Presidential and Congressional Vote-Share Equations: November 2014 Update

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Abstract

The three vote-share equations in Fair (2009) are updated using data available as of November 5, 2014. The equations are reestimated incorporating the new data, and forecasts of the 2016 presidential and House elections are made.

1 Introduction

Three vote-share equations are estimated in Fair 2009)—presidential, on-term House, and mid-term House. These equations are updated in this paper using data available as of November 5, 2014. The sample period in Fair (2009) was 1916–2004 for the first two equations and 1918–2006 for the third. In this update two observations have been added. The sample period is 1916–2012 for the first two equations and 1918–2014 for the third. No specification changes have been made; the equations are simply reestimated using two more observations.

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The history of the equations is briefly discussed in Section 2; the data are discussed in Section 3; the estimates are presented in Section 4; a comparison of ex ante and ex post forecasts is made in Section 5; and forecasts for the 2016 presidential and on-term House elections are presented in Section 6. Appendix A contains a complete description of how the data were collected and a listing of all the data. The results in this paper can be duplicated using these data if desired.

2 History of the Equations

The presidential vote equation was first presented in Fair (1978). The previous updates of this equation are in Fair (1982, 1988, 1990, 1996a, 1998, 2002a, 2006, 2010). The specification of the equation has not been changed since changes following the 1992 election. The easiest paper to read regarding the changes that were made to the equation between the original specification and the specification after the 1992 election is Fair (1996b). A non technical discussion is in Fair (2002b). The on-term and mid-term House equations were first presented in Fair (2009). The specification of these two equations has also not been changed for this update.

Counting the original presidential vote paper and the eight updates, there are nine estimated equations, one before each of the elections between 1980 and 2012. In Section 5 I have examined nine ex ante forecasts. Each forecast uses the relevant estimated equation and the economic data that existed at the time of the election. These forecasts are compared to ex post forecasts using the currently estimated equation and the latest economic data. This gives one a sense, among other things, of how important the specification changes after the 1992 election were.

3 The Updated Data

The National Income and Product data available as of October 30, 2014, from the Bureau of Economic Analysis (BEA) have been used. Data prior to 1929 have been obtained, as before, from Balke and Gordon (1986). The appendix discusses the splicing of the Balke and Gordon data to the BEA data.

The vote data have been obtained when possible from the *Statistical Abstract of the United States*, various issues, and the Office of the Clerk of the U.S. House of Representatives. Some of these data are slightly different from the data used in Fair (2009), which were based on data from the CQ Press (a division of Congressional Quarterly, Inc.). The differences are small between these two data sources, but the use of the new data source does mean that some of the vote-share values used for the current update do not match exactly the values used previously. The previously used data were used when data were not available from the Office of the Clerk. The value used for the mid-term 2014 House two-party vote share, 46.5, is preliminary. I am indebted to Gary Jacobson for this estimate.

4 The Updated Estimates

Tables 1–4 are the same as in Fair (2009) except for two more observations used. If you compare the new tables to the old, you will see that the current results are quite close to the previous results. None of the conclusions reached in Fair (2009) are changed. It is assumed that the reader is familiar with this earlier discussion; it is not repeated here.

Table 1
Variables

Variable	Definition
V^p	Democratic share of the two-party presidential vote.
V^c	Democratic share of the two-party on-term House vote.
V^{cc}	Democratic share of the two-party mid-term House vote.
I	1 if there is a Democratic presidential incumbent at the time of the election and -1 if there is a Republican presidential incumbent.
$DPER$	1 if a Democratic presidential incumbent is running again, -1 if a Republican presidential incumbent is running again, and 0 otherwise.
DUR	0 if either party has been in the White House for one term, 1 [-1] if the Democratic [Republican] party has been in the White House for two consecutive terms, 1.25 [-1.25] if the Democratic [Republican] party has been in the White House for three consecutive terms, 1.50 [-1.50] if the Democratic [Republican] party has been in the White House for four consecutive terms, and so on.
WAR	1 for the elections of 1918, 1920, 1942, 1944, 1946, and 1948, and 0 otherwise.
G	growth rate of real per capita GDP in the first three quarters of the on-term election year (annual rate).
G^{cc}	growth rate of real per capita GDP in the first three quarters of the mid-term election year (annual rate).
P	absolute value of the growth rate of the GDP deflator in the first 15 quarters of the administration (annual rate) except for 1920, 1944, and 1948, where the values are zero.
P^{cc}	absolute value of the growth rate of the GDP deflator in the first 7 quarters of the administration (annual rate) except for 1918, 1942, and 1946, where the values are zero.
Z	number of quarters in the first 15 quarters of the administration in which the growth rate of real per capita GDP is greater than 3.2 percent at an annual rate except for 1920, 1944, and 1948, where the values are zero.
Z^{cc}	$\frac{15}{7}$ times number of quarters in the first 7 quarters of the administration in which the growth rate of real per capita GDP is greater than 3.2 percent at an annual rate except for 1918, 1942, and 1946, where the values are zero.

• Sample period: 1916, 1920, . . . , 2012 for the V^p and V^c equations and 1918, 1922, . . . , 2014 for the V^{cc} equation.

Table 2
Estimated Equations

	Eq. 1 V^p	Eq. 2 V^c	Eq. 2a V^c	Eq. 3 V^{cc}	Eq. 3a V^{cc}
$Index$	–	–	0.558	–	0.622
			(6.16)		(3.03)
$G \cdot I$	0.667	0.393	0.372	–	–
	(5.79)	(3.65)			
$P \cdot I$ or $P^{cc} \cdot I$	−0.690	−0.383	*−0.385*	−0.469	*−0.429*
	(−2.34)	(−1.43)		(−2.26)	
$Z \cdot I$ or $Z^{cc} \cdot I$	0.968	0.470	*0.540*	0.577	*0.602*
	(4.03)	(1.98)		(2.57)	
$DPER$	3.01	2.80	2.88	–	–
	(2.14)	(2.65)	(3.05)		
DUR	−3.80	–	–	–	–
	(−3.10)				
I	−1.56	−3.45	−3.84	−2.94	−3.10
	(−0.71)	(−2.01)	(−4.33)	(−2.69)	(−3.49)
WAR	4.89	2.18	2.41	0.42	0.60
	(1.92)	(1.01)	(1.45)	(0.22)	(0.35)
$CNST$	47.75	49.96	49.97	48.73	48.76
	(79.15)	(90.92)	(96.45)	(76.85)	(80.28)
$V^{cc}_{-2} - 50$	–	0.603	0.583	–	–
		(4.38)	(5.11)		
$V^{c}_{-2} - 50$	–	–	–	0.748	0.735
				(4.49)	(4.72)
$V^{p}_{-2} - 50$	–	–	–	−0.312	−0.323
				(−2.16)	(−2.38)
SE	2.62	2.33	2.21	2.36	2.30
R^2	0.897	0.834	0.833	0.795	0.794
No. obs.	25	25	25	25	25

• Estimation method: OLS; t-statistics are in parentheses.
• Estimation period: 1916–2012 for V^p and V^c, 1918–2014 for V^{cc}.
• $Index$ for V^c is $0.667 \cdot G \cdot I - 0.690 \cdot P \cdot I + 0.968 \cdot Z \cdot I$. The hypothesis that the weights in this index are correct is not rejected: F-value of 0.052, which with 2,17 degrees of freedom has a p-value of 0.949.
• $Index$ for V^{cc} is $-0.690 \cdot P^{cc} \cdot I + 0.968 \cdot Z^{cc} \cdot I$. The hypothesis that the weights in this index are correct is not rejected: F-value of 0.072, which with 1,18 degrees of freedom has a p-value of 0.788.
• Values in italics are implied values.

Table 3
Predicted Values and Estimated Residuals from Table 2

	Act.	Eq. 1		Act.	Eq. 2a		Act.	Eq. 3a		
t	V^p	$\hat{V}^p$	$\hat{u}^p$	V^c	$\hat{V}^c$	$\hat{u}^c$	V^{cc}	$\hat{V}^{cc}$	$\hat{u}^{cc}$	$t+2$
1916	51.7	50.7	-1.0	48.9	50.0	1.1	45.1	44.9	-0.2	1918
1920	36.1	39.6	3.5	38.0	41.4	3.5	46.4	44.7	-1.7	1922
1924	41.7	42.8	1.0	42.1	46.9	4.8	41.6	42.3	0.8	1926
1928	41.2	43.4	2.1	42.8	43.5	0.6	45.7	47.7	2.0	1930
1932	59.1	61.5	2.4	56.9	54.3	-2.6	56.5	51.2	-5.3	1934
1936	62.2	64.0	1.7	58.5	61.1	2.6	50.8	51.8	1.0	1938
1940	55.0	55.7	0.7	53.0	55.2	2.3	47.7	46.8	-0.8	1942
1944	53.8	52.1	-1.7	51.7	51.6	-0.1	45.3	46.3	1.0	1946
1948	52.3	50.5	-1.8	53.2	49.9	-3.3	50.0	51.1	1.0	1950
1952	44.7	45.3	0.6	49.9	49.4	-0.5	52.5	52.6	0.0	1954
1956	42.9	43.6	0.7	51.0	50.9	-0.1	56.0	54.7	-1.2	1958
1960	50.1	49.2	-0.9	54.8	55.1	0.3	52.5	53.8	1.3	1962
1964	61.2	60.4	-0.8	57.3	56.7	-0.6	51.2	52.8	1.5	1966
1968	49.4	50.4	1.0	50.9	51.3	0.4	54.4	53.6	-0.8	1970
1972	38.2	41.9	3.7	52.7	51.0	-1.6	58.5	58.5	0.0	1974
1976	51.0	50.9	-0.2	56.9	57.5	0.7	54.4	52.6	-1.8	1978
1980	44.8	46.3	1.4	51.4	49.9	-1.4	56.0	55.0	-1.0	1982
1984	40.9	38.5	-2.4	52.8	50.0	-2.7	55.1	55.3	0.2	1986
1988	46.2	48.7	2.5	54.0	54.3	0.3	54.2	55.1	0.9	1990
1992	53.6	48.3	-5.3	52.7	51.9	-0.9	46.5	48.1	1.7	1994
1996	54.7	53.9	-0.9	50.2	49.6	-0.6	49.5	47.5	-2.0	1998
2000	50.3	49.4	-0.9	49.8	49.7	-0.1	47.6	52.4	4.9	2002
2004	48.8	44.5	-4.3	48.6	48.5	-0.1	54.1	50.1	-4.0	2006
2008	53.7	54.3	0.6	55.5	56.9	1.3	46.6	48.1	1.6	2010
2012	52.0	50.1	-1.9	50.7	47.5	-3.2	46.5	47.5	1.0	2014
RMSE			2.16			1.92			2.01	

- $\hat{u}^p = \hat{V}^p - V^p$.
- $\hat{u}^c = \hat{V}^c - V^c$.
- $\hat{u}^{cc} = \hat{V}^{cc} - V^{cc}$.
- RMSE = root mean squared error.

Table 4
Full Information
Maximum Likelihood Estimates

	Eq. 1 V^p	Eq. 2a V^c	Eq. 3a V^{cc}
$G \cdot I$	0.676	0.365	–
	(7.37)	(5.50)	
$P \cdot I$ or $P^{cc} \cdot I$	−0.717	*−0.387*	−0.362
	(−3.56)		(−2.27)
$Z \cdot I$ or $Z^{cc} \cdot I$	0.958	*0.517*	*0.484*
	(5.03)		
$DPER$	2.80	3.06	–
	(2.41)	(3.64)	
DUR	−3.87	–	–
	(−4.16)		
I	−1.36	−3.73	−2.83
	(−0.85)	(−3.90)	(−3.46)
WAR	4.87	2.22	0.57
	(2.44)	(1.50)	(0.38)
$CNST$	47.74	49.98	48.99
	(96.35)	(111.05)	(85.65)
$V^{cc}_{-2} - 50$	–	0.582	–
		(6.24)	
$V^{c}_{-2} - 50$	–	–	0.678
			(4.51)
$V^{p}_{-2} - 50$	–	–	−0.251
			(−1.92)
SE	2.17	1.93	2.06
No. obs.	25	25	25

- Estimation method: FIML.
- Coefficient constraints on equations (2a) and (3a) imposed.
- Errors assumed to be correlated across equations.
- t-statistics are in parentheses, not adjusted for degrees of freedom.
- Values in italics are implied values.

The variables are listed in Table 1. The coefficient estimates are presented in Table 2: there is one estimate for the presidential equation and two each for the on-term and mid-term House equations. The second estimate for each House equation contains restrictions on the coefficients of the economic variables based on estimates from the presidential equation. Table 3 presents the predicted values and estimated residuals from the presidential equation and the two restricted House equations. Table 4 contains FIML estimates of the three equations.

Looking at Table 3, the ex post error for 2012 for the presidential election is -1.9 percentage points (Obama got 52.0 percent and was predicted to get 50.1 percent). For 2008 the ex post error is 0.6 percentage points (53.7 actual and 54.3 predicted). For the 2012 on-term House election, the ex post error is -3.2 percentage points (the Democrats got 50.7 percent and were predicted to get 47.5 percent). For the 2014 mid-term House election, the ex post error is 1.0 percentage points (the Democrats got 46.5 percent and were predicted to get 47.5 percent). The estimated standard errors of the three equations from Table 2 are 2.62, 2.21, and 2.30, respectively, and the last two ex post errors for each equation are within one standard error except for the 2012 on-term House election. Given that these six errors are relatively small, it is not surprising that the coefficient estimates have not changed much from those in Fair (2009) by adding the two new observations. There are no big surprises.

All the robustness tests discussed in Fair (2009) were repeated, with no change in any of the conclusions. Again, this discussion is not repeated here.

5 Ex Ante versus Ex Post Forecasts

As noted in Section 2, nine estimated presidential equations can be examined, one for each of the elections between 1980 and 2012. Beginning with the 1996 election, the last forecast before the election is available from my website. In each case this forecast uses the actual economic data that were known at the time (no predicted economic data are needed right before the election). For the elections of 1984, 1988, and 1992, tables of vote forecasts were presented in the respective papers—Fair (1982, 1988, 1990)—for different values of the economic variables. For present purposes I took the values of the economic variables that were available right before the election (from past issues of the *Survey of Current Business*) and chose the relevant vote forecast from the tables. Interpolation was used to get the exact forecast. For the 1980 election I used the equation in row 4 of Table 2 in Fair (1978) along with the economic data that were available right before the election.

The ex ante forecasts are presented in Table 5 along with the ex post forecasts from Table 3. The ex post forecasts use the estimated equation in Table 2 and the latest revised economic data. The mean absolute error (MAE) for the nine ex ante errors is 3.53, which compares to 2.24 for the ex post errors. The largest ex ante and ex post errors are for the elections of 1992 and 2004. In 1992 Clinton, running against President George H.W. Bush, got 53.6 percent of the vote and was predicted to get much less—the ex ante error is -10.5 percentage points. In 2004 Kerry, running against President George W. Bush, got 48.8 percent of the vote and was predicted to get much less—the ex ante error is -6.5 percentage points.

Table 5
Ex Ante and Ex Post Forecasts
Democratic Share of the Two-Party Vote

		Presidential Equation			
		Ex Ante		**Ex Post**	
	Actual	**Forecast**	**Error**	**Forecast**	**Error**
1980	44.8	46.4	1.6	46.3	1.4
1984	40.9	43.2	2.3	38.5	-2.4
1988	46.2	48.1	1.9	48.7	2.5
1992	53.6	43.1	-10.5	48.3	-5.3
1996	54.7	51.0	-3.7	53.9	-0.9
2000	50.3	50.8	0.5	49.4	-0.9
2004	48.8	42.3	-6.5	44.5	-4.3
2008	53.7	51.9	-1.8	54.3	0.6
2012	52.0	49.0	-3.0	50.1	-1.9
MAE			3.53		2.24
		On-Term House Equation			
2008	55.5	55.8	0.3	56.9	1.3
2012	50.7	46.0	-4.7	47.5	-3.2
MAE			2.80		2.25
		Mid-Term House Equation			
2010	46.6	49.2	2.6	48.1	1.6
2014	46.5	50.9	4.4	47.5	1.0
MAE			3.50		1.30

- Ex Post forecasts from Table 3.
- Ex Ante forecasts explained in the text.

The respective ex post errors are smaller at -5.3 and -4.3 percentage points. The other seven elections are forecast fairly well. The next largest ex ante error is -3.7 percentage points in 1996, where the Democrats (Clinton) got 54.7 percent and were predicted to get 51.0 percent.

As noted in Section 2, some specification changes were made to the presidential equation after the 1992 election. This election remains, however, a poorly predicted one. The ex post error of -5.3 percentage points in Table 3 for 1992 is the largest of the 25 errors in absolute value.

There are two ex ante forecasts available for the on-term House election and the mid-term House election. These are presented in Table 5 along with the ex post forecasts from Table 3. For the 2008 on-term House election the ex ante error is 0.3 percentage points and the ex post error is 1.3 percentage points. For the 2012 election the ex ante error is -4.7 percentage points and the ex post error is -3.2 percentage points. For the 2010 mid-term House election the respective errors are 2.6 and 1.6, and for the 2014 mid-term House election they are 4.4 and 1.0.

6 Forecasts for 2016

The values of the non economic variables for 2016 are $I = 1$ (the Democrats are in power), $DPER = 0$ (the incumbent President is not running), $DUR = 1.00$ (the Democrats have been in power for two consecutive terms), $WAR = 0$, and $V^{cc} = 46.50$. Using equations 1 and 2a in Table 2, the two equations for 2016 are:

$$V^p = 42.39 + 0.667 \cdot G - 0.690 \cdot P + 0.968 \cdot Z$$

$$V^c = 44.09 + 0.372 \cdot G - 0.385 \cdot P + 0.540 \cdot Z$$

The constant terms incorporate the non economic values just mentioned.

Table 6
Forecasts for 2016
Democratic Share of Two-Party Vote

Forecast	G	P	Z	
				Presidential Equation (V^p)
48.70	2.97	2.14	6	October 30, 2014, economic forecast from US model
51.33	4.00	2.14	8	Large boom
43.96	1.00	1.50	2	Sluggish growth
				On-Term House Equation (V^c)
47.61	2.97	2.14	6	October 30, 2014, economic forecast from US model
49.07	4.00	2.14	8	Large boom
44.96	1.00	1.50	2	Sluggish growth

The two equations are:

$$V^p = 42.39 + 0.667 \cdot G - 0.690 \cdot P + 0.968 \cdot Z$$

$$V^c = 44.09 + 0.372 \cdot G - 0.385 \cdot P + 0.540 \cdot Z$$

Given forecasts of the three economic variables, forecasts of the vote shares can be made. Table 6 presents three forecasts per equation. For the first, the economic forecasts, dated October 30, 2014, from my US model are used. These economic forecasts are fairly optimistic. The per capita growth rate in 2016 (G) is 2.97 percent, and the number of good news quarters (Z) is 6. (Through the third quarter of 2014 there have been two good news quarters since the beginning of the second Obama administration—2013:3 and 2014:2—and the US model is forecasting that there will be four more through the third quarter of 2016—all four quarters in 2015.) Inflation (P) is forecast to be 2.14 percent. These economic values lead to a forecast of 48.70 percent of the two-party vote share for the Democratic candidate. The Democratic share of the two-party House vote is forecast to be 47.61 percent.

The presidential forecast thus suggests that even with a fairly robust economy the Democrats are not favorites. The constant term in the above V^p equation is fairly low at 42.39. This term reflects the facts that 1) there is a slight bias of 1.56 percentage points against the Democrats (the coefficient estimate of I), 2) there is a duration penalty of 3.80 against the Democrats (the coefficient estimate of DUR), and 3) there is no person running again effect ($DPER$ is zero).

The second forecast in Table 6 assumes a very strong economy between now and the election. The per capita growth rate in the first three quarters of 2016 is 4.0 percent, the inflation rate is 2.14 percent (the same as forecast by the US model), and there are 8 good news quarters—6 out of the remaining 8 quarters. With these economic values the forecast is that the Democrats get 51.33 percent of the two-party vote. This is above 50 percent, but still within one standard error of 50 percent.

The third forecast in Table 6 assumes that growth will be sluggish. The per capita growth rate is only 1.0 percent, the inflation rate is 1.50 percent, and there are assumed to be no further good news quarters, so the total number is just 2. This leads to a vote share for the Democrats of only 43.96 percent, which is more than two standard errors below 50 percent.

In summary, the non economic variables are not favorable for the Democrats in 2016, and so the equation predicts that a very strong economy is needed for the Democrats to get more than 50 percent of the two-party vote.

Data Appendix

The data used in this paper are presented in Table A. Quarterly data on nominal GDP, real GDP, and population are needed to construct G, G^{cc},P, Z, P^{cc}, and Z^{cc}. Let GDP denote nominal GDP, let $GDPR$ denote real GDP, and let POP denote population. Let a subscript k denote the kth quarter of the sixteen-quarter period of an administration. Also, let $Y = GDPR/POP$, which is real per capita GDP, and let $GDPD = GDP/GDPR$, which is the GDP deflator. Then G, G^{cc}, P, and P^{cc} are constructed as:

$$G = [(Y_{15}/Y_{12})^{(4/3)} - 1] \cdot 100$$
$$G^{cc} = [(Y_7/Y_4)^{(4/3)} - 1] \cdot 100$$
$$P = [(GDPD_{15}/GDPD_{16}(-1))^{(4/15)} - 1] \cdot 100$$
$$P^{cc} = [(GDPD_7/GDPD_{16}(-1))^{(4/7)} - 1] \cdot 100$$

where (-1) means the previous four-year election period. To construct Z and Z^{cc} one needs to define the growth rate in a given quarter, which for quarter k is $g_k = [(Y_k/Y_{k-1})^4 - 1] \cdot 100$ for quarters 2 through 16 and $g_k = [(Y_1/Y_{16}(-1))^4 - 1] \cdot 100$ for quarter 1. Z is then the number of quarters in the first 15 quarters of an administration in which g_k is greater than 3.2, and Z^{cc} is $\frac{15}{7}$ times the number of quarters in the first 7 quarters of an administration in which g_k is greater than 3.2.

The data on nominal GDP were obtained as follows. Annual data for 1929–1946 and quarterly data for 1947:1–2014:3 were obtained from the Bureau of Economic Analysis (BEA) website on October 30, 2014. Quarterly data for 1913:1–1946:4 are available from Balke and Gordon (1986), pp. 789–795. The Balke and

Gordon values for 1913:1–1928:4 were used exactly, but the values for 1929:1–1946:4 were adjusted to take account of the BEA annual data. For 1929:1–1946:4 each quarterly value for a given year was multiplied by a splicing factor for that year. The splicing factor is the ratio of the BEA value for that year to the respective yearly value in Balke and Gordon (1976), pp. 782–783.

The data on real GDP were obtained in a similar way. Annual data for 1929–1946 and quarterly data for 1947:1–2014:3 were obtained from the BEA website on October 30, 2014. Quarterly data for 1913:1–1946:4 are available from Balke and Gordon (1986), pp. 789–795. The Balke and Gordon values were spliced to the BEA values. All the Balke and Gordon quarterly values for 1913:1–1929:4 were multiplied by the same number. This number is the ratio of the BEA value for 1929 to the 1929 value in Balke and Gordon (1976), p. 782. For 1930:1–1946:4 each Balke and Gordon quarterly value for a given year was multiplied by a splicing factor for that year. The splicing factor is the ratio of the BEA value for that year to the respective yearly value in Balke and Gordon (1976), pp. 782–783.

The data on population were obtained as follows. For 1913–1928 annual data were obtained from U.S. Department of Commerce (1973), pp. 200–201, A114 series. Each of these observations was multiplied by 1.000887, a splicing factor. The splicing factor is the ratio of the A114 value for 1929 in U.S. Department of Commerce (1973) to the value for 1929 in Table 8.2 in U.S. Department of Commerce (1992). For 1929–1945 annual data were obtained from U.S. Department of Commerce (1992), Table 8.2. Quarterly observations for 1877:1–1945:4 were obtained by interpolating the annual observations using the method presented in Fair (1994), Table B.6. For 1946:1–1946:4 quarterly data were obtained from the BEA website on October 27, 2006. For 1947:1–2014:3 quarterly data were obtained from the BEA website on October 30, 2014.

Turning now to the vote data, V^p is the Democratic vote divided by the Democratic plus Republican vote except for the 1924 election. For 1924, V^p is the Democratic vote plus 0.765 times the LaFollette vote divided by the Democratic plus Republican plus LaFollette vote. The presidential vote data for 1916 were obtained from U.S. Department of Commerce (1975), pp. 1078–1079. Data for the elections after 1916 were obtained from past issues of the *Statistical Abstract of the United States* and from the website of the Office of the Clerk of the U.S. House of Representatives.

V^c and V^{cc} are the Democratic House vote divided by the Democratic plus Republican House vote. No adjustments were made to these data. The vote data were obtained when possible from the website of the Office of the Clerk of the U.S. House of Representatives. Most of the data from 1930 on were available from this website. When data were not available, past issues of the *Statistical Abstract of the United States* were tried, working from the most recent back. When data from this source were not available, the data were obtained from U.S. Department of Commerce (1975), p. 1084. The value of V^{cc} of 0.465 for 2014 was supplied to me by Gary Jacobson; it is preliminary.

I, $DPER$, DUR, and WAR are defined in the text. In the construction of $DPER$ Ford is not counted as an incumbent running again, since he was not an elected vice president, whereas the other vice presidents who became president while in office are counted.

Table A
Data for the V^p and V^c Equations

t	V^p	V^c	I	$DPER$	DUR	WAR	G	P	Z
1916	51.682	48.881	1	1	0.00	0	2.229	4.252	3
1920	36.148	37.957	1	0	1.00	1	-11.463	0.000	0
1924	41.737	42.093	-1	-1	0.00	0	-3.872	5.161	10
1928	41.244	42.838	-1	0	-1.00	0	4.623	0.183	7
1932	59.149	56.874	-1	-1	-1.25	0	-14.350	6.928	4
1936	62.226	58.476	1	1	0.00	0	11.682	2.498	9
1940	54.983	52.967	1	1	1.00	0	3.913	0.051	8
1944	53.778	51.718	1	1	1.25	1	4.122	0.000	0
1948	52.319	53.190	1	1	1.50	1	3.214	0.000	0
1952	44.710	49.944	1	0	1.75	0	0.997	2.353	7
1956	42.906	50.970	-1	-1	0.00	0	-1.252	1.907	5
1960	50.087	54.790	-1	0	-1.00	0	0.674	1.980	5
1964	61.203	57.324	1	1	0.00	0	5.030	1.241	9
1968	49.425	50.921	1	0	1.00	0	5.045	3.086	7
1972	38.209	52.660	-1	-1	0.00	0	5.834	4.813	4
1976	51.049	56.850	-1	0	-1.00	0	3.817	7.463	5
1980	44.842	51.383	1	1	0.00	0	-3.583	7.795	5
1984	40.877	52.778	-1	-1	0.00	0	5.550	5.210	8
1988	46.168	54.011	-1	0	-1.00	0	2.403	2.871	5
1992	53.621	52.744	-1	-1	-1.25	0	3.035	3.193	3
1996	54.737	50.158	1	1	0.00	0	3.315	2.031	4
2000	50.262	49.819	1	0	1.00	0	2.031	1.683	7
2004	48.767	48.632	-1	-1	0.00	0	2.086	2.141	2
2008	53.689	55.535	-1	0	-1.00	0	-1.787	2.745	2
2012	52.010	50.681	1	1	0.00	0	1.422	1.470	1

• The values of P for 1920, 1944, and 1948 before multiplication by zero are 16.535, 5.489, and 8.688, respectively, and the values of Z are 5, 14, and 5.

Table A (continued)
Data for the V^{cc} Equation

t	V^{cc}	I	WAR	G^{cc}	P^{cc}	Z^{cc}
1914	50.338					
1918	45.096	1	1	22.006	0.000	0.0000
1922	46.400	-1	0	14.368	11.480	12.8571
1926	41.572	-1	0	3.461	0.117	10.7143
1930	45.741	-1	0	-11.206	2.071	4.2857
1934	56.509	1	0	12.736	3.993	8.5714
1938	50.815	1	0	4.597	0.033	6.4286
1942	47.664	1	1	16.073	0.000	0.0000
1946	45.277	1	1	-4.401	0.000	0.0000
1950	50.044	1	0	13.442	0.166	6.4286
1954	52.537	-1	0	-0.686	0.800	2.1429
1958	55.983	-1	0	-1.160	2.713	2.1429
1962	52.492	1	0	3.681	1.113	8.5714
1966	51.250	1	0	3.724	2.577	10.7143
1970	54.403	-1	0	-0.023	5.028	2.1429
1974	58.530	-1	0	-2.917	8.093	4.2857
1978	54.416	1	0	5.978	6.679	8.5714
1982	55.994	-1	0	-2.883	7.086	4.2857
1986	55.085	-1	0	2.330	2.430	4.2857
1990	54.177	-1	0	0.816	3.814	4.2857
1994	46.476	1	0	2.754	2.203	4.2857
1998	49.533	1	0	3.262	1.336	6.4286
2002	47.562	-1	0	1.694	1.785	0.0000
2006	54.120	-1	0	1.179	3.259	4.2857
2010	46.561	1	0	2.005	0.922	0.0000
2014	46.500	1	0	1.273	1.477	4.2857

• Observation of V^{cc} for 1914 needed for the V^c equation.
• The values of P^{cc} for 1918, 1942, and 1946 before multiplication by zero are 15.735, 8.082, and 10.518, respectively, and the values of Z^{cc} are 10.7143, 15.0000, and 4.2857.

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