The 2016 Presidential Election Popular-Electoral Vote Difference

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This paper provides models to forecast the popular vote for each of the two major political party candidates in the 2016 US presidential election and to explain the Electoral College outcome. One day prior to the election, the authors published forecasts online (https://finpolicy.georgetown.edu/) predicting Secretary Hillary Clinton would receive between 50.49 and 51.78 percent of the two-party popular vote. These forecasts were developed from economic and political models adapted from the work of Ray Fair. The final, certified vote count shows that Clinton's share of the two-party popular vote was 51.11 percent. For the second time in the current century, the winner of the popular vote was not elected to the Presidency. Given the difference between the winners of the popular vote and the electoral vote, the authors developed a state-by-state, cross-sectional probit model to explain Donald Trump's Electoral College victory, based on voters' economic, racial, and educational characteristics.

INTRODUCTION

The 2016 U.S. presidential election was certain to be highly unusual as the Republicans whittled their list of 17 diverse candidates to Donald Trump, who became the nominee as a result of a surprising list of primary victories. Trump's primary victories throughout the Northeast and Mid-Atlantic on Tuesday, April 26th made him the presumptive Republican nominee, after he had won more than two-thirds of the state primary contests.

Trump pursued the nomination with less political experience than any major party nominee in history, with the exception of General Dwight D. Eisenhower in 1952. Eisenhower was the only president who was elected with no political experience as either a governor, member of Congress, Cabinet member, or Vice President. Washington had less than a year's such experience; Lincoln, Cleveland, and Wilson had two years; and four other presidents had only four years of political experience before entering the White House (*Washington Post*, 2016b).

This paper continues a series of presidential election forecast studies on the basis of macro-dynamic models to predict the percentage of the popular vote for the two major political party candidates. The significant economic factors in these models are adapted from the approach Yale University Professor Ray Fair (2002) has been developing since 1978.

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popular vote. The certified vote count is that Clinton's share of the two-party popular vote was 51.11 percent, making her the candidate who received more votes than any other losing presidential nominee in American history.

For the second time in the current century, the 2016 winner of the popular vote was not elected to the Presidency. Donald Trump received 306 of the 535 electoral votes and became the 45th President of the United States. In addition to the *forecast* for the two-party popular vote, this paper presents a state-by-state, cross-sectional probit model to *explain* Trump's Electoral College victory, based on voters' economic, racial, and educational characteristics.

A brief summary of the relevant literature is provided in Section II, with an emphasis on unique factors for 2016. Voluminous reviews of the literature on forecasting presidential election outcomes have been published by political scientists and economists in scholarly journals, such as *PS: Political Science & Politics* (October 2016) and Fair (2016). Section III delineates two party popular vote models from which the 2016 forecasting equation is adapted and provides the 2016 forecast. Section IV provides a cross-sectional probit Electoral College vote model, developed after the election, to explain the 2016 result. The conclusions follow.

LITERATURE

Popular Vote Models

A variety of scholars, including political scientists, historians, economists, analysts, pollsters, and forecasters have contributed to understanding American presidential election results. The popular vote model in this paper has been developed based on the models that Fair contributed (1978, 2002, 2008, 2009, and 2016), which Walker has extended (2006, 2008, and 2013) for the past three presidential elections.

The current contributions by Abramowitz, Lewis-Beck, Campbell, and Norpoth are of particular relevance to the popular vote model. In October 2016, *PS: Political Science & Politics* published a special issue devoting extensive attention to the uniqueness of the 2016 election. The issue emphasized the highly contested Republican primaries and historically unprecedented levels of dissatisfaction among the electorate with both of the major party nominees.

Abramowitz offers forecasts using a Time for Change Model (Abramowitz, 2016). He has projected the winner of the Presidency every year since 1988. This model employs only three variables: the incumbent president's mid-election-year net favorability rating, the second quarter election year GDP growth rate, and the number of consecutive terms the incumbent party has held the Oval Office. Based on 2016 data, the Time for Change Model predicted that Trump would defeat Clinton by a narrow margin of 51.4 percent to 48.6 percent of the two-party popular vote. Abramowitz, however, warned that his model could easily predict the wrong outcome. The average error between his forecasts and actual results is an overstatement of 2.2 percentage points. Trump's forecasted margin of victory over Clinton fell within the historical margin of error. Abramowitz's model rests on two key assumptions. He assumes that: (a) parties will nominate mainstream candidates who have the ability to unify their respective parties and (b) nominees will run effective, competitive campaigns. Abramowitz noted that Trump and his candidacy appear to have violated both of those fundamental assumptions.

Lewis-Beck employs two similar variables to forecast the incumbent party's vote share (Lewis-Beck, 2016). He uses GNP growth during the first two quarters of an election year and the incumbent president's mid-year job approval rating as his election outcome predictors. Lewis-Beck forecasted that Clinton, as the nominee of the incumbent party, would receive 51.0 percent of the popular vote. He, likewise, recognizes the narrowness of Clinton's forecasted margin of victory, and he ultimately deemed his forecast of the election's results to be only slightly more favorable for the Democrats than a coin flip.

Campbell presents two models (Campbell, 2016) to forecast the 2016 election results. His first model is the trial-heat and economy model, which predicts the election results based on Gallup's trial-heat preference poll on Labor Day and the GDP growth rate. Campbell's second model is the convention bump and economy-forecasting model. This model includes three predictive variables: (1) the share of the

two-party vote the incumbent party's candidate commands prior to the nominating conventions; (2) that candidate's net change of the two-party vote share subsequent to both conventions; and (3) the second-quarter GDP growth rate for the election year. The model successfully predicted both the 2004 and 2012 elections results within two percentage points. Campbell discounts 2008 from his analysis due to the unprecedented severity of the economic recession. The trial-heat and economy model forecasted that Clinton would receive 50.7 percent of the two-party vote-share, while the convention bump and economy model predicted that Clinton would receive 51.2 percent of the popular vote. Clinton's sizable convention bounce and Labor Day preference poll leads were largely offset by the U.S. economy's sluggish growth in the second quarter of 2016.

Norpoth takes a different approach to forecasting election results. His Primary Model (Norpoth 2016) uses each major party nominee's performance during the primary process compared to their competitor as the predictor for how well each candidate will fare in the general election. Norpoth suggests the candidate with stronger performance in their party's primaries is more likely to win the general election. He focuses on the results of the New Hampshire and South Carolina primaries as a proxy for overall primary performance. Norpoth compares each party's ultimate nominee's margin of victory over that of the runner-up in each state. He finds that Trump defeated his nearest rivals (Kasich and Cruz, respectively) by more than Clinton defeated Sanders. Indeed, in New Hampshire, Clinton lost to Sanders by an even greater margin (22.46%) than the margin by which Trump defeated Kasich (19.53%). Norpoth's model also considers an "electoral pendulum," a measure designed to account for the fact that incumbent parties that have held the presidency for one term are highly likely to win re-election, while incumbent parties that have held the Oval Office for at least two terms are more likely to be defeated. Norpoth compares a candidate's re-election percentage of the popular vote to his share of the popular vote from his first election. A re-election popular vote share that is less than the candidate's initial election share suggests that the incumbent party is more likely to be defeated in the third term. President Obama's decline from 53.7 to 52.0 percent in the popular vote from 2008 to 2012 is the second factor in Norpoth's model that leads him to predict a Trump victory over Clinton by 52.5 percent to 47.5 percent.

Electoral College Votes

There have been arguments for many years that the popular vote alone should determine the election outcome. In Federalist Paper No. 68, Alexander Hamilton (1788) was among the founding fathers who argued a counter case in favor of the Electoral College. Hamilton cites two primary grounds to justify his position. First, Hamilton argues that the Electoral College affords the process of electing a President the appropriate amount of involvement by the general public. He argues that through the Electoral College, all American voters are directly involved in the selection of the President, but they do so indirectly by choosing well-informed, politically competent electors who make the ultimate selection of the highest elected official. Furthermore, Hamilton suggests that having an indirect system to choose the President serves as a check on any potential corruption or chaos in the process. Political arguments aside, however, the winner of the Electoral College vote did not also win the popular vote in five presidential elections: 1824, 1876, 1888, 2000, and 2016.

The literature concerning the Electoral College focuses mainly on the advantages and disadvantages it provides to various constituencies. The authors have not discovered models in which the state-by-state Electoral College vote is predicted or explained by state characteristics. The model in this paper has been developed subsequent to November 8, 2016. The authors emphasize that this model was not employed to predict the election outcome but, rather, to explain the unusual divergence between the outcomes of the popular and electoral votes.

TWO-PARTY POPULAR VOTE MODELS

The Popular Vote Models are extensions of Fair's models (2002, 2004, 2008, 2009, and 2016), which he estimated based on data from presidential elections from 1920 through 2012. The four major factors Fair includes in his study are the rate of economic growth, inflation rate, whether a candidate is an incumbent, and whether the country is at war. Fair defines a wartime election as a time during which the United States Congress officially declared war. Each of Walker's election models (2006, 2009, 2013) has a theme to capture the unique circumstances at the time of a particular election. Walker extends the scope of a wartime election to include Korea (1952), Vietnam (1968), and Iraq (2004 and 2008) and removes autocorrelation.

2004-2012 Popular Vote Models: Walker's 2004 model relied heavily on Fair's data and variables. He extended Fair's definition of wartime election years beyond World Wars I and II and removed autocorrelation. The 2008 model tested whether the U.S. Senate and House midterm elections two years prior to a presidential election and financial market activity at the end of October of an election year have significant explanatory power for the outcome of the presidential election. The 2012 model considered the potential importance of financial markets following the 2008 financial crisis, the U.S. government bailouts of various industries, and the Federal Reserve's quantitative easing programs.

2016 Popular Vote Model: The unique factor in the 2016 model is competition among candidates pursuing the nomination for the *out-of-power party*. This characteristic is measured as the number of candidates nominated at that party's national convention. This variable captures the unusually high number of primary opponents that Trump faced: indeed, there has not been a primary process as competitive since the Democratic race of 1972. Trump was underestimated as a candidate for the Republican nomination in large part because of his lack of experience in the public sector, as well as his unusual campaign style.

Estimated 2016 Popular Vote Model

The Popular Vote Model is estimated on the basis of presidential election-year data from 1900 through 2012 to forecast the two-party popular vote for 2016. This is a longer time series than was previously employed to estimate models developed by Fair and Walker. Table 1 delineates the characteristics of the variables.

The dependent variable, VOTE, is the share of the two-party popular vote received by the Democratic Party's candidate. Inflation, real GDP growth, the length of time an incumbent party has been in office (DURATION), candidate incumbency, and whether the election occurred during a time of war have statistically significant coefficients in their previous studies.

The unique variable for the 2016 model, CANDID, is the competitiveness for the nomination for the out-of-power party. The number of candidates nominated at the challenging party's political convention is a measure that is consistently available over the whole estimation period from 1900 to 2012. The value of CANDID ranges from peaks of 21 in 1916 and 20 in 1972 to lows of 1 in 1900 and 2 for four other elections. The median was 8 and the standard deviation was 4.99. At the 2016 Republican Convention, 9 candidates were nominated, making the Republicans' 2016 convention more competitive than any since the nomination of George McGovern in 1972.

Table 2 presents the t-statistics for the coefficients of different iterations of models to predict the percentage of the two-party popular vote received by the Democratic candidate (VOTE). The primary model in the first row is argued to be the most effective on the basis of the consistently significant coefficients' t-statistics and the adjusted R-square of 0.54. The column denoted AR(1)/DW reports the t-statistic for the AR(1) coefficient if the Durbin-Watson (DW) statistic is far from 2.0 without the transformation to remove autocorrelation. With an AR(1) transformation, all Durbin-Watson statistics are above 1.83. The DW is reported if the transformation is unnecessary.

The negative t-statistic for the coefficient of INFLATION indicates that the Democratic candidate's popular vote percentage declines as the inflation rate rises. The positive t-statistic for GROWTH shows that the Democratic share of the popular vote rises as the rate of economic growth increases. The negative

t-statistic for DURATION suggests that the longer the Republicans (and, therefore, the shorter the Democrats) have held the Oval Office, the expected Democratic share of the popular vote increases. Conversely, the expected Democratic share decreases if there has already been a Democratic President for a number of terms. If there is a Democratic incumbent running for reelection, the expected Democratic share of the two party popular vote increases since the t-statistic for INCUMBENT is positive. The t-statistic for WAR has a positive sign; if there is a war during an election year, the Democratic nominee is more likely to win. This evidence corroborates the so called "Rally 'Round The Flag" effect. Finally, if the out-of-power party has a more competitive presidential nominating process, the Democratic vote share is expected to be lower, as demonstrated by the negative sign of the CANDID t-statistic. Since the 2016 Republican primary was so contentious, this model suggests that Clinton would not have as high a vote percentage in the 2016 general election.

Among the additional variables that are tested, none has a statistically significant coefficient at the 5 percent probability level. For most of the alternative models, at least one coefficient of a major variable in the primary model or a coefficient of an additional variable has a low t-statistic. Often, with the introduction of other variables, the coefficients of either GROWTH, WAR, or both are no longer statistically significant. Both variables are important to determine the outcomes of presidential elections.

TABLE 1
CHARACTERISTICS OF ELECTION YEAR DATA 1900-2012

	INFLATION	GROWTH	DURATION	INCUMBENT	CANDID	WAR
MEDIAN	2.74	2.72	0.00	0.00	8.00	0.00
MEAN	3.41	1.35	0.04	0.00	8.38	0.33
STD.DEV.	4.56	5.5	0.91	1.02	4.99	0.48
RANGE	22.82	26.03	3.00	2.00	18.00	1.00

INFLATION: HISTORICAL ANNUAL INFLATION RATES FOR 1914 - 2012; Fair's measures 1900 -1912
GROWTH: WEIGHTED AVERAGE REAL PER CAPITA GDP PRIOR TO THIRD QUARTER OF ELECTION YEAR
DURATION: 0 IF INCUMBENT PARTY IN POWER 1 TERM; = 1 IF FOR 2 CONSECUTIVE TERMS;
1.25 IF FOR 3 CONSECUTIVE TERMS; 1.5 IF FOR 4 CONSECUTIVE TERMS
INCUMBENT: 1 IF INCUMBENT PERSON IS RUNNING FOR REELECTION; 0 OTHERWISE
CANDID = NUMBER OF CANDIDATES NOMINATED AT CONVENTION FOR PARTY NOT IN WHITE HOUSE IN ELECTION YEAR
WAR = 1 for 1920, 1944, 1948 1952, 1968, 1972, 2004, 2008; 0 OTHERWISE

TABLE 2
POPULAR VOTE REGRESSION MODELS
t-statistics for coefficients of variables included in model

adj. R square	INFLATION	GROWTH	DURATION	INCUMBENT	CANDID	WAR	AR(1)/ DW #	ADDITIONAL VARIABLES
0.54	-4.02	2.01	-3.67	5.01	-2.64	1.93	-1.78	
0.54	-4.23	2.12	-3.95	5.36	-2.84	2.25	-2.09	'-1.12 dow at year end
0.58	-4.73	2.65	-3.44	5.19	-2.41	0.80	-2.19	'1.73 goodnews
0.60	-2.46	1.40	-2.32	2.91	-1.96	1.49	DW = 2.16	'1.91 unemployment
0.59	-3.94	1.01	-3.61	4.50	-2.83	1.93	-1.89	'1.84 political experience
0.56	-2.67	1.22	-3.06	3.98	-2.16	1.44	DW = 2.25	'-1.92 rank among presidents
0.55	-3.97	2.33	-4.33	5.91	-2.15	2.16	-2.54	'-1.45 third party popular vote
0.51	-3.44	1.42	-3.00	4.18	-2.28	1.29	DW = 2.24	'-0.76 delegates

t statistics are for AR(1) term unless Durbin-Watson (DW) is close to 2.0 and AR() is unnecessary

SEE TABLE1 FOR INFLATION, GROWTH, DURATION, INCUMBENT, CANDID, WAR

GOOD NEWS IS NUMBER OF QUARTERS OF ADMINISTRATION WERE GDP GROWTH > 3.2 (SEE Fair)

POLITICAL EXPERIENCE: NUMBER OF YEARS CANDIDATE SERVED IN CONGRESS, VICE PRESIDENT OR GOVERNOR

RANK AMONG PRESIDENTS (see Washington Post, 2016b)

THIRD PARTY POPULAR VOTE (see Matuz, 2015)

DELEGATES: DELEGATES WON AS A PERCENT OF TOTAL DELEGATES AT THE CONVENTION FOR THE PARTY NOT IN THE WHITE HOUSE AT THE TIME OF THE ELECTION

DOW AT YEAR END: ELECTION YEAR END DOW JONES AVERAGE (see Farrell, 1972, Federal Reserve Bank of St. Louis, 2016)

2016 Popular Vote Forecast

Table 3 provides forecasts for Secretary Clinton's 2016 popular vote, applying the primary model from Table 2 and the median value of each independent variable. Medians are preferred to means to reduce skewness. The first forecast (50.49%) is based on the medians for the 1992-2012 elections (6

elections). The second forecast (51.78%) is based on the medians for a shorter, more recent period, 2000-2012 (4 elections). The authors published the results summarized in this table (https://finpolicy.georgetown.edu/) on Monday, November 7, 2016, and discarded a third published forecast that employed only values of the independent variables for the first three quarters of 2016.

Certified vote counts from each of the 50 states and the District of Columbia show that Secretary Clinton received 51.11 percent of the two-party popular vote. The forecasts in Table 3 are each less than three-quarters of one percentage point different than the actual two-party vote percentages. The average of the two forecasts, 51.135 percent, is nearly identical to the actual share Clinton received. Table 4 lists 10 major national pollsters' final 2016 general election surveys, and only one, Selzer & Co., was marginally superior to the models in this paper. Most of the other forecasters overestimated Clinton's share of the two-party popular vote by between 1 and 3 percentage points.

TABLE 3
WALKER GOLDSTEIN ELECTION FORECAST MODELS

	INFLATION	GROWTH	DURATION	INCUMBENT	CANDID	WAR	AR(1)	PERCENTAGE DEMS VOTE
MEDIANS 1992-2012	2.5850	2.0585	0	0	4	0	-0.3748	50.49
MEDIANS 2000-2012	2.3225	1.7265	0	0	2.5	0	-1.7952	51.78
								Constant
coefficients	-0.8197	0.3426	-6.1589	7.4030	-0.3809	4.4976	-0.4310	53.2706
t-statistics	-4.02	2.01	-3.67	5.01	-2.64	1.93	-1.78	31.51
R-square = 0.66. Durbin-Watson Statistic 1.94 with AR(1).								

WAR = 1 for 1920, 1944, 1948, 1952, 1968, 1972, 2004, 2008

CANDID = NUMBER OF CANDIDATES NOMINATED AT PARTY CONVENTION FOR OUT OF POWER PARTY

INFLATION: INFLATION FOR FIRST 15 QUARTERS OF AN ADMINISTRATION; *HISTORICAL INFLATION RATES, 1914-2016*

GROWTH: WEIGHTED AVERAGE REAL PER CAPITA GDP FROM WWW.FAIRMODEL.EDU

DURATION: 0 IF PARTY IS IN THE WHITE HOUSE 1 TERM, 1 (-1) IF THE DEMOCRAT (REPUBLICAN) IS IN THE WHITE HOUSE TWO CONSECUTIVE TERMS 1.25 (-1.25) THREE CONSECUTIVE TERMS; 1.50 (-1.50) FOUR CONSECUTIVE TERMS.

INCUMBENT: 1 IF INCUMBENT IS RUNNING, 0 OTHERWISE

TABLE 4
CLINTON SHARE OF TWO PARTY POPULAR VOTE 2016

Pollster	CONDUCTED	CLINTON %	TRUMP %	JOHNSON %	CLINTON SHARE (2 Party)
Selzer & Co.	Nov 4-Nov 6	44	41	4	51.76%
Nate Silver's 538	Nov 8 (AM)	48.5	44.9	5	51.93%
Fox News	Nov 3-Nov 6	48	44	3	52.17%
ABC/Washington Post	Nov 3-Nov 6	47	43	4	52.22%
CBS/NY Times	Nov 2-Nov 6	45	41	5	52.33%
Wall Street Journal/NBC	Nov 3-Nov 5	44	40	6	52.38%
CNN/ORC	Oct 20-Oct 23	49	44	3	52.69%
Monmouth University	Nov 3-Nov 6	50	44	4	53.19%
Quinnipiac University	Oct 17- Oct 18	47	40	7	54.02%
IOWA - IEM Pr(win)	7-Nov	78.5	23.5	-	-
	INPUT DATA				
Walker - Goldstein Model	1992-2012				50.49%
Walker - Goldstein Model	2000-2012				51.78%
Final Popular Two Party Vote	Jan 10	65,844,954	62,979,879		51.11%

STATE ELECTORAL COLLEGE MODELS

The difference between Trump's loss in the national popular vote and his victory in the Electoral College prompted the authors to explore factors that led to this unusual result. Unlike these results in Table 3, the results in this section have been developed subsequent to the 2016 popular-electoral vote divergence.

The Electoral College Model is a state-by-state, cross-sectional probit model designed to explain Trump's Electoral College victory. The probit analysis is estimated across the 50 states to test which factors might explain the 2016 Republican Electoral College victory. The dependent variable is 1.0 if Trump won the state and 0.0 otherwise. The Electoral College Model was designed to include state-wide variables analogous to the Popular Vote Model variables, in addition to new explanatory variables. Additional potential factors that were tested include: states' economic conditions, political environment, population size, educational levels, and gender and racial compositions. Different variations of these factors were tested, along with other considerations that may have affected the unusual 2016 outcome.

Table 5 provides the characteristics of a selection of the potential explanatory factors for the Electoral College model. There are large variations, both in terms of standard deviation and range, for many of the variables.

Table 6 presents the z-statistics for probit cross-section models that include the Huber/White robust heteroskedastic transformation. The model on the first line is selected as the best one to explain Trump's Electoral College victory. This model has the highest adjusted R-square (0.87), nearly the lowest AKAIKE IC value (0.42), and five coefficients that are all statistically significant at the 5 percent probability level or better. In cases where the adjusted R-square is nearly as high, the coefficient of at

least one hypothesized explanatory variable does not have a significant z-statistic at a meaningful probability level.

The negative coefficients of variables that measure a state's economy — per-capita income and real GDP growth — indicate that states with weaker economies voted for Trump. The states with a higher percentage of Republicans in the Senate (SENREPUB), likewise, voted for Trump, following the trend in recent American elections for "straight-ticket" voting. In place of Senate delegation percentages, the political party of the state governor was also tested as a binary variable; however, it has a less significant coefficient than states' Senate composition. State relative population size is represented by its number of electoral votes (ELECTORS). ELECTORS partially avoids the implicit correlation inherent by including per-capita income (PERCAPINC). The positive sign for the z-statistics for ELECTORS reflects Trump's winning more populous states.

To reflect additional economic environments, state unemployment was included in several models. The coefficients of unemployment (U) had low z-statistics, and these models exhibited AKAIKE IC values well above the lowest cases. Economic growth and income were more important than unemployment in determining whether or not a state voted for Trump.

States with lower percentages of Hispanic populations were more likely to vote for Trump, as indicated by this demographic's negative z-statistic. The mixed z-statistic signs for the percentage of the state population that is African American (AFRAMER) indicate that states with a higher percentage of African Americans did not consistently vote for the post-Obama era Democratic party. These results are consistent with the respective increase in Hispanic and decrease in African American turnout in 2016. The state minority population is estimated by the sum of the percentages of Hispanic and African American populations. Including the sum of these two variables in a model is indicated in Table 6 by reporting the same z-statistic in both columns (HISPANIC, AFRAMER). Models that include minority state populations were found to have lower adjusted R-squares, and higher AKAIKE IC values.

The level of voter education in the states where Trump won the popular vote is another electoral issue frequently discussed for 2016. The impacts of the percentage of a state's population with high school diplomas (HSGRAD) or a bachelor's degree (BACH) are not statistically strong in the states that Trump won. Each variable has a negative coefficient, however, indicating that less education was consistent with his electoral college victories. The coefficient for greater high school graduation rates is statistically significant at the 10 percent probability level, but in that model, the significance of the coefficient of GDP growth declines to 10 percent, the AKAIKE IC rises to 0.52, and the adjusted R-square declines to 0.79. Finally, the percentages of state populations that are senior citizens or women were tested as potential determinants. Neither of these characteristics was found to have a coefficient that is statistically significant at any meaningful level, as both z-statistics are below 1.0. The latter conclusion, in particular, was surprising, given that Clinton was the first woman to top a major political party ticket in American history.

TABLE 5
CHARACTERISTICS OF 2016 STATE ELECTION DATA

	PERCAPINC	GDPGR	ELECTORS	HISPANIC	AFRAMER	HSGRAD	REPWIN	SENREPUB	U
MEDIAN	27546	1.4	8.00	8.65	8.03	87.50	1.00	50.00	4.75
MEAN	28445	0.73	10.7	11.02	10.61	86.91	0.60	52.00	4.71
STD. DEV.	4205	2.38	9.72	10.11	9.58	3.45	0.49	43.99	0.98
RANGE	18337	15.30	52.00	46.70	36.63	11.90	1.00	100.00	4.00

REPWIN: 1 IF REPUBLICAN WON STATE POPULAR VOTE, 0 OTHERWISE
PERCAPINC: PERCAPITA INCOME BY STATE
GDPGR: REAL GDP GROWTH RATE BY STATE
ELECTORS: NUMBER OF ELECTORAL VOTES PER STATE (reflecting state population)
HISPANIC: PERCENTAGE OF STATE POPULATION THAT IS HISPANIC
AFRAMER: PERCENTAGE OF STATE POPULATION THAT IS AFRICAN AMERICAN
HSGRAD: PERCENTAGE OF STATE POPULATION THAT IS A HIGH SCHOOL GRADUATE
SENREPUB: PERCENT OF STATE'S SENATORS THAT ARE REPUBLICAN
U: STATE UNEMPLOYMENT PERCENTAGE

TABLE 6
STATEWIDE VOTE PROBIT MODELS
z-statistics for coefficients of variables included in each model

adj. Rsquare	PERCAPINC	GDPGR	SENREP	HOUSREP	HISPANIC #	AFRAMER #	ELECTORS	AKAIKE IC	ADDITIONAL VARIABLES
0.87	-2.60	-2.05	2.09		-2.49		2.87	0.42	
0.86	-2.67	-1.73		3.66	-1.04			0.39	
0.85	-3.04	-2.07		3.96	0.69	0.69		0.40	
0.70	-3.18	-2.96	3.51			2.05	-0.03	0.64	
0.76	-3.56	-2.44	4.32		-2.24	-2.24	2.75	0.57	
0.78	-3.28	-2.42	3.72		-2.45			0.50	
0.70	-2.98	-2.84	3.49			2.05		0.60	
0.70	-3.18	-2.96	3.51			2.05	-0.03	0.64	
0.79	-3.05	-1.84	3.81		-2.45			0.52	-1.64 HSGRAD
0.78	-2.35	-2.17	3.30		-2.26			0.54	-0.52 BACH
0.78	-3.35	-2.55	3.97		-3.00			0.53	0.79U
0.72	-3.22	-2.84	3.69			2.07		0.62	-1.10U
0.77	-3.56	-3.09	3.79		-2.12	-2.12	2.51	0.60	1.04U
0.78	-3.51	-3.02	3.78		-2.70			0.42	-0.71 SENIORS
0.78	-3.26	-3.43	3.35		-2.39			0.54	0.09 WOMEN

REPWIN IS THE DEPENDENT VARIABLE (0,1) MEASURING WHETHER THE STATE POPULATION VOTE WAS HIGHER FOR THE REPUBLICAN (1) OR DEMOCRAT (0)

PERCAPINC: PER CAPITA INCOME IN EACH STATE

GDPGR: GDP GROWTH RATE FOR EACH STATE

SENREP: PERCENTAGE OF THE SENATORS THAT ARE REPUBLICANS FOR EACH STATE

HOUSEREP: PERCENTAGE OF MEMBERS OF THE STATE'S DELEGATION IN THE HOUSE THAT IS REPUBLICAN

HISPANIC: PERCENTAGE OF STATE POPULATION THAT IS HISPANIC

AFRAMER: PERCENTAGE OF STATE POPULATION THAT IS AFRICAN AMERICAN

CONCLUSION

This study extends previous research to show that the presidential popular vote can be predicted by a macro-dynamic economic model. The unique feature of the 2016 model is a variable to reflect the competitive environment for the out-of-power party in selecting its nominee. The statistical results are strong, and the popular vote forecast is closer to the actual outcome than virtually every poll conducted immediately before Election Day. On the day before the 2016 election, the authors published forecasts that Secretary Clinton would receive between 50.49 and 51.78 percent of the two-party popular vote; her final share of the popular vote was 51.11 percent.

For only the fifth time in American history, the popular vote winner did not win the Electoral College vote. Therefore, the authors developed a 50-state, cross-sectional probit model to *explain* the 2016 outcome after the election. Statewide per-capita income, GDP growth, the percentage of U.S. Senators who were Republican, the statewide population that is Hispanic, and the population (number of electors from each state) have highly significant coefficients and explain 87 percent of the variation in a probit model.

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