one election; it was abandoned after it failed to predict George H. W. Bush's defeat in 1992. Lewis-Beck and Tien (1996) argued that the model suffered from specification error as it included irrelevant variables.

3.1.1. Issues

Voters favor candidates that share their views on important issues. Campbell et al. (1960, 170) proposed three simple but necessary conditions for an issue to influence vote choice: (1) the voter is aware of the issue, (2) the issue is of some importance to him, and (3) he expects one party to do a better job in handling the issue than the other parties. Only if these conditions are met, is an issue said to have an impact on vote choice that goes beyond party identification.

In an attempt to meet these conditions, results from two types of polls were combined to obtain how voters perceive the candidates' relative issue-handling competence.

Issue-salience polls. The string ["most important problem" OR "most important issue"] was used to search all Gallup polls stored in the *iPoll databank* of the *Roper Center for Public Opinion Research*.[10] This resulted in a total of 270 relevant polls for the eleven elections from 1972 to 2012. Each issue was assigned to one of three categories: economic, foreign, and other.[11] For each poll, the percentage of issues named per category was calculated.[12] The result is the issue salience score $S_{t,c}$ per category c at day t. If no new poll was released on a certain day, the value from the previous day was used.

Issue-handling polls. The string "[Republican candidate] AND [Democratic candidate] AND (issue OR problem)" was used to search the *iPoll databank* of the *Roper Center for Public Opinion Research* for polls on the relative issue-handling competence of the candidates. This resulted in 5671 questions for the eleven elections from 1972 to 2012, in which voters were asked to assess the candidates' relative issue-handling competence. As with issue importance, each issue was assigned to one of three categories: economic, foreign, and other. For each issue category, the two-party voter support for the candidate of the incumbent party was calculated across all issues in that category. If more than one poll was released on the same day, the average of these polls was used for that day. The resulting score is the incumbent party's candidate issue handling competence score $C_{t,c}$ for category c at day t.

Simple exponential smoothing was used to combine issue handling competence scores over time in a particular election year. Exponential smoothing is a common procedure in forecasting for extrapolating time-series data. The underlying idea is to weight the most recent data most heavily; it can be formulated as:

$$\overline{C}_{t,c} = \alpha C_{t,c} + (1-\alpha)\overline{C}_{t-1,c},$$

where $C_{t,c}$ represents the latest issue handling competence score for category c at time t, and $\overline{C}_{t-1,c}$ represents the smoothed average of the issue competence series for category c at $t-1$, which was calculated the day the most recent poll was released. The factor α determines how much weight to assign to the most recent issue handling

[9] An exception is the *fiscal model*, which posits that incumbents who restrain the growth of spending regularly retain the White House while those who do not tend to lose it (Cuzán and Bundrick, 2008).

[10] All data analyzed in the present study are available upon request.

[11] Economic issues include issues such as the state of the economy, jobs, or trade. Foreign issues include issues such as foreign policy, Iraq, or terrorism. Other issues include issues such as health care, social security, or abortion. Appendix I in the supporting online material shows the full classification of issues to categories.

[12] All cases in which less than 1% of respondents mentioned a particular issue, or in which people did not provide an answer, were excluded.

competence score: the higher the factor, the heavier the weight. The Issues and Leaders model uses an α of 0.7, which means that 70% of the new average come from the latest issue handling competence score, and the other 30% come from the previous average. Thereby, the weight assigned to previous issue salience scores drops of geometrically. If no new poll was released on a certain day, the smoothed average from the previous day was used. The smoothed issue handling competence scores at day t for category c are referred to as $\overline{C_{t,c}}$.

This procedure of averaging and smoothing polls was expected to reduce measurement error and thus to increase accuracy as it moderates the impact of single polls.

Issue score calculation. For each day, the weighted averages of the daily scores of issue-salience and issue-handling competence were calculated across the three categories. The result is the issues score I_t used in the vote equation of the model:

$$I_i = \sum_c S_{t,c}\overline{C_{t,c}}$$

Table 2 shows the number of polls used and the resulting issue scores for the candidate of the incumbent party, calculated on Election Eve for each of the eleven presidential elections (1972–2012). In each of the eleven elections, the final issue score on Election Eve correctly predicted the popular vote winner.[13]

3.1.2. Candidates

While the importance of issues on vote choice has varied across elections, candidate evaluations have always been an important factor for vote choice. Some researchers would argue that elections are choices between candidates and that candidate evaluations influence party identification and perceived issue-handling competence (e.g., Asher, 1992). Miller et al. (1986) found that voters focus predominantly on candidates' personality traits rather than on issues or party affiliation. The authors focused on five categories of candidate characteristics: competence, integrity, reliability, charisma, and personal qualities. Bartels (2002) analyzed the impact of candidates' personalities on the outcomes of U.S. presidential elections. Across the six elections from 1980 to 2000, he estimated that the average net effect of candidate traits on the vote was about 1.6 percentage points.

One factor that has often been studied along with candidate evaluations is leadership. In analyzing the impact of several personality traits on candidate evaluations for the three presidential elections in 1984, 1988, and 1992, Funk (1999) found leadership quality to be an important factor. Bartels (2002) found that, out of five personality traits, leadership had the second strongest influence on individual vote choice. Pillai and Williams (1998) identified positive effects of leadership perceptions of candidates on both intent to vote and voting behavior. These effects remained stable after accounting for the influence of party identification. Finally, leadership evaluations are a core variable in the valence politics model (Clarke et al., 2011).

Therefore, voters' perceptions of candidates' leadership quality were used as a variable in the model. The string "[Republican candidate] AND [Democratic candidate] AND leader" was used to search the *iPoll databank* of the *Roper Center for Public Opinion Research* for polls that reveal information on the relative leadership quality of the candidates. This resulted in a total of 158 relevant polls from 1972 to 2012.[14] For the three elections in 1972, 1976, and 1992, no leadership poll was released until 71, 37, and 8 days prior to Election Day. In these cases, it was assumed that the two candidates do not differ in their perceived leadership skills. That is, the incumbent was assigned a leadership score of 50% until the publication of the first poll that year. For each poll, the two-party share of voters that favored the candidate of the incumbent party was calculated. If more than one poll was released on the same day, the average of these polls was used for that day. As with issue polls, simple exponential smoothing was used to combine polls over time in a particular election year ($\alpha = 0.7$). If no new poll was released on a certain day, the smoothed average from the previous day was used. The result is incumbent party's candidate leadership score L_t at day t.

Table 2 shows the number of polls used and the resulting leadership scores for the candidate of the incumbent party, calculated on Election Eve of each of the eleven elections from 1972 to 2012. The leadership score correctly predicts the popular vote winner in eight of the eleven elections. It was wrong in 1976 and 1992, when the incumbent presidents Gerald Ford and George H. W. Bush were perceived as stronger leaders than the young challengers Jimmy Carter and Bill Clinton. In 2000, the closest election in the sample, there were no differences in the

[13] The issues score differs in several ways from the "issue index" developed by Graefe and Armstrong (2012). For each issue, their "issue index" assigns a score of 1 to the candidate that voters expect to better handle the issue. The candidate with the higher overall score is then predicted to win the election. The "issue-index" has been criticized as it considers all issues as equally important and does not account for the magnitude of voter support on any one issue. That is, the index assigns the same weight to issues such as the war in Iraq or smog in American cities. Also, each issue's impact on the vote is the same, regardless whether a candidate is favored by two (51 vs. 49) or twenty percentage points (60 vs. 40). In including issue-salience polls, the issues measure developed in the present study accounts for the relative importance of issues within and across elections, and captures the magnitude of voter support on each issue. This procedure leads to substantial gains in accuracy. A simple linear regression of the incumbent's "issue index" score, published in Graefe and Armstrong (2012), on the actual two-party vote shares over the ten elections from 1972 to 2008 yielded in-sample forecasts that missed the election results on average by 2.8 percentage points. By comparison, using the issue score developed in the present study as the explanatory variable, the average error of the in-sample forecasts was 2.0 percentage points. This refers to an error reduction of 28%.

[14] For the 1972 election, no leadership polls were available at *iPoll*. In this case, results from a *Newsweek* poll, conducted at August 28 of that election year, were used. The poll asked respondents to rate Nixon and McGovern on several personality traits. The present study used people's ratings on the trait "strong, forceful" to determine the candidates' relative leadership scores. The poll results are reported in Asher (1992, 162).

Table 2
No. of polls, issues and leadership scores, and in-sample forecasts calculated on election eve.

Election year	Issue-salience				Issue-handling competence							Issues score	Leadership quality		Popular two-party vote share		Abs. error
	No.	% of issues mentioned as most important per category			No. of poll questions per issue category				Incumbent's issue handling score per issue category				No.	Incumbent's leadership score			
		Econ	Foreign	Other	No.	Econ	Foreign	Other	Econ	Foreign	Other				FC	Act.	
1972	17	28%	35%	37%	43	17	4	22	53%	66%	63%	62%	1	67%	60.6	61.8	1.2
1976	16	67%	9%	24%	94	33	24	37	47%	60%	40%	47%	4	54%[a]	49.3	49.0	0.3
1980	20	71%	14%	15%	81	45	18	18	37%	50%	61%	42%	5	43%	43.8	44.8	1.1
1984	19	34%	35%	31%	403	170	108	125	69%	55%	40%	55%	9	71%	58.9	59.1	0.3
1988	10	54%	17%	29%	392	153	120	119	55%	62%	56%	56%	4	51%	53.3	53.8	0.6
1992	21	54%	6%	40%	477	186	66	225	40%	68%	36%	40%	1	57%[a]	46.9	46.4	0.5
1996	14	35%	4%	61%	637	216	85	336	60%	54%	60%	60%	4	54%	56.0	54.7	1.3
2000	12	18%	5%	78%	813	200	67	546	50%	49%	53%	53%	23	50%	50.9	50.3	0.6
2004	42	30%	36%	34%	1340	399	346	595	48%	57%	48%	51%	48	57%	52.5	51.2	1.3
2008	50	63%	13%	24%	853	265	269	319	43%	53%	43%	44%	33	47%	46.0	46.3	0.3
2012	49	60%	5%	35%	538	248	85	205	49%	55%	57%	52%	26	52%	51.3	52.0	0.6
Total/avg.	**270**	**47%**	**16%**	**37%**	**5671**	**1932**	**1192**	**2547**					**158**				**0.7**

[a] Leadership score pointed to wrong election winner.

perceived leadership qualities of George W. Bush and Al Gore.

3.1.3. Party identification

Party identification is the psychological attachment (or loyalty) to a political party. This measure plays a central role in studies of U.S. presidential elections and is commonly regarded as a long-term, stable, and powerful predictor of individual vote choice (Asher, 1992; Bartels, 2000). In addition, party identification has been found to strongly influence issue and candidate evaluations.

According to the *theory of issue ownership* (Petrocik, 1996), a party "owns" an issue if the public consistently perceives the party to be better at handling the issue. Democrats have an advantage on issues related to social welfare and intergroup relations, whereas voters tend to favor Republicans on issues associated with taxes, spending, and the size of government (Petrocik et al., 2003). Issues that are not tied to party constituency are referred to as performance issues. Evaluations of performance issues are retrospective as they depend on the record of the incumbent. Thus, performance issues have an impact on vote choice that goes beyond party identification. For example, in times of high unemployment, challengers can gain performance-based ownership of economic issues, since the weak economy demonstrates the incumbent's incapability to handle the job.

In studying voters' perceptions of the personalities of the major candidates for the six U.S. presidential elections from 1980 to 2000, Bartels (2002) found that candidate evaluations are strongly influenced by party identification. Voters tend to evaluate the personality traits of their party's candidate more positively, and assign more negative rating to the candidate of the opposing party.

Thus, the predictor variables used already capture part of the effect of party identification on vote choice. What remains are voters who do not pay attention to politics and thus would never change their party identification. These people will vote for the candidate of the party they feel attached to, regardless of the candidate's personality or issue positions (Lewis-Beck et al., 2008, 121). It is therefore assumed that the share of the incumbent's vote that is directly linked to party identification is captured by the intercept of the vote equation of a multiple linear regression model.[15]

3.2. Model specification

The specification of the model developed in the present study, hereafter referred to as the "Issues and Leaders" model, reads as:

$$V_t = P + bI_t + cL_t$$

where I_t the represents the issues score and L_t the leadership score, measured t days before Election Day. The intercept P reflects party identification. The dependent variable V_t refers to the incumbent's actual share of the two-party popular vote.[16]

3.3. Model estimation and fit

The forecast starting point began 100 days prior to Election Day and was moved forward one day at a time until Election Eve. The vote equation was estimated for each of the 100 days in the forecast horizon across the eleven elections from 1972 to 2012. That is, the resulting

[15] While this might be a strong assumption, the idea that party identification has only a limited effect on the vote forecast seems reasonable, as there is relatively little variance in party identification from election to election. In contrast, issue evaluations fluctuate greatly, and thus can swing more votes at the aggregate level. This procedure also avoids potential problems associated with the long-term stability of party identification and multicollinearity with the other predictor variables, both of which are factors that limit the performance of regression analysis.

[16] The use of the incumbent two-party vote-shares as the dependent variable is common in election forecasting. The underlying assumption is that independent or third party candidates draw support equally from the two major parties (Campbell and Garand, 2000).

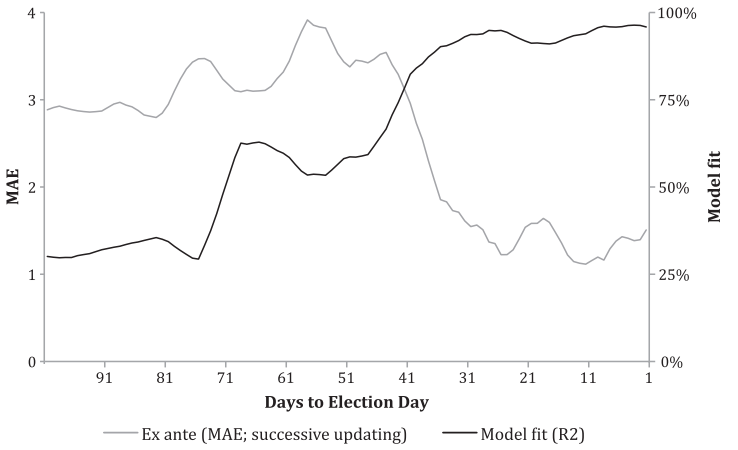

Fig. 1. R^2 (in-sample, 1972–2012) and mean absolute error (ex ante, 1996–2012) over the course of the campaign.

vote equation changes whenever new polls become available in an election year. Needless to say, with only few elections to analyze, any statistical results remain tentative. On the first day of the forecast horizon (i.e., day 100 before Election Day, which is around the end of July), the model equation reads as:

$$V_{100} = \underset{(1.8)}{26.5} + \underset{(1.1)}{27.6}\, I_{100} + \underset{(1.5)}{23.2}\, L_{100} \cdot \qquad R^2 = .30;\ SSE = 5.0 \quad (t - values\ in\ parentheses)$$

That is, the model predicts the incumbent to start out with 26.5% of the two-party vote, which is the share of voters that decide solely based on party identification. In addition, the incumbent can gain votes depending on his perceived issue-handling competence and leadership quality. If both candidates are perceived as equal (i.e., issues = candidates = 50%), the model predicts the incumbent to gain 51.9% of the vote. An increase in his issue-handling competence of 10 percentage points would increase the incumbent's vote-share by 2.8 percentage points. An increase in leadership quality of 10 percentage points would increase his vote-share by 2.3 percentage points.

On the last day in the forecast horizon (Election Eve), the model equation reads as:

$$V_1 = \underset{(3.9)}{9.6} + \underset{(9.9)}{49.6}\, I_1 + \underset{(7.0)}{30.7}\, L_1 \cdot \qquad R^2 = .97;\ SSE = 1.0 \quad (t - values\ in\ parentheses)$$

The intercept is almost 17 percentage points lower than in the previous equation, which suggests that fewer people cast their vote based on party identification and nothing else. As the campaign develops, the importance of issues increases; the coefficient of the issues variable is more than 20 points higher. An increase in issue-handling competence on Election Eve by ten percentage points increases the incumbent's vote share by 5.0 percentage points. In comparison, the coefficient of the leadership variable remains more stable and increases by only 7.5 points. In addition, as shown with the black line in Fig. 1, the model's fit increases substantially over the course of the campaign.

3.4. Predictive performance

However, model fit is not necessarily related to forecast accuracy. The hardest accuracy test is how well the model forecasts prospectively (that is, for years not included in the estimation sample), and compared to benchmark forecasts. The bottom section of Table 1 reports the errors of quasi ex ante forecasts of the Issues and Leaders model for the five elections from 1996 to 2012. Since these predictions were not issued at the time of each particular election, they cannot be considered true "forecasts". However, these forecasts were calculated using only data that *would* have been available at the time and thus provide the most realistic estimate.[17] For instance, to predict the 2012 election, data on the ten elections from 1972 to 2008 were used, for the 2008 election, data on the nine elections from 1972 to 2004 were used, and so on. Thus, when predicting the 1996 elections, only six data points were available. This procedure of simulating ex ante forecasts, also known as 'successive updating' or 'step-ahead' method, is a standard practice for evaluating the accuracy of forecast models after the fact (Lewis-Beck, 2005).

To compare the model's accuracy to established models, it is necessary to define a certain lead time for when the forecasts are generated. Most models publish their forecasts around Labor Day, about eight to nine weeks prior to Election Day. In an effort to make the forecasts comparable, Table 1 shows the average forecasts of the Issues and Leaders model, calculated over the period from 90 to 60 days prior to Election Day. In addition, Table 1 shows the model's Election Eve forecast.[18]

Across all five elections, the early September forecasts of the Issues and Leader model yielded an MAE of 2.9 percentage points, which makes it rank fourth in terms of

[17] An exception are the 2012 forecasts, which were published prior to the election at PollyVote.com.

[18] To calculate an ex ante forecast, say 70 days prior to Election Day, one would use only historical polls conducted prior to 70 days before Election Day in each election year. The Election Eve forecast would use all available polls from all prior elections.

accuracy after Erikson and Wlezien (2012a), Abramowitz (2012), and Lewis-Beck and Tien (2012). In addition, the model's error is lower than the error that one would have achieved if one had randomly picked a model (3.1 percentage points). This was achieved despite the model's poor performance in the 1996 election, for which only six elections (and generally fewer polls for these elections) were available to calibrate the model.[19]

Such one-off comparisons conceal an important advantage of the Issues and Leaders model, which is the ability to track campaigns. The model fit suggested that the accuracy of the model increases over the course of the campaign. This is confirmed by the grey line in Fig. 1, which reflects the MAE of the ex ante forecasts from 1996 to 2012, calculated as one-week moving averages.

Across the past five elections, the model's Election Eve forecasts missed the election outcome by, on average, 1.1 percentage points (cf. Table 1). By comparison, the corresponding error of the final Gallup pre-election poll was 30% higher, at 1.6 percentage points. That is, the Issues and Leaders model provided better forecasts than directly asking people for whom they intend to vote.

4. Discussion

The Issues and Leaders model departs from the theory underlying most traditional models, according to which an election is a referendum on the incumbent's performance. In contrast, the model is built on a vast literature on individual voting behavior, which found that Americans elect their president based on three fundamental factors: party identification, issues, and candidates. In addition, the Issues and Leaders model differs from most established models in that it uses no economic indicators as predictor variables but relies solely on polling data.

In building on a different theoretical foundation and different data, the Issues and Leader model addresses some of the limitations of established models. In particular, the poll data included in the model (1) cover both retrospective and prospective aspects of voting, (2) evaluate the relative performance of candidates instead of being centered on the incumbent, (3) directly measure people's perceptions instead of taking, for example, the detour of using other indicators such as structural economic data, (4) directly measure non-economic issues instead of taking the shortcut of presidential approval ratings, and (5) account for the relative importance of issues as seen by voters across specific elections. For example, economic issues are likely to have more weight during recessions or times of poor economic performance, whereas during an international crisis or threats of national security, the importance of foreign issues will increase. Although the long-term forecasts of the Issues and Leaders model did not necessarily outperform established models, they provide different information and thus should contribute to the accuracy of a combined forecast (Graefe et al., 2013). Thus, the Issues and Leader model should be regarded as a supplement rather than an alternative to existing models when it comes making forecasts early in the election.

4.1. Issues and Leaders v. political economy models

Shortly before Election Day, the Issues and Leaders model provided highly accurate predictions, with Election Eve forecasts that outperformed the final Gallup pre-election poll. This suggests that the performance of the model increases as the election nears. The ability to update the forecast as new information on issues and candidates is gained is thus an advantage of the Issues and Leaders model.

The question that one might ask is to what extent the Issues and Leaders model encompasses information from other forecast models and, if so, how this changes over the course of the campaign? In order to test the extent to which one forecast encompasses information contained in another forecast, one can conduct the simple regression analysis (Chong and Hendry, 1986):

$$V = \alpha_1 \widehat{V}_1 + \alpha_2 \widehat{V}_2 + \varepsilon,$$

where V is the actual vote-share of the candidate of the incumbent party, $\widehat{V}_1$ and $\widehat{V}_2$ are the respective forecasts of models 1 and 2, and ε is the error term. The results of such an encompassing regression should be interpreted as follows: if the regression coefficients α_1 and α_2 are both different from zero, both models contain independent information. Now assume that α_1 is nonzero and α_2 is zero. In such a situation, both models contain information but the information in model 2 is completely contained in model 1 *and* model 1 contains further relevant information.

Fig. 2 shows the model coefficients resulting from these regressions when doing pair-wise comparisons of the in-sample forecasts of seven[20] of the eight established models listed in Table 1 and the Issues and Leaders model.[21] An encompassing regression was conducted for each of the 70 days prior to Election Day, across the eleven elections

[19] The limited number of observations and polls is detrimental to the performance of the Issues and Leaders model. The absence of polling data for elections before 1972 leaves only eleven elections to draw upon, which is problematic when calculating ex ante forecasts through successive updating. In addition, there are generally fewer polls for early elections, which limits the validity of the issues and leadership scores over the course of the campaign. For example, for the 1972 election, data from only a single leadership poll, conducted more than two months prior to Election Day, were available. In such a situation, it is impossible to incorporate changes in voter perception during the campaign. The performance and validity of the Issues and Leaders model should improve with more observations and more polling data.

[20] For the model by Norpoth and Bednarczuk (2012), no data were available.

[21] The in-sample forecasts were estimated based on all available data for each model. That is, in the case of the Issues and Leader model, the eleven elections from 1972 to 2012 were used. In the case of, for example, the Fair (2009) model, the 25 elections from 1916 to 2012 were used. It is important to note that the in-sample forecasts of the established models are based on replications of the latest model specifications and data that were used to forecast the 2012 election. Expect for the Fair model, for which the data is published at http://fairmodel.econ.yale.edu, all models are described in the special issue of *PS: Political Science & Politics* 45(4). That is, these forecasts cannot exactly replicate the models' forecasts for elections prior to 2012, since the model specifications and data may have changed over time.

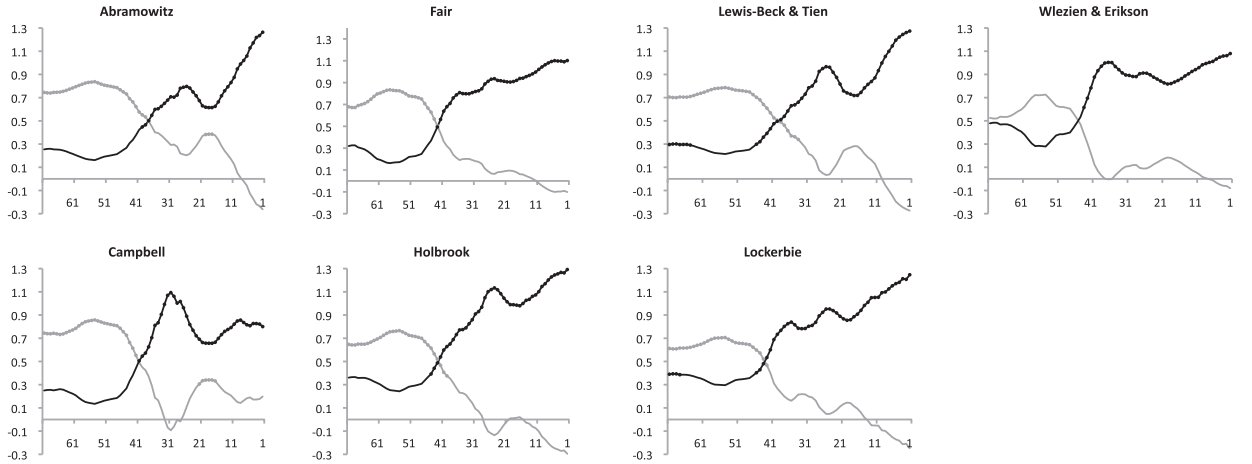

Fig. 2. Encompassing regression coefficients of the issues and Leaders model and seven benchmark models.

from 1972 to 2012.[22] For observants of statistical significance, dotted data points in all figures visualize coefficients that are twice as large as their standard error (i.e., the *t*-statistic).

The general pattern is similar for most comparisons. The established models dominate until about six weeks prior to Election Day. In most cases, they have a much larger weight in the encompassing regression than the Issues and Leaders model. This suggests that the Issues and Leaders model provides little or no unique information early in the campaign. Around six weeks prior Election Day, the picture reverses. In the last one and a half months prior to Election Day, the Issues and Leaders model contains the information embodied in most benchmark models (i.e., the pre-campaign fundamentals) as well as further relevant information (e.g., the specific context of each election).

4.2. Impact of campaigns

The increase in model fit and predictive accuracy towards Election Day suggests that information that becomes available during campaigns matters for the election outcome.

4.2.1. Relative influence of party identification, issues, and candidates over time

Fig. 3 shows the development of one-week moving averages of the model coefficients (i.e., issues, leadership, and party identification) for explaining the vote over the last 100 days prior to Election Day. In general, the influence of the party identification constant decreases towards Election Day, the importance of issues increases, and the weight of leadership remains relatively stable.

One possible explanation for this development is the nature of the three predictors. Party identification leads people to vote for their party's candidate. It can influence the vote decision directly or indirectly. People who are directly influenced by party identification ignore all other information such as issues and candidates when deciding for whom to vote. Thus, party identification should be particularly valuable as a long-term predictor before the start of the campaign, when little is known about the candidates, and even less about their stands on the issues. In such a situation, voters have little choice but to decide solely based on party identification. Candidate evaluations are a medium-term predictor, as voters possess much information about candidates before the start of the hot phase of the campaign. Voters know virtually everything about the incumbent, and the nomination process of the parties has revealed insights about the candidates' experience and personality. Therefore, it is unlikely that much new information on the candidates' leadership qualities will be revealed as the campaign evolves. In contrast, due to the initial focus on candidates, it may be more difficult for voters to learn about the issues early in the campaign. But, as the election nears, the campaign increasingly draws people's attention to the issues and allows voters to focus on substance. As a result, the importance of voter perceptions of candidates' issue-handling competence as a predictor of the election outcome increases towards the end of the campaign. Consequently, the influence of party identification on aggregate vote choice fades.

It is clear that the model's macro view does not allow for drawing causal inferences on why voters perceive the candidates as they do. It might be that a candidate is able to convince some voters of his ability to better handle a certain issue (or to be a better leader) than his opponent through successful campaigning. At the same time, another group of voters might solely be influenced by partisanship. Such voters would simply align their perceptions of issues and candidates with their party identification. The aggregate perceptions then arise from a mix of different

[22] The forecasts of the established models are one-off predictions and thus did not change in the encompassing regression. In contrast, the forecasts of the Issues and Leader model were updated daily.

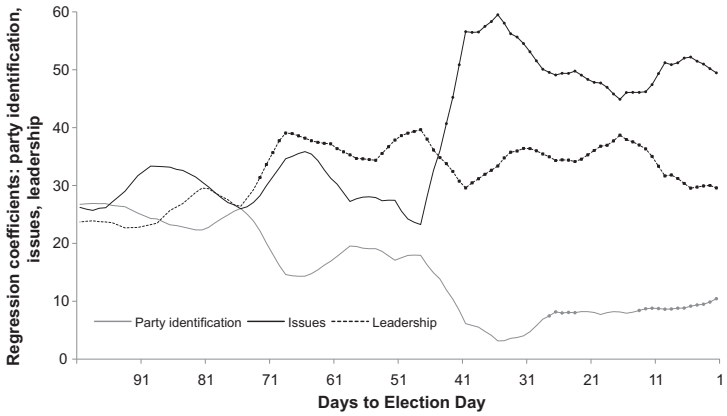

Fig. 3. Model coefficients over the course of the campaign.

strategies that depend on various factors such as the strength of partisanship or the type of issue (e.g., whether an issue is linked to party constituency or performance, see Section 4.4.1). The Issues and Leaders model cannot provide insight into what drives voters' perceptions. But it does demonstrate that these perceptions matter for the election outcome, no matter how they are created. As a result, the model can provide insights into what happens over the course of the campaign.

4.2.2. Conventions and debates

There are two key events that achieve a particular high level of attention in a campaign: the party conventions and the presidential debates. The conventions are usually held shortly before or after Labor Day and the presidential debates start around six weeks prior to the Election. The massive media coverage of these events is accompanied by a large number of released polls.

As shown in Fig. 1, model fit and predictive performance of the Issues and Leaders model somewhat decreases around the time of the conventions. A possible explanation for this result is the bump that candidates usually get from their conventions. Conventions tend to unite the party, create favorable media coverage, and thus increase people's enthusiasm for their party and candidate (Campbell et al., 1992). As a result, polls might have difficulties to accurately measure issue perceptions around conventions, since people might be strongly influenced by party identification. To some extent, the model reflects this. Fig. 3 reveals a small convention bump; the party identification constant and the leadership coefficient increase, whereas the issues coefficient decreases during that time period.

The performance of the model then improves with a sharp increase in the influence of issues, starting around the time when the presidential debates usually begin (cf. Fig. 3). Thereafter, the influence of issues decreases somewhat but remains at a high level. Findings from the meta-analysis by Benoit et al. (2003) help to explain the sudden increase in the importance of issues. Their results show that watching debates increased people's knowledge and salience of issues, influenced candidate evaluations of issue-handling competence, and impacted agenda-setting (i.e., the issues that voters regard as important). By comparison, debates had only small effects on evaluations of candidates' leadership quality. The Issues and Leaders model supports these findings. The increase in the weight of the issues coefficient suggests that debates can alter public opinion on issues. On the contrary, the leadership coefficient remains relatively stable, which conforms to the finding that debates have little effect on leadership perceptions.

4.2.3. Campaign effects over time

In addition to analyzing how the model coefficients change over the course of the campaign, one might be interested in how the coefficients changed across past elections. Fig. 4 shows how the model coefficients developed across the eight elections from 1984 to 2012. These coefficients were estimated using data up to and including each particular election. For example, when estimating the coefficients for the 1984 election, only the four observations from 1972 to 1984 were used. When estimating the coefficients for the 2000 election, data from 1972 to 2000 were used, and so on.

The model coefficients are remarkably robust, even for early elections, when estimated based on very limited data.[23] The importance of the party identification constant remained basically unchanged over time. The only change that can be observed is a slight increase in the importance of candidate perceptions, at the cost of issues, from 1984 to 1996. Since then, all three coefficients are stable.

These results suggest that the model is robust to the specifics of certain elections. Or, to put it differently, the issue and leadership variables do a good job in capturing the electoral context. Even a major crisis such as the financial meltdown two months before the 2008 election does not seem to impact the model. This conforms to the

[23] Note that the 1984 election is the first election that can be estimated without using all degrees of freedom.

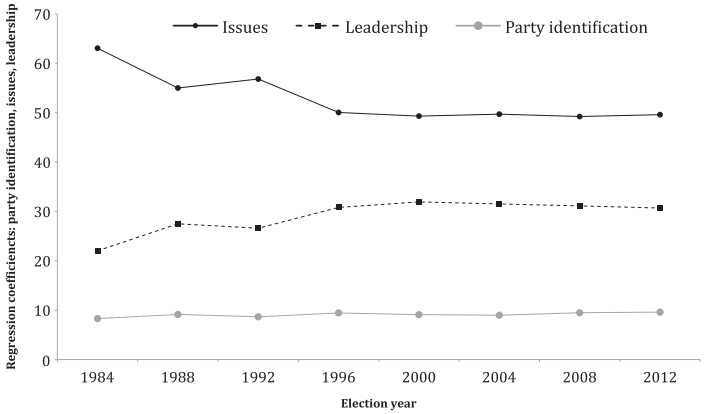

Fig. 4. Model coefficients across election years.

results of the encompassing regression, which showed that the model contains all of the pre-campaign information included the established model, as well as other relevant information. The party identification constant remains stable across all eight elections in the sample, which suggests that the election outcome is largely driven by people's perceptions of candidates and issues (which, again, might in part be driven by party identification and pre-campaign fundamentals). In addition, the model suggests that the relative importance of candidates over issues increased during the 1980s and into the mid-1990s, a finding that conforms to the literature on candidate-centered politics (Wattenberg, 1991).

4.3. Model validity

These explanations are, of course, speculations based on aggregated data and few observations. One should generally be careful with drawing definite conclusions from macro models such as the Issues and Leaders model. Future research should further investigate these and other questions using the Issues and Leader model along with micro-level data on the effects of campaigns on individual voting behavior.

Another possible constraint of the model's validity is its reliance on polling data. As with any measure of public opinion, voters' perceptions of issues and candidates are subject to measurement error associated with sample size, interviewer instructions, and the order and phrasing of questions, etc. In order to limit potential biases introduced by a single poll, the model therefore combines information from a large number of surveys (Graefe et al., 2013).

But there are good reasons to have some confidence in the results. First, the model is based on an established theory that emerged from a vast literature of individual voting behavior. Second, the Issues and Leaders model provides accurate forecasts. Early in the campaign, the model's accuracy is comparable to those from established models. As the election nears, accuracy increases; the model's Election Eve forecasts were more accurate than the final Gallup pre-election poll. Third, encompassing regression showed that, from the time of the presidential debates, the Issues and Leaders model includes the pre-campaign fundamentals covered by the established election forecasting models, as well as other relevant information such as the specific context of a particular election. Finally, the Issues and Leader provides empirical macro-level support for various findings from other studies using different data and a different approach. In particular, the model supports previous findings such as (i) issues gain importance as the election nears, (ii) conventions generate a bump in party identification, (iii) debates affect issue importance and issue (but not leadership) evaluations, and (iv) the importance of candidates has increased in the 1980s.

4.4. Decision-making implications

Established election forecasting models usually publish their forecasts before the start of the general election campaign. While a long lead time is a desirable feature of forecasting models (Lewis-Beck, 2005), these models cannot provide advice to campaign strategists and political observers.

The Issues and Leader model relies on public opinion of candidates' issue-handling competence and leadership quality. In recent elections, polls that reveal such information have become frequently available during the course of a campaign. The model can thus provide advice to those that are involved with, or observe, campaigns.

4.4.1. Implications for campaign strategists

The model suggests three levers for candidates to increase their share of the popular vote. First, candidates should aim at increasing their issue-handling reputation. The most straightforward way to achieve this is to gain ownership of an issue. That is, candidates should try to convince voters that they are better at solving a particular problem than their opponent. However, Petrocik (1996) suggests limited success of this strategy for issues that are linked to party constituency. The reason is that ownership for such issues rarely changes. However, the

strategy might be beneficial for performance issues, which are not tied to party constituency but depend on the context of a particular election. But gaining issue-ownership is not necessary to increase issue-handling reputation. For issues that favor the opponent, candidates can aim at reducing the perceived difference on issue-handling competence. For issues that favor themselves, candidates should try to further increase the difference with their opponent.

Second, the model implies that issues that are seen as more important by voters have a larger impact on the election outcome. Therefore, candidates should engage in agenda setting. That is, candidates should aim at directing public attention to issues for which voters favor them and should frame issues that favor the opponent as less important. Thereby, issues for which public opinion is one-sided are preferable. Agenda-setting also involves competition over media coverage, since the media plays an important role in influencing which issues are important to voters and how voters evaluate the issues (McCombs and Shaw, 1972; Hetherington, 1996).

Third, parties should support candidates that are likely to be perceived as strong leaders. Several factors can influence perceptions of leadership. This includes factors that are inherent to a candidate's biography (such as age, education, professional experience) and appearance (such as attractiveness, facial competence, height). Since most of these factors are difficult to manipulate during a campaign, parties are advised to take this into account when nominating candidates (Armstrong and Graefe, 2011). In addition to socio-demographic factors, meta-analyses have found a strong link between personality and leadership (Lord et al., 1986; Judge et al., 2002). Personality traits that are positively correlated with both leader emergence and performance are *extraversion* (e.g., sociability, assertiveness), *openness* (e.g., curious, imaginative), *agreeableness* (e.g., trustful, compassionate), and *conscientiousness* (e.g., dependability, self-confidence). In contrast, *neuroticism* (e.g., anxious, depressive) hurts leadership evaluations. For an overview of predictors of leadership see Antonakis (2011).

4.4.2. Implications for observers

Journalists and political commentators need to meet the demands of the news cycle, which asks for a constant flow of interesting stories and analysis. In this endeavor, they often select stories based on their level of newsworthiness (such as gaffes by candidates) rather than their relevance. In particular, journalists increasingly treat elections as horse-races and inform the public about who is ahead in the polls, without providing explanations for the relative performance of candidates (Patterson, 2005; Rosenstiel, 2005).

The Issues and Leaders model provides a tool for tracking campaigns. It can be used to assess the impact of campaign events on the public's perceptions of the candidates' issue-handling competence as well as their leadership quality. In addition, it can be used to assess the effect of such changes in public opinion on the predicted vote share. Therefore, the model is useful for political observers and journalists as well as researchers in the fields of communication studies and public opinion research.

5. Concluding remarks

The Issues and Leaders model is built on three major determinants of individual vote choice: party identification, issues, and candidates. The model uses public opinion data from polls that ask voters about the importance of issues, which candidate they think can better handle the issues, and which candidate is the stronger leader. For the past four elections, the model's ex ante forecasts, calculated three to two months prior to Election Day, were competitive with those from the best of eight political economy models. Model accuracy substantially improved over the course of the campaign, when the model captures information on the pre-campaign fundamentals as well as the specific electoral context. The Election Eve forecasts of the model were more accurate than the final Gallup pre-election poll.

The results suggest that information that becomes available during campaigns matter for the outcome of U.S. presidential elections. The direct influence of party identification was found to decrease over the course of the campaign, whereas issues gain importance, especially during the presidential debates. On Election Eve, issue evaluations are the most important factor for predicting the election result. The model has decision-making implications for campaign strategists. Candidates should engage in agenda setting and should try to increase their perceived issue-handling and leadership competence in order to gain votes.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.electstud.2013.04.003.

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