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TRIAL-HEAT FORECASTS OF THE PRESIDENTIAL VOTE

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This research examines Gallup poll trial-heat forecasts of the two-party presidential popular vote for the incumbent presidential party. First, several existing forecasting equations are updated and evaluated. Trial-heat results at six points throughout campaigns from 1948 to 1988 are then examined. These trial-heats are used in several ways to produce presidential vote forecasts: (a) in raw form as direct forecasts, (b) alone in regression estimated forecasts, and (c) in conjunction with economic growth in regression estimated forecasts. As Lewis-Beck and Rice found in 1985, the earliest and most accurate trial-heat forecasts are those using early September trial-heats and second-quarter real growth in the gross national product. These forecasts are also more accurate than forecasts based on previous models. The early September trial-heat/economy forecast equation has an average "within-sample" error of only ±1 percentage point (adjusted R^2 = .94, SEE = 1.5) and a mean "out-of-sample" error of ±1.1 percentage points. The early September trial-heat/economy equation correctly "predicted" the winning presidential candidate in ten of the eleven elections from 1948 to 1988, missing only in the near dead heat of 1960.

Once the exclusive province of pundits and pollsters, the arena of election forecasting has been entered by political scientists in recent years (Rosenstone 1983; Rice 1985, 1986-87).[1] This research extends that foray by systematically examining "trial-heat" poll responses commonly used by the public, politicians, and journalists for forecasting.

RETROSPECTIVE VOTING FORECASTS

With one exception, all recent forecasting models of the national presidential popular vote have been based exclusively on a

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retrospective voting model. This is reflected in the variables used in deriving the forecasts: the incumbent president's popularity (Sigelman 1979; Brody and Sigelman 1983; Lewis-Beck and Rice 1984; 15-16), economic conditions prior to the election (Hibbs 1982; Fair 1978, 1982, 1988; Karmin 1987), or both (Lewis-Beck and Rice 1984, 17). The supposition is that whether or not the current incumbent is seeking reelection, the public's overall evaluation of his performance is a precursor to its vote for him or his party's standard-bearer. Likewise, the public is supposed to hold the incumbent president and his party responsible for the state of the economy. If economic conditions are favorable, the public rewards the incumbent party. If not, the party is punished.

The presidential popularity forecasts with and without economic considerations are updated in Table 1. Our estimates indicate that the simple presidential approval-rating equation (Lewis-Beck and Rice 1984), using the May polls, accounts for only about half of the variance in the two-party vote in the eleven elections held between 1948 and 1988. Lewis-Beck and Rice (1984, 17), following Tufte's (1978) lead, supplemented the May ratings of presidential popularity with the real gross national product (GNP) growth rate per capita in the second quarter of the election year. The updated estimate of this equation indicates that it is a substantial improvement over the equation based solely on presidential approval ratings. The popularity/economy equation accounts for about 70% of the variance in the presidential vote and has an average absolute error of 2.5 percentage points.

Recently, Abramowitz (1988) added a third variable to the popularity/economy equation, a dummy variable for incumbent parties that had controlled the presidency for two or more consecutive terms. The rationale is that voters should be more inclined to feel that it is "time for a change" after eight years or more of the same party in the White House. The forecasting version of the Abramowitz equation, using data available before the election (pp. 846-47), fits the two-party presidential vote exceptionally well in elections held between 1948 and 1984 (adjusted $R^2 = .92$ and the average absolute error of 1.2). The update (equation 3 in Table 1) indicates that this equation remains very nearly as strong after including the 1988 election.[2]

TABLE 1

Updates of Retrospective-Based Presidential Vote Forecasting Equations, 1948-1988

	Equations		
Independent Variables	*1*	*2*	*3*
Constant	36.60	38.46	47.58
May presidential popularity	.32 (.10)	.25 (.08)	.12 (.05)
Second-quarter GNP change per capita	—	2.32 (.94)	3.01 (.56)
Incumbent party seeking more than second consecutive term	—	—	-6.06 (1.42)
R^2	.55	.74	.93
Adjusted R^2	.50	.68	.90
SEE	4.41	3.53	1.99

NOTE: $N = 11$. The dependent variable in each case is the incumbent party's share of the two-party popular presidential vote. Standard errors are in parentheses. Equation 1 is the Sigelman (1979) and Brody and Sigelman (1983) equation adapted to a forecasting equation by Lewis-Beck and Rice (1982, 1984). Equation 2 was first proposed by Lewis-Beck and Rice (1984). Equation 3 was developed by Abramowitz (1988).

While the retrospective forecasting equations remain quite strong with the addition of new elections, several problems can be anticipated. One potentially serious problem is that neither retrospective indicator explicitly measures reactions to the two candidates themselves. If the incumbent is not seeking reelection, there may be a large gap between public impressions of the incumbent and his party's nominee. Had several recent and close presidential nomination contests turned out differently, this problem would have been glaringly apparent. If Reagan had successfully wrested the Republican nomination away from Ford in 1976, would voters have rewarded or punished him for the successes or failures of Ford? Similarly, if Ted Kennedy had won the 1980 Democratic nomination, would voters have credited or blamed him for the record of Jimmy Carter? More to the point, would they have treated Reagan just as they had treated Ford and treated Kennedy just as they had treated Carter?

The retrospective indicators also fail to consider the candidate of the opposing party. Does the candidate of the opposing party make a difference? Perhaps not. However, candidates have different strengths, and while voters may look to the past for hard information, they are not entirely oblivious to the campaign and what the candidates have to say. As such, forecasting models might well benefit from including indicators of the public's comparative evaluations of the presidential candidates.

One equation that is not exclusively retrospective and includes comparative candidate evaluations was also developed by Lewis-Beck and Rice (Lewis-Beck 1985, 58). This equation combines the real GNP growth rate in the second quarter with the percentage favoring the incumbent party's presidential candidate in the Gallup poll's trial-heat question asked in early September. The equation fits the data extremely well for the nine elections held between 1948 and 1980 (R^2 = .94 and SEE = 2.15). It also was quite accurate in forecasting the 1984 election, missing Reagan's popular vote by only 1.3 percentage points (Lewis-Beck 1985, 58).

The strength of Lewis-Beck and Rice's trial-heat equation is both impressive and promising. It suggests that further progress in presidential election forecasting may be made by studying trial-heat forecasts more closely. That is our purpose in this article. We will thoroughly examine various formulations of trial-heat-based forecasts at different points in the campaign, both alone and with additional forecasting variables. The goal is the earliest, simplest, and most accurate presidential vote forecasting equation possible.

THE DATA AND VARIABLES

PRESIDENTIAL VOTE

The variable to be predicted is the incumbent presidential party's share of the national two-party popular vote. The incumbent party's presidential vote is examined, rather than the Democratic or Republican presidential vote, so that the incumbent's approval ratings and the effects of election-year economic

changes can be straightforwardly incorporated into the forecast equation. The national presidential vote data were obtained from *Guide to U.S. Elections* (Congressional Quarterly 1985) for the elections held between 1948 and 1984, and from the *Congressional Quarterly Weekly Report* for the 1988 election.

TRIAL-HEAT QUESTIONS

Trial-heat questions offer survey respondents before election day the same candidate choice that they will face at the polls. The following is a typically-worded Gallup trial-heat question:

> If the presidential election were being held today, would you vote for the Republican candidate (name) or the Democratic candidate (name)?

Unlike measures of the economy or presidential popularity, trial-heat measures offer an explicit choice between candidates. While trial-heat data are now available from several sources, we used the Gallup poll results since they have the longest continuous series of trial-heat surveys. Gallup has asked trial-heat questions since 1936 and at fairly regular intervals in campaigns since 1948 (American Institute of Public Opinion 1972, 1978; Gallup Poll 1981, 1985, 1989).

Several decisions were made in using the aggregated trial-heat responses. First, like the actual vote, the trial-heat percentage is the incumbent party's share of the two-party responses. "Undecideds" and those inclined to vote for a third-party candidate are, in effect, divided proportionately between the two major candidates. Second, since there has not been a consistent timing of the Gallup polls conducted in each campaign, different time periods were identified to select polls during the campaigns. The six time ranges used were June, late July, early September, late September, October, and November just prior to the election.[3]

ECONOMIC INDICATOR

The economic indicator is that used by Lewis-Beck and Rice (1984, 12): the real GNP growth rate in the second quarter, or nine

to six months before the election. Since we were interested in examining how actual before-the-fact forecasts and economic indicators are regularly revised after their initial release, we used the earliest, authoritative, unrevised publication of second-quarter real growth whenever possible. For elections since 1960, second-quarter real economic growth data were obtained in election years from August issues of the *Survey of Current Business* (U. S. Department of Commerce 1960, 1964, 1968, 1988). Before 1960, however, the *Survey of Current Business* did not publish quarterly GNP figures in constant dollars. Thus for the 1948, 1952, and 1956 elections, second-quarter economic growth rates (in constant dollars) were drawn from *The National Income and Products Accounts of the United States, 1929-1982* (U.S. Department of Commerce 1986).

TRIAL-HEATS AND THE PRESIDENTIAL VOTE

The examination of trial-heat forecasts is presented in three parts. First, unlike other forecasting indicators, trial-heats are designed to be directly interpretable as vote forecasts. Thus we examined how well trial-heat results throughout the campaign, taken literally, forecast the actual vote. Second, we examined how well trial-heat results fare when their forecasts are based on regression analysis rather than on simply a direct reading of the poll results. Finally, we considered a multivariate forecasting equation using trial-heats and the real GNP growth rate in the spring of the election year.

TRIAL-HEAT RESULTS AS LITERAL FORECASTS

Trial-heat polls have had a rather checkered forecasting history. The 1948 trial-heat polls, even as late as November, indicated that Dewey would defeat Truman. More recently, during the 1988 campaign, several different polls indicated that Dukakis held a commanding lead over Bush well into August (Hwang and Shelley 1989). Of course, both the Truman and the Bush cam-

paign went on to victory, contrary to any prediction that might have been made from a literal reading of these trial-heat results as forecasts.

The Truman and Bush cases graphically demonstrate the danger of interpreting raw trial-heat percentages as literal forecasts. While they obviously lend themselves easily to forecasting use, their track record suggests that they should not be taken strictly at face value, especially early in campaigns. Although the eventual winner led in the June trial-heat in eight of the eleven elections (missing in 1948, 1980, and 1988), the trial-heat "vote" missed the actual vote by more than 10 percentage points in four of the last eleven elections. The average absolute difference between the June trial-heat and actual vote was nearly 8 percentage points, a span of almost 16 percent points around the actual vote. Late-July trial-heats had only a slightly better track record, missing the actual vote by nearly 6 percentage points and correctly forecasting the winner in eight of the eleven elections (missing in 1948, 1960, and 1988).

The September measures were significantly more accurate. Both the early and the late September measures were typically within 4 percentage points of the actual vote (mean absolute errors of 3.9 and 3.6 points, respectively). The candidate ahead in early September went on to win the election in nine of the eleven cases and the late-September leader held the lead in all cases but one, that being Truman's come-from-behind defeat of Dewey.

Later trial-heats were still more accurate in their forecast but reflected diminishing returns. The average absolute difference between the October trial-heat and the vote was less than 3 percentage points (2.9), and the candidate leading in October held onto the lead in all but one case (1948). Surprisingly, the November lead was only slightly more accurate, a mean absolute error of 2.4 percentage points, and the November leader actually lost in two cases (1948 and 1976). The trend in the mean absolute errors at the six trial-heat points are charted in Figure 1 (the "r" points).

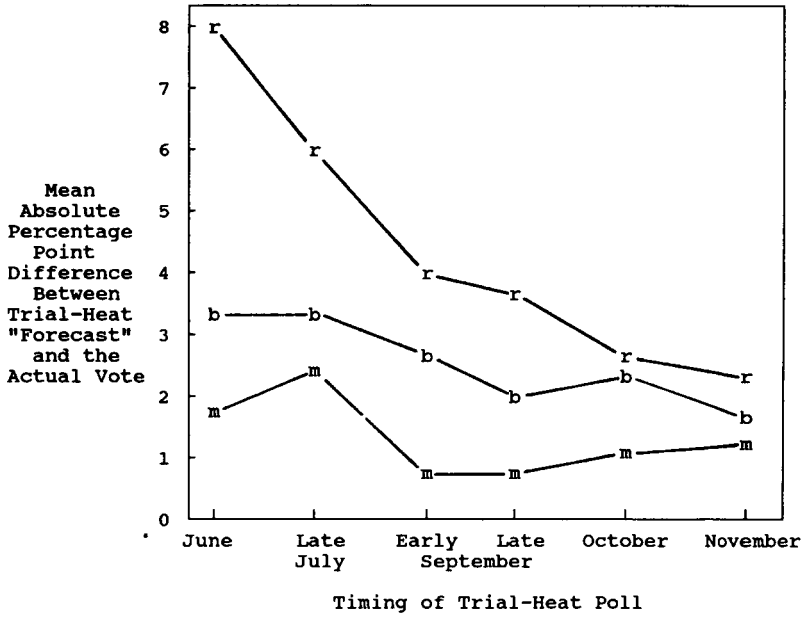

Figure 1: The Average Absolute Error of Trial-Heat "Forecasts" at Six Points in Campaigns, 1948-88

THE SIMPLE TRIAL-HEAT REGRESSION FORECAST

Trial-heats may be used to forecast the two-party vote more systematically through regression analysis. Table 2 presents the bivariate trial-heat regression results at the six different stages in the campaign. The mean absolute vote percentage errors of these regressions are also plotted in Figure 1 (the "b" points).

As a comparison of the average errors demonstrates, the forecasts based on simple trial-heat regressions were consistently more accurate than those taken directly from the raw trial-heat

TABLE 2

Trial-Heat and GNP Change Forecast Equations of the Incumbent Party's Share of the Two-Party Presidential Popular Vote, 1948-1988

	Trial-heat-only equation				*Trial-heat and GNP change equation*				
Timing of trial heat	*Constant*	*Trial-heat*	*Adjusted R^2*	*SEE*	*Constant*	*Trial-heat*	*GNP change*	*Adjusted R^2*	*SEE*
June	35.36	.34 (.12)	.41	4.76	34.67	.31 (.07)	2.98 (.71)	.80	2.81
Late July	31.39	.43 (.12)	.56	4.12	34.35	.34 (.10)	2.16 (.90)	.71	3.33
Early September	23.48	.57 (.11)	.73	3.22	26.20	.48 (.05)	2.26 (.40)	.94	1.53
Late September	21.09	.62 (.11)	.77	3.01	24.34	.53 (.05)	2.14 (.37)	.95	1.40
October	16.94	.68 (.11)	.78	2.90	21.29	.57 (.07)	1.94 (.46)	.92	1.73
November	12.01	.76 (.11)	.83	2.56	17.14	.64 (.07)	1.71 (.44)	.94	1.58

NOTE: N = 11. Standard errors are in parentheses. The dependent variable is the two-party popular presidential vote. GNP change is the second-quarter change in the real GNP per capita.

results.[4] The error reductions in early forecasts were quite substantial. Whereas the average absolute error of the June trial-heat literal forecast was nearly 8 percentage points, the average absolute error of the June trial-heat *regression* forecast was 3.4 percentage points. The errors in the late-July forecasts were also substantially reduced, from an average of nearly 6 percentage points to 3.3 percentage points. The regression errors at later points in the campaign also were smaller than the forecast errors of the simple trial-heats, although the improvements were smaller. The increasing accuracy of trial-heats through the course of the campaign was also evident in the regression results themselves. Not only did each successive trial-heat equation account for a greater share of the variance in the vote, but the trial-heat coefficients approached (though fell short of) unity, indicating that there is less danger in using trial-heats as literal forecasts closer to the election.

While the bivariate trial-heat regression within-sample "forecasts" were fairly accurate, there is room for improvement.[5] The addition of another indicator may permit an earlier and still more accurate forecast. We will now consider whether and to what degree the addition of the second-quarter real GNP growth rate to the trial-heat regressions strengthens the forecast.[6]

ECONOMIC GROWTH AND TRIAL-HEAT REGRESSION FORECASTS

The addition of the second-quarter growth rate in the real GNP to the trial-heat forecast equation significantly improved the equation's fit at each of the six points in the campaign. The forecasting regression equations based on the economic growth rate and the trial-heat measure are also presented in Table 2.[7] In each equation, the economic growth rate coefficient was statistically significant ($p < .03$). Its inclusion improved the accuracy of the equation at each point of the campaign. The improved regression fits were also evident in their average absolute errors (see the "m" points in Figure 1). Even the largest average error (the July forecast) was less than 2.5 percentage points.[8]

The Early-September Forecast

Although the addition of the economic indicator improved the fit of each trial-heat regression, the accuracy of the equations did not improve after early September. This concurs with the conclusion of Lewis-Beck and Rice (1984) in their analysis of elections held between 1948 and 1980. *The early-September equation accounted for more than 90% of the vote variance and its average absolute error was less than 1 percentage point* (± 0.86).[9] Given this accuracy and the two-month lead time before the election, the early-September trial-heat/economy equation appeared to be the most accurate equation available before the election to forecast the presidential vote.

The vote "forecast" of the early-September trial-heat/economy equation is presented in Table 3 for each of the eleven elections. The errors of these expected votes are generally quite small. With the single exception of the 3.5-percentage-point underestimation of Eisenhower's 1956 vote, none of the errors exceeded 1.6 percentage points. Moreover, the candidate expected to win based on the equation's estimates actually went on to win in ten of the eleven elections. The single exception was Kennedy's razor-thin victory over Nixon in 1960.

Two questions about the early-September equation remain. First, how robust is it? Is it especially sensitive to one or more elections? Second, how accurately does it predict the vote in elections that have not been included in its estimation?

Robustness

Even though they span forty years, eleven elections still constitute a small set of cases on which to estimate an equation. One or two outliers may unduly influence the estimation and produce results that do not reflect elections in general as well as they should. This issue was addressed in two ways: (a) reestimation of the equation by ordinary least squares, (OLS), dropping one election at a time, and (b) reestimation by "least median

TABLE 3

The Expected Presidential Vote of Within-Sample OLS, LMS and Out-of-Sample OLS Regression Estimates of the Early-September Trial-Heats and GNP Growth Forecast Equation, 1948-1988

		Early-September trial-heat and GNP growth equation estimates								
		OLS estimate			*LMS estimate*			*Out-of-sample OLS estimate*		
Election year and in-party	*Actual two-party vote*	*Expected vote*	*Error*	*Expected winner won?*	*Expected vote*	*Error*	*Expected winner won?*	*Expected vote*	*Error*	*Expected winner won?*
1948 - D	52.3	52.3	.0	Yes	52.3	.0	Yes	52.3	.0	Yes
1952 - D	44.6	46.0	−1.4	Yes	44.6	.0	Yes	46.5	−1.9	Yes
1956 - R	57.8	54.3	+3.5	Yes	53.2	+4.5	Yes	53.8	+4.0	Yes
1960 - R	49.9	51.5	−1.6	No	50.5	−.6	No	51.7	−1.8	No
1964 - D	61.3	62.1	−.8	Yes	61.4	.0	Yes	62.7	−1.4	Yes
1968 - D	49.6	49.6	.0	Yes	49.4	+.2	Yes	49.6	.0	Yes
1972 - R	61.8	61.8	.0	Yes	62.0	−.2	Yes	61.8	.0	Yes
1976 - R	49.0	47.9	+1.0	Yes	47.5	+1.5	Yes	47.5	+1.5	Yes
1980 - D	44.7	44.5	+.2	Yes	41.4	+3.2	Yes	44.0	+.7	Yes
1984 - R	59.2	59.6	−.4	Yes	59.5	−.3	Yes	59.6	−.4	Yes
1988 - R	53.9	54.4	−.5	Yes	53.6	+.3	Yes	54.5	−.6	Yes
Mean absolute error			.9			1.0			1.1	
Median absolute error			.8			.3			.7	

NOTE: The expected vote for an election in the "out-of-sample" estimation is calculated from a regression estimated *without* that particular election.

squares" (LMS), an iterative, robust regression estimation technique (Rousseeuw and Leroy 1987).

The reestimations yielded consistent results. Both indicated that the trial-heat coefficient was quite stable. Trial-heat coefficients only varied between .46 and .51. The LMS trial-heat coefficient was .47, only .01 less than the OLS estimate. The economic growth coefficient was less robust. Economic growth coefficients ranged from 2.18 (with 1952 out) to 2.41 (with 1980 out) and the LMS estimate of the economy coefficient (3.01) was .75 greater than the OLS estimate.

Table 3 also presents the LMS expected vote for each election in the series.[10] As with the OLS estimation, the fit was impressive and, again, the candidate expected to have a majority actually won in every case except 1960. *The median absolute error of this LMS estimated equation was a mere one-third of a percentage point of the vote.*

Out-of-Sample "Forecasts"

To this point, we have used the fit of the equation to evaluate its forecasting value. However, this is not a very stringent test, since the expected votes used to evaluate the equation are used in estimating the equation. Obviously, in making a real forecast, we would never have the benefit of adjusting the coefficients to better fit the case we were forecasting. To avoid the circularity of within-sample tests, we reestimated the expected vote for each election based on an OLS regression that excluded that particular election year. For instance, the expected 1948 vote was calculated using coefficients estimated by a regression using the ten elections held between 1952 and 1988. These out-of-sample expected votes and their deviations from the actual vote are also presented in Table 3.[11]

The out-of-sample expected votes were nearly as accurate as those fitted within-sample. The mean absolute error was 1.1 percentage points, and in ten of the eleven elections, the error was less than 2 percentage points. Like the within-sample estimates, early-September out-of-sample estimates correctly "predicted" the winning candidate in every election except 1960.

These out-of-sample errors compared favorably to those of the Abramowitz equation in which the out-of-sample average absolute error was 1.9 percentage points. This difference was large enough to cause the Abramowitz equation to forecast wrongly the winner of four elections (1960, 1968, 1976, and 1988).

CONCLUSIONS

Compared to existing equations, the early-September trial-heat and economic growth equation, first proposed by Lewis-Beck and Rice, appears to be the most accurate in forecasting the two-party presidential vote. The early-September equation offers a forecast two months in advance of the election and, judged by either within-sample or out-of-sample tests, is very accurate. As Table 4 shows, the early-September trial-heat/economy equation's average error of 0.86 percentage points compares favorably with the previous, purely retrospective-based forecasting equations. While the Abramowitz equation produced a very accurate forecast a bit earlier, forecasts based on the early-September trial-heat and second-quarter economic growth were even more squarely on target.

There are several implications suggested by the success of the early-September equation. First, the fact that the trial-heat equation is more accurate than the previous, purely retrospective equations suggests that presidential candidates do matter. The election is not just a retrospective judgment of the previous administration. Second, the fact that forecast accuracy was achieved in early September, the time traditionally thought of as the "kickoff" of the general election campaign, suggests that campaign effects are of limited consequence. This is consistent with Campbell et al.'s (1960; 78) findings that the great majority of voters decide their vote before or immediately following the parties' nominating conventions. While it would be an overstatement to say that the analysis indicates that campaigns do not matter, generally, they appear to run a course set by earlier economic conditions. Or, to the extent that campaigns matter, they have minimal net effects because *both* presidential candi-

TABLE 4

Comparison of the Success of Several Presidential Forecasting Equations, 1948-1988

Independent variables in model	*Mean % absolute error*	*Largest % error*	*Expected winner won (of 11)*	*Adjusted R^2*	*Standard error of estimate*	*Out-of-sample mean % absolute error*
Equation 1: Early-September trial-heat and second-quarter GNP change	.86	3.45	10	.939	1.53	1.12
Equation 2: May presidential popularity	3.32	8.10	7	.496	4.41	3.98
Equation 3: May presidential popularity and second-quarter GNP change	2.52	6.12	8	.676	3.53	3.63
Equation 4: May presidential poplarity second-quarter GNP change, and seeking more than second term	1.18	3.99	7	.897	1.99	1.87

NOTE: The dependent variable is the incumbent party's share of the two-party popular presidential vote. Equation 1 was first tested by Lewis-Beck and Rice (Lewis-Beck, 1985). Equation 2 is the Sigelman (1979) and Brody and Sigelman (1983) equation adapted to a forecasting equation by Lewis-Beck and Rice (1982, and 1984). Equation 3 was first proposed by Lewis-Beck and Rice (1984). Equation 4 was developed by Abramowitz (1988).

dates receive a great deal of attention throughout the campaign and are near parity in their abilities to use that attention to influence voters.

There are also several questions raised by this analysis. First, why did the early-September equation miss the results of the 1956 election by such an unusually large margin? Both regression diagnostics and LMS estimates for trial-heat equations through October identified the 1956 election as an outlier, although the election was not an outlier in the November equation. In the last month of the 1956 campaign, Eisenhower's trial-heat rating rose 6 percentage points. Apparently, the campaign mattered in 1956 and did not simply run the course set by earlier economic conditions.

Second, how might this forecasting equation be improved? Even though the forecasting error was less than the sampling error of most polls, and even though some measurement error will always be present, there are several places to look for improvement. The fact that the November trial-heat missed the actual election results by as much as it did—and had a coefficient significantly less than one—suggests that more accurate forecasts may come from improvements in the trial-heat data themselves.[12] Improvements of several sorts are plausible: (a) "Undecideds" and third-party voters may be assigned by their party identifications rather than by dividing them in proportion to the two-party, trial-heat "vote" or equally between the two parties, and (b) trial-heat preferences of likely voters may be more clearly separated from those of nonvoters.

NOTES

1. The one notable exception to the previous lack of political science interest in election forecasting is the work of Louis Bean (1948, 1972).

2. The standardized coefficients indicated that of Abramowitz's three forecasting variables, presidential approval had the least impact on the forecast. The standardized coefficients for the May presidential approval, economic change, and third-term variables were .29, .61, and .51, respectively.

3. The exact time of each survey used, the decision rules for identifying the appropriate poll, and the poll results themselves, as well as the actual vote and economic variables are available from the authors.

4. Comparison of the raw forecasts with the regression-estimated forecast may have exaggerated the improvement since the regression estimates were actually fitted to the data or based on these elections rather than on independent forecasts of the elections. However, the "out-of-sample" forecasts demonstrated that the improvements in actual forecasts generated by the regression equations was not greatly overstated.

5. Several other treatments of the simple trial-heat percentages were examined: (a) The trial-heat division was constrained to the historical range of the actual vote to adjust for the exaggeration of landslides; (b) "undecideds" and third-party respondents were divided equally between the major candidates rather than proportionally; and (c) a conditional or "threshold" trial-heat measure taking voter indecision into account was also considered. Only the landslide adjustment substantially improved the accuracy of the forecast, and even that was not an improvement over the regression-generated forecasts.

6. Presidential approval ratings in May (the reading used by Lewis-Beck and Rice) were also added to the trial-heat regression forecasts. However, the addition of the approval rating did not improve the fit of the equation.

7. As in the simple bivariate regressions shown in Table 2, the trial-heat coefficients had values less than one at each point, but these strengthened through the course of the campaign.

8. The prospective third-term, "time for a change" variable from Abramowitz's model was also introduced into the trial-heat/economy equations. In each equation, the estimated coefficient of the second-term variable was negative, as Abramowitz's analysis indicated. It was also statistically significant in the June and late-July equations. However, in later equations, the prospective third-term coefficient was smaller (less than a 3-point penalty) and was not statistically significant. Presumably, most sentiment of "it's time for a change" associated with a party having served two consecutive terms is expressed through lower trial-heat ratings. In fact, the incumbent party seeking more than a second consecutive term did fare more poorly in the trial-heats. The correlations with the six trial-heats in the eleven elections examined ranged from –.63 to –.78.

9. It appears that the forecast was more dependent on the early-September trial-heat results than on the earlier growth rate of the economy. The standardized coefficient for the trial-heat variable was .74 and .46 for the second-quarter growth in GNP variable.

10. Like the OLS estimation, much of the LMS error was in the single case of the 1956 election and the "resistant diagnostic" LMS statistic indicates that this case was an outlier. The constant in the LMS regression was 25.42.

11. The residuals were inspected for evidence of partisan bias (Buchanan 1986). Although the OLS and LMS within-sample expected votes appeared slightly to overpredict the Democratic vote and underpredict the Republican vote, this appeared to be the result of a single case, the relatively large underprediction of Eisenhower's 1956 vote. To assess the partisan bias question, the trial-heat/economy regressions were reestimated with a dummy variable for the party of the incumbent. The partisan bias variable was statistically significant only in the June regression. Although its direction indicated a pro-Democratic bias in later regressions, it was not statistically significant.

12. Some inaccuracy in the trial-heat forecasts may result from differences in the collection of trial-heat data over the years. Some forms of the trial-heat question mention third-party candidates, vice-presidential candidates, and the party labels of the presidential candidates, while other forms have not. Also, there have been differences in filtering by voter registration and the likelihood of voting. Finally, since 1980, the trial-heat question has included a follow-up probe for those initially indicating no preference or a preference for a minor-party candidate.

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