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TEMPORAL HORIZONS AND PRESIDENTIAL ELECTION FORECASTS

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In this article we present a simple forecasting model that has been successful at predicting past presidential elections. The two variables included in the model are cumulative per capita income growth and presidential approval. These "fundamental" variables predict the vote especially well when measured shortly in advance of the election, when the outcome is already becoming clear in the polls. Their predictive power drops quite quickly as one steps back from the election, however; readings of income growth and approval taken early in the election year only modestly predict readings of the same variables just prior to the election. Thus we turn to leading economic indicators that allow us to forecast presidential elections by giving advance indication of changes in the economy and approval during the election year. For 1996, our model offers a cautious prediction of a Clinton victory.

Successfully forecasting presidential elections requires an understanding of what actually causes the vote on election day. In theory, the presidential vote reflects the electorate's relative evaluations of the major candidates. Unfortunately, these evaluations are not fully clear until late in the election cycle. We do, however, know that the ultimate candidate evaluations are largely, though not perfectly, structured by assessments of the incumbent president (see, e.g., Tufte 1978; Brody and Sigelman 1983; Hibbs 1987; Abramowitz 1988; Erikson and Wlezien 1994). That is, to a large extent the presidential vote is a referendum on presidential performance. A portion of this performance reflects economic prosperity. The noneconomic aspects of presidential performance appear to be largely captured by the public's approval of the sitting president, which often is included in models of the presidential vote (see Lewis-Beck and Rice 1992). Indeed, these

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two "fundamental" variables predict the vote quite well, at least when using information that is available shortly in advance of elections (Erikson and Wlezien 1996).

In this article we assess the predictability of the presidential vote, using information about the economy and presidential approval over the election cycle, and then apply this simple model to the 1996 presidential election. As of this writing (June 1996), however, available readings of economic growth and approval provide only limited information about the presidential vote. Thus we incorporate leading economic indicators that provide advance indication of changes in the economy and approval leading up to the election. We begin with a brief discussion of our measure of economic prosperity.

MODELING "THE ECONOMY"

Various indicators of economic prosperity have been used in models of the presidential vote (see Lewis-Beck and Rice 1992). We rely on a measure of per capita income growth, adapted from Hibbs (1987), that has been found in previous analyses to predict the vote as well as—if not better than—other commonly used economic indicators. The measure represents the weighted average cumulative income growth over the election cycle, stopping at quarter 15 just before the election.[1] Our first task is to provide a theoretical rationale for our choice and describe our precise operational definition.

The most general theoretical argument about economic voting is that voters evaluate the presidential party's candidate based on some accumulated estimate of W, the nation's economic welfare, where we define W generally as:

$$W(t) = \int_0^t w(t)\ dt.$$

This function simply states that at election time (t), the net economic effect $W(t)$ is the accumulation of economic effects during the current president's term, from the beginning of the term (0) through the election. Economic effects occurring throughout the term may not have equal electoral impact, however. Those that occur early in the

term may matter less than those that occur later, for at least two reasons. First, memories of early effects may lessen over time. Second, voters may discount presidential responsibility for early economic effects. A reasonable model is to assume that effects decay geometrically:

$$w(t) = c^{t-s} \bullet w(s),$$

where $w(s)$ represents an effect perceived at time s, and $w(t)$ is the effect that survives until time t. When $c < 1$, the effects decay; when $c = 1$, effects count equally whenever they occur; when $c > 1$, early effects actually grow in importance as time evolves. We presume, of course, that $c < 1$, with the smaller the value of c, the faster the decay.

As a practical matter, searching for the correct c term is a simple empirical exercise. We approximate the continuous variable $W(t)$ by a quarterly summation of per capita income growth:

$$Y(t) = \sum_{q=1}^{15} c^{15-q} \bullet y(q),$$

where Y and y are the cumulated and quarterly measures of per capita disposable income. The value of c is chosen to maximize the correlation between estimated $Y(t)$ and the incumbent party vote. The value of c that maximizes the correlation is 0.79, which is very close to the value Hibbs (1987) estimated previously, 0.80. Given the closeness of the estimates, we maintain the round number estimated by Hibbs, which implies that each quarter's per capita income growth counts on election day at 0.80 the growth rate of the following quarter. Put another way, each quarter's income growth is weighted 1.25 times the one before; thus income growth in the last quarter prior to an election counts about 23 times as much as income growth in the first quarter of the president's term.

In principle, we could apply this approach to economic variables other than income growth. But income growth offers a special advantage for this study. Most indicators of economic change are actually cumulative, so that change in one quarter to some extent carries over into future change—for example, the next quarter's change in the

unemployment rate is partially a function of this quarter's change. Per capita income growth (PCIG) does not predict future per capita income growth, however. Between 1949 and 1992, the correlation between PCIG in one quarter and PCIG in the next quarter is a trivial 0.03. If the correlation were positive, then growth from early quarters would be reflected naturally in growth rates in late quarters, making the task of weighting the accumulation much more complex.

TOWARD FORECASTING THE PRESIDENTIAL VOTE

We now examine how well one can predict elections in advance using information about income growth and presidential approval over the election cycle. We focus on the incumbent party share of the two-party presidential vote in the 11 elections between 1952 and 1992 and estimate separate equations using readings of cumulative income growth and approval for each of the final seven quarters of the cycle.[2] The results are presented in Table 1.

These results are as one might expect. The predictability of the presidential vote increases as the election cycle evolves and more proximate information about approval and income growth becomes available. When predicting from indicators for quarter 10, the adjusted R^2 is negative, as if one predicts worse than expected by chance. The R^2 values grow steadily from this point on, reaching statistical significance in quarter 12, the last quarter prior to an election year. Thus we do have some information about the presidential vote early in the election year, but this information is far from perfect—the standard error of the estimate is about 5 percentage points. The predictability continues to improve during the year, reflecting economic growth and other aspects of presidential performance. By the third quarter of election years, we have pretty good information about the presidential vote because the standard error is less than 3 percentage points and the range of errors is within plus or minus 5 points.

So what about the election of 1996? As of this writing (June 1996), we only have measures of approval during the second quarter of the

TABLE 1
Forecasting the Presidential Vote, 1952-1992

	Quarter of the Election Cycle						
	10	*11*	*12*	*13*	*14*	*15*	*16*[a]
Intercept	41.52***	37.99***	36.75***	36.12***	34.81***	33.97***	32.55***
	(3.93)	(4.48)	(5.68)	(7.38)	(7.57)	(10.52)	(9.47)
Cumulative income growth$_t$	3.66	8.90	12.74*	11.27*	5.24	7.35**	6.37*
	(0.45)	(1.29)	(2.25)	(2.17)	(1.45)	(2.49)	(2.10)
Presidential approval$_t$	0.18	0.22	0.20	0.20*	0.30**	0.30***	0.33***
	(1.17)	(1.54)	(1.67)	(2.05)	(2.88)	(4.25)	(4.36)
Adjusted R^2	–0.07	0.11	0.40**	0.56**	0.67***	0.80***	0.81***
Standard error of the estimate	6.74	6.16	5.06	4.31	3.73	2.88	2.83

NOTE: $N = 11$. Numbers in parentheses are t-values.
a. The measure of cumulative income growth through quarter 15 is used.
*$p < .10$; **$p < .05$; ***$p < .01$ (two-tailed).

election year and income growth through the first quarter. Because we cannot directly substitute this information into any one of the equations in Table 1, we estimate the following equation:

$$\text{Vote} = 33.19 + 8.00(\text{Cum. PCIG}_{13}) + 0.29(\text{Approval}_{14})$$
$$(7.80)\ (1.73) \qquad\qquad (3.13)$$

$$\text{Adjusted } R^2 = 0.70$$

$$\text{Standard error of the estimate} = 3.57,$$

where subscripts 13 and 14 indicate the quarters of the election cycle and t values are in parentheses. To produce a forecast for 1996, we insert the 1996 values of cumulative income growth (0.574) and approval (52%) into the equation. Doing so yields a prediction of 52.9% of the vote for Clinton, or a slight edge based on the fundamentals. Given the standard forecast error (4.21), the election is too close to call based on our included information.[3] We can, however, compute a p value using the forecast, the standard forecast error, and the t distribution (with 8 degrees of freedom). Based on the statistical history of the model, Clinton enjoys about a 75% chance of winning the election.

FORECASTING APPROVAL AND INCOME GROWTH

Unfortunately, as Table 1 implies, much of the information that ultimately predicts the vote does not become available until late in the election cycle, when the outcome is already becoming clear in the polls (Erikson and Wlezien 1996). In effect, readings of approval and cumulative income growth taken early in the election year only modestly predict readings of the same variables just prior to the election. By definition, forecasting using available readings of income growth and approval is constrained by time itself, making it difficult to predict accurately the presidential vote in advance, at least until the general election campaign is under way.

Possibly, however, we can forecast income growth and approval close to election day from other information available earlier in the election year. For this task, we have the Commerce Department's Index of Leading Economic Indicators measured over the election cycle. This index is designed to forecast economic turning points one or two quarters in advance (Rogers 1994). Thus, from the growth in leading indicators (LEIG) early in the election year, we might be able to forecast late readings of income growth and approval and, ultimately, the vote. After all, income growth is one important indicator of economic prosperity, and approval reflects this prosperity (see Erikson and Wlezien 1996).

Just as for income growth, we measure LEIG cumulatively. Our measure is the weighted average of quarterly summaries of monthly growth, with each quarter weighted 0.90 as much as the following quarter (i.e., 1.11 the weight of the preceding quarter). This weighting scheme maximizes the correlation with the presidential vote, which peaks using indicators from quarter 13. In Table 2, we show how the presidential vote correlates with separate readings of cumulated LEIG taken for each quarter of the election cycle. Notice that the correlations increase sharply beginning in quarter 10 until quarter 13, where the correlation reaches 0.85. The strong connection between the quarter 13 measure of LEIG and the presidential vote is apparent in Figure 1,

TABLE 2
Correlations Between the Cumulative Growth in Leading Economic Indicators and the Presidential Vote, 1952-1992

Quarter of Election Cycle	*Correlation*
1	0.45
2	0.40
3	–0.09
4	–0.19
5	–0.26
6	–0.36
7	–0.23
8	0.06
9	0.22
10	0.48
11	0.67
12	0.79
13	0.85
14	0.75
15	0.69
16	0.67

in which we present the scatterplot of these two variables. Even by quarter 12, however, the correlation between cumulative LEIG and the vote approaches 0.80. Perhaps most interesting, whether measured in quarter 12 or 13, cumulated LEIG predicts the vote better than the final measure of income growth cumulated through quarter 15 ($r = 0.70$).

These results imply that early leading indicators, estimated on the eve and beginning of the election year, effectively predict election year economic change. Consistent with this argument, LEIG *cumulated* through quarter 13 correlates with *quarterly* PCIG leading up to the election:

Q 13 Cum. LEIG—Q 13 PCIG = 0.57;
Q 13 Cum. LEIG—Q 14 PCIG = 0.69;
Q 13 Cum. LEIG—Q 15 PCIG = 0.10.

The measure of LEIG best predicts income growth in the near term, during the first two quarters of the election year. These quarterly effects, in turn, add up (with weighting) in our cumulative measure of income growth. Indeed, the quarter 13 measure of LEIG accounts for 65% of the variance in quarter 15 *cumulative* income growth.

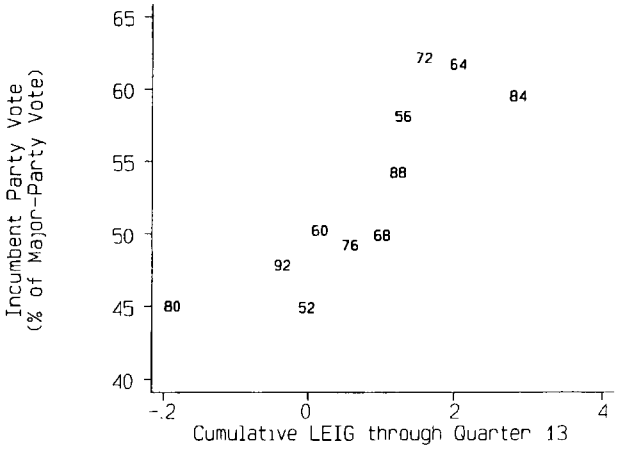

Figure 1: Presidential Vote by Weighted, Cumulative Growth in Leading Economic Indicators through Quarter 13 of the Election Cycle

LEIG cumulated through quarter 13 also is a strong predictor of election year approval. The correlations with separate quarterly measures of approval are as follows:

Q 13 Cum. LEIG—Q 13 Approval = 0.38;
Q 13 Cum. LEIG—Q 14 Approval = 0.62;
Q 13 Cum. LEIG—Q 15 Approval = 0.66;
Q 13 Cum. LEIG—Q 16 Approval = 0.69.

As for income growth, the measure of cumulative LEIG predicts shifts in approval during the first half of the election year. The correlations increase slightly leading up to the election as the economy evolves and its effects on evaluations of the sitting president cumulate.[4] Of particular interest is the regression equation predicting the final preelection reading of approval from quarter 13 measures of approval and cumulative LEIG:

$$\text{Approval}_{16} = 11.75 + 0.68(\text{Approval}_{13}) + 42.76(\text{Cum. LEIG}_{13})$$
$$(3.34)\ (9.94)\qquad\qquad (5.24)$$

Adjusted $R^2 = 0.95$

Standard error of the estimate = 3.06.

The LEIG coefficient is positive and highly significant, and the overall fit of the model ($R^2 = 0.95$) is impressive. Clearly, the quarter 13 measure of cumulative LEIG quite accurately predicts the evolution in approval during election years.

THE FINAL FORECASTING MODEL

We now return to our original mission of forecasting the presidential vote by directly incorporating quarter 13 cumulative LEIG into our model that includes income growth and approval. In Table 3 we present the results for the final four quarters of the election cycle. These results are as expected, given what we have already demonstrated. The effect of cumulative LEIG is largest in the quarter 13 model, using readings of income growth and approval through the first quarter of the election year. The effect drops as more updated information about income growth and approval is used, which increasingly reflects the economic change predicted by early leading indicators. By the end of the cycle, the three variables, especially cumulative LEIG and income growth, are highly correlated with each other.

Notice that the quarter 13 model performs quite well, accounting for 82% of the variance in the presidential vote. This model actually predicts slightly better than the model that includes final readings of income growth and approval in Table 1. Moreover, the predictability of the model (i.e., R^2) barely improves using the more updated information about income growth and approval in quarters 14 to 16. This pattern indicates that the quarter 13 measure of cumulative LEIG almost perfectly taps the economic change that structures the presidential vote. Indeed, the measure may capture this change better than income growth itself.[5]

In Table 4, we present the results of our final forecasting model, which includes approval and quarter 13 cumulative LEIG but excludes income growth. Once again, the effect of cumulative LEIG drops steadily over the election cycle as approval increasingly absorbs economic change during the year. Even in the final model, however, the measure of leading indicators predicts the vote independently of

TABLE 3
Forecasting the Presidential Vote, Including Cumulative LEIG, 1952-1992

	Quarter of the Election Cycle			
	13	*14*	*15*	*16*[a]
Intercept	42.62***	40.15***	37.96***	36.85***
	(11.83)	(10.93)	(8.96)	(8.53)
Cumulative $LEIG_{13}$	45.63***	42.50**	19.81	20.41
	(3.58)	(3.04)	(1.36)	(1.48)
Cumulative income $growth_t$	–5.62	–5.09	2.49	0.47
	(–0.98)	(–1.20)	(0.55)	(0.42)
Presidential $approval_t$	0.18**	0.23**	0.23**	0.26**
	(2.88)	(3.05)	(2.93)	(3.13)
Adjusted R^2	0.82***	0.84***	0.82***	0.84***
Standard error of the estimate	2.74	2.61	2.74	2.64

NOTE: $N = 11$. Numbers in parentheses are t values. LEIG = growth in leading indicators.
a. The measure of cumulative income growth through quarter 15 is used.
*$p < .10$; **$p < .05$; ***$p < .01$ (two-tailed).

TABLE 4
The Final Forecasting Model, 1952-1992

	Quarter of the Election Cycle			
	13	*14*	*15*	*16*
Intercept	40.91***	39.06***	39.19***	37.50***
	(13.04)	(10.69)	(11.39)	(10.27)
Cumulative $LEIG_{13}$	35.43***	28.37***	26.08**	23.98**
	(4.86)	(3.38)	(3.04)	(2.84)
Presidential $approval_t$	0.17**	0.22**	0.23**	0.26**
	(2.77)	(2.87)	(3.02)	(3.30)
Adjusted R^2	0.82***	0.83***	0.84***	0.86***
Standard error of the estimate	2.73	2.69	2.62	2.49

NOTE: $N = 11$. Numbers in parentheses are t values. LEIG = growth in leading indicators.
*$p < .10$; **$p < .05$; ***$p < .01$ (two-tailed).

approval, and this model outperforms the one containing income growth. More important, as indicated by the R^2 values and standard errors, we lose only a small amount of predictability as we step back from the election, using information available earlier in the year.[6]

TABLE 5
Out-of-Sample Forecasts Using Quarter 13 Cumulative LEIG and Quarter 14 Approval, 1952-1992

	Incumbent Party Vote		
Year	*Actual*	*Predicted*	*Error*
1952	44.6	46.0	–1.4
1956	57.8	58.6	–0.8
1960	49.9	54.3	–4.4
1964	61.3	61.2	0.1
1968	49.6	51.9	–2.3
1972	61.8	55.5	6.3
1976	48.9	51.2	–2.3
1980	44.7	38.7	6.0
1984	59.2	58.9	0.3
1988	53.9	53.3	0.6
1992	46.6	46.8	–0.2
Mean absolute error			2.2

NOTE: The out-of-sample forecast for each year is based on an estimated model that excludes the particular election. LEIG = growth in leading indicators.

When using information available in quarter 14, the standard error of the estimate is 2.69 percentage points. Note also that, as shown in Table 5, the mean absolute out-of-sample forecasting error is 2.2 points.

FORECASTING 1996

We can now forecast the presidential vote for 1996 from cumulative LEIG and approval. Through the first quarter of 1996 (quarter 13 of the election cycle), the value of cumulative LEIG is 0.1405, or slightly better than average compared to the previous 11 election years. Recall that Clinton's June approval rating was 52%. Inserting this information into the quarter 14 model in Table 4 produces a forecast of 54.5% of the vote for Clinton, which is 1.6 points larger than we predicted using income growth and approval for the same periods. Given the

standard forecast error (see note 3) of 3.35, however, the election still is technically too close to call. Nevertheless, the *t* distribution (with 8 degrees of freedom) implies that the prospect of a Clinton victory, at 89%, is quite good.

SUMMARY AND DISCUSSION

Much of the information about the candidates and the economy that matters on election day does not become clear until the campaign begins in earnest—during and after the summer of the election year. Evaluations of the sitting president taken early in the year do provide some information about the likely election outcome, but the public continues to update its preferences based on the important election year economic change and other factors. Quite clearly, this evolution of preferences limits our ability to forecast the outcome well in advance of an election, at least when using available information about fundamental variables, such as presidential approval and income growth. That is, readings of approval and income growth taken early in the election year only modestly predict readings of the same variables just prior to the election.

We can, however, effectively forecast these fundamental variables themselves, using leading economic indicators measured through the early part of the election year. The growth in these indicators taps future economic change, which finds expression in income growth and drives approval leading up to the election. Our measure of the cumulative growth in leading indicators through the first quarter of the election year actually outperforms measures of the real economy in models of the presidential vote. This finding suggests that the measure of leading indicators may capture economic performance better than simple summary indicators taken after the fact. Given the small number of presidential elections encompassed by our study, however, we stop short of drawing this conclusion. Still, using leading economic indicators substantially improves our electoral forecast. As for 1996, our model offers a cautious prediction of a Clinton victory.

NOTES

1. We cumulate only through the quarter prior to the election. Although the measure of income growth cumulated through the last quarter of the election year performs best in our models, most of quarter 16 occurs after the election (and information about income growth during the quarter does not become available until the next year, which is of obvious relevance to forecasting the presidential vote).

2. Except for the last quarter of the election cycle, the measure of approval is the average percentage of the public that approves of the president during each particular quarter or the most recent quarter for which data are available, using Gallup polls. The quarter 16 measure is the percentage of the public that approves of the president in October or the most recent *month* for which data are available, also using Gallup polls.

3. The standard forecast error takes into account the standard errors of the coefficients and thus is larger than the standard error of the estimate. To compute the standard forecast error, we rely on Kmenta (1986, 426-8).

4. All these correlations are larger than the comparable correlations between current measures of cumulative income growth and approval (see Erikson and Wlezien 1996).

5. Separate analyses (not reported here) indicate that the quarter 13 measure of cumulative growth in leading indicators (LEIG) also outperforms change in other economic variables, including coincident indicators, gross national product, unemployment and inflation, and aspects of consumer sentiment.

6. As Table 2 implies, the predictability drops sharply using information for the year prior to the election. When using information about approval and cumulative LEIG for quarter 12, the R^2 is 0.57; when using information for quarter 11, the R^2 is 0.36.

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