Prediction for the 2012 United States Presidential Election using Multiple Regression Model

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Abstract

This paper investigates the factors responsible for predicting 2012 U.S. Presidential election. Though contemporary discussions on Presidential election mention that unemployment rate will be a deciding factor in this election, it is found that unemployment rate is not significant for predicting the forthcoming Presidential election. Except GDP growth rate, various other economic factors like interest rate, inflation, public debt, change in oil and gold prices, budget deficit/surplus and exchange rate are also not significant for predicting the U.S. Presidential election outcome. Lewis-Beck and Rice (1982) proposed Gallup rating, obtained in June of the election year, as a significant indicator for forecasting the Presidential election. However, the present study finds that even though there exists a relationship between June Gallup rating and incumbent vote share in the Presidential election, the Gallup rating cannot be used as the sole indicator of the Presidential elections. Various other non-economic factors like scandals linked to the incumbent President and the performance of the two parties in the midterm elections are found to be significant. We study the influence of the above economic and non-economic variables on voting behavior in U.S. Presidential elections and develop a suitable regression model for predicting the 2012 U.S. Presidential election. The emergence of new non-economic factors reflects the changing dynamics of U.S. Presidential election outcomes. The proposed model forecasts that the Democrat candidate Mr. Barack Obama is likely to get a vote percentage between 51.818 % - 54.239 %, with 95% confidence interval.

1. Introduction

The outcome of the United States Presidential elections has a significant influence on world economies, developed or developing. The road to the White House is a rocky and long one. Over the years, several researchers have tried to explain the results of the electoral contest which leads to one of the most powerful jobs in the world, that of the President of the United States of America.

Several models have been proposed in the past for forecasting Presidential elections result. Literature suggests that economic variables can be taken as the independent variables while some suggest use of non-economic variables to get the forecasts. Each method has its respective merits and de-merits. In this paper, we explore the impact of various economic and non-economic variables on the Presidential forecasting model.

For prediction of Presidential elections, researchers such as Fair (1978, 2012) analyze economic factors such as (annual rate) growth rate of real per capita GDP in the first three quarters of the election year. Abramowitz (1988) uses the growth rate of the economy in the first six months of the election year. Lichtman (2005, 2008) also refers to the growth rate to develop two of the "keys" for the White House. Sinha and Bansal (2008) derive predictive density function under Hierarchical priors and use these results to forecast 2008 U.S. Presidential election using Ray Fair's model.

Apart from growth, inflation is the second variable that is widely accepted as an indicator of the economic health of a country. Fair (1978, 2012) used the absolute value of the growth rate of the GDP deflator as an indicator to gauge the election results. The same definition is used by Cuzan, Heggen and Bundrick (2000) to analyse the outcome of presidential elections outcomes based on simulation run over fiscal models.

The third macroeconomic variable in consideration is unemployment rate of the United States. Intuitively speaking, several researchers might consider the unemployment rate to be a measure of the discontent of the people. The change in unemployment rate has also been used to forecast election results by researchers including Jérôme and Jérôme -Speziari (2011). However, the inexact nature of this relationship has been highlighted by Silver (2011), finding that there has been no relationship between the unemployment rate and the margin of victory (defeat).

So, the major macroeconomic variables which have been studied to influence Presidential election outcomes are the growth rate, the unemployment rate and the inflation rate of an economy.

Several studies have chosen to look at economic factors in a different manner altogether. Erikson and Wlezien (1996) chose to refer to economic indicators holistically, looking at the index of leading economic indicators. The Bread and Peace model by Hibbs (2000, 2012) considers growth in real disposable per capita income as an economic indicator to measure the likelihood of the incumbent party in an election to retain the White House.

Even though the key indicator(s) to any Presidential Election are widely accepted to be economic in nature, non-economic factors do play a major role in the determination of an election outcome. The most prominent non-economic factor in this regard is whether the country is currently involved in any military interventions. War/peace have been referenced as a factor in studies done by Fair (1978, 2012), Hibbs (2000,2012), Lichtman and Keilis-Borok (1996).

Another key non economic factor which emerges from past discussions in the field is that of incumbency. Not just with regard to the incumbent President running for office again, but also the number of terms the incumbent party has spent in office plays a role in the re-election prospects. Fair (1978, 2008), Bartells and Zaller (2001) and Lichtman and Keilis-Borok (1996) refer to incumbency as a factor for reelection. Alan I. Abramowitz (1988) adds to the research in the field by building a model that included a "time for change" factor- dependent on the number of terms the incumbent party has been in power.

Lewis-Beck and Rice (1982) include presidential popularity as a factor to formulate a model for predicting the result of the presidential elections. The inclusion of these factors comes from extending Lee Seigelman's (1979) work which proves that there exists a relationship between the popularity rating of the incumbent president and the preceding election. Seigelman's model provides a relationship between the popular vote share of the incumbent and the Gallup rating as obtained on the last pre-election popularity poll. Lewis-Beck et al (1982) however, proposes the use of Gallup Ratings as obtained in June of the election year. This decision to take the June rating rather than a rating closer to the process has multiple reasons, the primary one being that the closer the process is, the larger the electoral mood swings are likely to be. As discussed by Lewis-Beck et al (1982), the June rating is ideal since it measures job approval in a period of relative political calm, pre-conventions and post-primaries. Though in the present study we find that there exists a relationship between Gallup ratings (June) and Presidential Election, it is worth noting that the Gallup survey, though extensive, is non-exhaustive in nature, and hence can't be used as the sole indicator of the Presidential Elections.

Apart from the presidential elections, the other Federal elections held in the USA consist of those for the Congress- i.e. the Senate and the House of Representatives. While the Members of the House of Representatives (often called the House) have a term of two years, Members of the Senate have a six year long term, staggered such that 33% of the Senate undergoes elections every two years. In almost all of the midterm elections held since 1948, the incumbent party has made gains in the midterm House elections only in the 1998 and 2002 elections. The midterm House election is typically seen as a

referendum on the ruling party (Tufte, 1975). As discussed by Tufte (1975), it is almost inevitable that the incumbent party will lose seats in the House, the important thing to note becomes whether or not it will lose the majority stake after the midterm elections.

In view of the above studies, it seems that using a combination of economic and non economic factors, a regression model can be used for predicting U.S. Presidential elections. In this paper, we study the influence of various economic and non-economic variables on voting behavior in U.S. Presidential elections and develop a suitable regression model for predicting the 2012 U.S. Presidential election.

The section 2 of this paper lists out all the factors that we consider during the development of the prediction model. It also discusses the sources of the data used in this research. Section 3 analyzes various regression models using economic and non-economic variables. Variables for the proposed model are selected after a careful analysis. In section 4, we test the proposed model by forecasting 2008 U.S. Presidential election. Section 5 presents the election forecasts of the 2012 election using the proposed model.

2. Significance of Factors Considered

In this section, on the basis of the above literature review, we analyze various factors (economic and non-economic) to find out the significant variables that could be used in forecasting Presidential elections. The following factors, listed under the two categories, have been considered:

Economic Factors: In this, we discuss the different economic factors that might affect the US Presidential election outcome. While factors like unemployment rate, growth rate, inflation, interest rate and healthcare budget affect the perception of the citizens about the incumbent President's work and effectively that of the ruling party, other factors like budgetary deficit/surplus and public debt signal the robustness of the national economy. A budgetary deficit is a signal of economic overspending and could turn out to be favorable for the incumbent party. On the other hand, a budgetary surplus is a signal of conservative management of the economy and might be unapproved by the citizens. Global economic indicators like oil prices, gold rate and exchange rate reflect the impact of the state of the foreign economies on the United States economy and might have an impact on the election results. The following is the list of the various economic factors considered:

1. Unemployment Rate: Annual average unemployment rate (percent) of civilian labor force i.e. 16 years and over, as defined, by Bureau of Labor Statistics (2012a). To further explore

the impact of the national unemployment rate on the Presidential results, the quadrennial percentage change in unemployment rate is also considered.

2. Budget Deficit/Surplus: The excess or deficit of budgetary receipts over the budgetary outlays as a percent of GDP, as defined by The White House (2012).
3. Gold Prices: The quadrennial (%) change in annual average price per ounce of Gold.
4. Exchange Rate: The quadrennial change in the exchange rate of $ with Franc, Euro, Mark and Pound is considered. For illustration, $/£ exchange rate is used.
5. Oil Prices: The quadrennial (%) change in average crude oil price in dollars per barrel.
6. Interest Rate: The annual Federal funds effective rate as mentioned by the Federal Reserve (2012).
7. Public Debt: Government debt as a percentage of the nominal GDP as defined by International Monetary Fund (2010).
8. Growth Rate: The growth rate of the real per capita GDP in the first three quarters of the election year (annual rate) as defined by Fair (2006).
9. Inflation: The absolute value of the growth rate of the GDP deflator in the first 15 quarters of the administration of the incumbent president (annual rate) as defined by Fair (2006).
10. Healthcare Budget: The social benefit spending by the Federal and the State government as a percentage of the national GDP, as provided by Bureau of Economic Analysis (2012).

The data for the economic variables is summarized in Tables 5a and 5b given in the Appendix.

Non-Economic Factors: As we shall observe later in this study, it is misleading to assume that U.S. Presidential election is a product of only economic factors. A lot of social and non-economic factors have significant influence on the election outcome. The Presidential work approval rating is a reflection of the perception of the citizens about the work done in the incumbent term. Other non-economic factors listed below might be a source of information about the citizens' opinion of the incumbent party's credentials in the election:

1. Presidential Work Approval Rating: Percentage of the American population that approves or disapproves of the work done by the incumbent President. Even though it is easy to identify from the contemporary literature that the Gallup job approval rating is the most reliable and widely accepted measure, the other considered Presidential job approval rating are Real Clear Politics (since 2000), Rasmussen Reports (since 2003), CNN/ORC International Survey (since 1980), Associated Press-GfK (since 2008). As we observe, most of these ratings are

recent and not suitable for our analysis. The data used in the analysis is the average Gallup rating of the incumbent President in the month of June of the election year. Also, the average rating of the incumbent President during the tenure is studied. In situations when the elected President resigns or passes away, the approval rating of the incumbent presiding over the current election is considered.

2. Incumbent President Scandals: It is the severity of a scandal that occurred in the term of an incumbent President. Scandals could be political, personal or of any other kind that negatively affect the incumbent President's popularity and consequentially that of the incumbent party. The ratings (0-2) for each of the Presidential terms have been given as follows:
    - No major scandal in the Presidential term: 0
    - At least one major scandal of some severity in the Presidential term: 1
    - Scandal of high severity, leading to the possible impeachment/resignation of the incumbent: 2

    Table 1 lists the above ratings for the various incumbent Presidents. These values are chosen after detailed news and literature analysis. As we observe, only in the case of President Nixon (1976) and Clinton (2000), the maximum rating of 2 has been given.

3. Military Interventions: Impact of the military interventions during the incumbent rule on the perception of the incumbent party. The ratings (-1 to +1) for each of the Presidential terms have been given as follows:
    - The intervention during the Presidential term improved the incumbent popularity: +1
    - The intervention during the Presidential term had no impact on the incumbent popularity: 0
    - The intervention during the Presidential term sabotaged the incumbent popularity: -1

    For example, while Mr. George W. Bush gets a -1 rating for his second Presidential tenure due to the unpopular Iraq and Afghanistan wars, Mr. Barack Obama gets a +1 for bringing the war to an end.

4. Midterm Performance: As discussed earlier, it is observed that the incumbent party's performance usually dips in the midterm elections. However, the degree of this performance is a direct indicator and a referendum on the incumbent party's popularity after 2 years in office. While the previously mentioned Presidential Work Approval Rating is influenced by the personality and other features of the incumbent President, the midterm is a clearer indicator of the incumbent party's acceptability. The variable midterm is calculated as follows:

   For election year 'n':

$$\frac{([HOUSE_{SEATS}] \times HOUSE_{RESULT} + [SENATE_{SEATS}] \times SENATE_{RESULT})}{HOUSE_{SEATS} + SENATE_{SEATS}}$$

   where-

   $HOUSE_{SEATS}$: Total number of seats in the House occupied by the Democrat and Republican party representatives during the midterm election prior to the forthcoming election 'n'

   $SENATE_{SEATS}$: Total number of seats in the Senate occupied by the Democrat and Republican party senators during the midterm election prior to the forthcoming election 'n'

   The variable $HOUSE_{RESULT}$ takes value between (-1 and 1) as follows:

   - 1 if the incumbent party is in majority in the House after the midterm election prior to the forthcoming Presidential election 'n'
   - -1 if the incumbent party is in minority in the House after the midterm election prior to the forthcoming Presidential election 'n'
   - 0 otherwise,

   The variable $SENATE_{RESULT}$ takes value between (-1 and 1) as follows:

   - 1 if the incumbent party is in majority in the Senate after the midterm election prior to the forthcoming Presidential election 'n'
   - -1if the incumbent party is in minority in the Senate after the midterm election prior to the forthcoming Presidential election 'n'
   - 0 otherwise

   On an average, the number of seats in House is close to 4 times of the seats in Senate. Hence, the variable is tilted towards the values of $House_{Seats}$. Rather than being a flaw, it is useful in being a better estimator of the incumbent party's public perception and acts as a

measure of referendum. This is due to the fact that in midterm elections, all the seats of the House go to re-election where as in Senate, on an average; only 33% of the seats are being contested for re-election.

For example, for the election of 2008, the value for $House_{Result}$ =-1 since the number of the incumbent Republican party's seats in House (202) is less than the number of seats of the Democrat (233). Similarly, $Senate_{Result}$ = 0 as the number of Republican and Democratic seats are equal after the midterm election (49 each).

The data for the economic variables is summarized in Tables 1, 2, 3 and 4 given in the Appendix.

Data Sources

Since the Gallup rating for the Presidents elected before 1948 is not available, all the values for the economic and non-economic variables have been considered since 1948 only. The growth and inflation rate are referred from Fair (2006, 2008, 2012). The unemployment rate is retrieved from the Bureau of Labor Statistics (2012b). The budgetary surplus/deficit data has been taken from The White House (2012). Historical gold prices are taken from the United States National Mining Association (2011) and the $/£ exchange rate has been obtained from the Bank of England (2010). Historical oil prices have been taken from InflationData.com (2012). The historical Federal funds rate has been obtained from the Federal Reserve (2012) and the healthcare expenditures data is found at Bureau of Economic Analysis (2012). The data on public debt has been obtained from International Monetary Fund (2010).

Non-economic factors like scandals and military interventions have been arrived at after reviewing the contemporary literature on the past Presidential tenures. These include the articles and essays mentioned on the history of United States president like the dedicated White House resource and other reliable links like Miller Center. The historical Gallup average rating in June of the Election Year and Average Gallup term rating were obtained from the Gallup Presidential Poll (2012). While the historical data was available for most of the independent factors, the Federal effective interest rate was found only since 1956. The results for the historical Congress elections have been collected from the Office of the Clerk (2010). Also, the quadrennial change in oil prices was available 1952 onwards.

The dependent factor in our analysis is the vote percentage of the incumbent party in the two-party Presidential election as given in Fair (2006, 2008).

3. Methodology

Economic Factors: The following table lists the regression results for various models containing economic variables as independent variables and *VOTE* as dependent variable:

Table A: Analysis of Influence of Economic Variables

Model	Year	R^2 (%)	p-Statistic	
$VOTE = \beta_1 + \beta_2 GROWTH + \beta_3 INFLATION + \beta_4 UNEMPLOYMENT\_RATE$	1948-2008	33.775	GROWTH* INFLATION UNEMPLOYMENT_RATE	0.046 0.551 0.756
$VOTE = \beta_1 + \beta_2 GROWTH + \beta_3 CHANGE\_UNEMPLOYMENT\_RATE$	1952-2008	31.948	GROWTH* CHANGE_UNEMPLOYMENT_RATE	0.036 0.903
$VOTE = \beta_1 + \beta_2 GROWTH + \beta_3 HEALTHCARE + \beta_4 DEBT$	1948-2008	37.503	GROWTH* HEALTHCARE DEBT	0.040 0.359 0.581
$VOTE = \beta_1 + \beta_2 GROWTH + \beta_3 INTEREST\_RATE$	1956-2008	30.368	GROWTH* INTEREST_RATE	0.054 0.992
$VOTE = \beta_1 + \beta_2 GROWTH + \beta_3 GOLD + \beta_4 OIL$	1952-2008	43.928	GROWTH* GOLD OIL	0.070 0.549 0.175
$VOTE = \beta_1 + \beta_2 GROWTH + \beta_3 DEFICIT + \beta_4 EXCHANGE\_RATE$	1948-2008	35.882	GROWTH* DEFICIT EXCHANGE_RATE	0.025 0.450 0.848

**Denotes significant p-value at 5 % level of significance*

The analysis suggests that several economic variables are not able to predict the Presidential election results effectively. Unemployment rate and the quadrennial change in unemployment rate are insignificant. External factors like percentage change in oil price, gold price and Sterling exchange rate have been also found insignificant. Internal monetary and budget factors like interest rate, public debt and budget deficit/surplus also do not affect vote percentage of Presidential outcomes.

GDP growth rate is the only important significant variable in the above regression models. This is in contrast to the widely held belief in the contemporary literature that the forthcoming US Presidential election will be decided on economic factors such as unemployment rate, inflation, budgetary deficit and public debt.

Non-economic Factors

Besides the already defined Gallup & Average-Gallup Rating, Scandals, Wars and Midterm; other non-economic variable that is considered is *Index.* A Gallup rating of 50% is considered a safe floor for the incumbent's popularity (Lewis-Beck &Rice, 1982) and as observed from the historical Gallup values, 80%

is a conservative cap on the job approval rating. So, while defining the *Index* variable, the lower cutoff is 40% rating and the higher cutoff is 60% rating.

Hence, the variable *Index* takes indicator values between 0 and 2 as follows:

- For $Average\_Gallup \leq 40$: Index = 0
- $40 < Average\_Gallup < 60$: Index = 1
- $Average\_Gallup \geq 60$: Index = 2

The following models are considered to explore the influence of non-economic variables on vote percentage:

Table B: Analysis of Influence of Non-Economic Variables

Model	Year	R^2 (%)	p-Statistic	
$VOTE = \beta_1 + \beta_2 GALLUP\_JUNE + \beta_3 WARS$	1948-2008	66.238	GALLUP* WARS	0.0002 0.524
$VOTE = \beta_1 + \beta_2 GALLUP\_JUNE + \beta_3 SCANDALS$	1948-2008	76.665	GALLUP* SCANDALS*	0.0008 0.025
$VOTE = \beta_1 + \beta_2 GALLUP\_JUNE + \beta_3 INDEX$	1948-2008	74.775	GALLUP* INDEX*	0.0001 0.044
$VOTE = \beta_1 + \beta_2 GALLUP\_JUNE + \beta_3 INDEX + \beta_4 SCANDALS$	1948-2008	83.633	GALLUP* INDEX* SCANDALS*	0.0002 0.043 0.025
$VOTE = \beta_1 + \beta_2 AVERAGE\_GALLUP + \beta_3 INDEX$	1948-2008	62.126	AVERAGE_GALLUP* INDEX*	0.0009 0.0079
$VOTE = \beta_1 + \beta_2 MIDTERM + \beta_3 SCANDALS$	1948-2008	56.999	MIDTERM** SCANDALS*	0.056 0.002

**Denotes significant p-value at 5 % level of significance*
*** Denotes significant p-value at 6 % level of significance*

As observed; June Gallup rating, average Gallup rating in the term of the incumbency, scandals and midterm are significant variables. The following table summarizes the correlations between the significant economic and non-economic variables:

	Gallup_June	Average_Gallup	Index	Scandals	Midterm	Growth
Gallup_June	1.000					
Average_Gallup	0.806**	1.000				
Index	0.667	0.911**	1.000			
Scandals	-0.393	-0.341	-0.150	1.000		
Midterm	-0.180	-0.065	-0.088	-0.218	1.000	
Growth	0.234	0.182	0.023	-0.195	-0.062	1.000

*** Correlation more than 0.7*

As observed, the correlation between Average_Gallup & Gallup_June and between Average_Gallup & Index is above the acceptable cutoff of 0.8. Hence, only one of the Gallup ratings could be included in the forecasting model to avoid multicollinearity. Since, the Gallup rating is a more relevant factor prior to the election than the Average-Gallup rating; it is preferred in the forecasting model.

4. Proposed Model

The driving criterion for a robust forecasting model is a high value of R^2, significant p-values of the coefficients of the independent variables, acceptable levels of Root Mean Square Error (RMSE), lower Theil statistic and a logical relationship between the dependent and independent variables.

Based on the analysis and results in Section 3, the following model is proposed for forecasting the US Presidential elections that combine the significant economic and non-economic factors:

$$VOTE = \beta_1 + \beta_2 GROWTH + \beta_2 GALLUP + \beta_3 SCANDALS + \beta_4 MIDTERM + \beta_5 INDEX + ERROR$$

The GDP growth rate is an indicator of the health of the economy and the June Gallup job approval rating is a reflection of the popularity and performance of the incumbent President prior to the forthcoming election. The scandals affect the chances of the incumbent party for re-election and by an even bigger degree in case the running candidate is the incumbent President. Midterm gives an indication of the performance of the two parties during the last nation-wide election and is similar to a referendum on the party's performances. Index is also included as an independent variable. The variable combines the Gallup rating during June of the election years with the average rating during the tenure. This accounts for major policy decisions that were taken during the initial quarters of the term.

For the period 1948-2008, the model exhibits a R^2 of 94.794 % and adjusted R^2 of 92.192 %. All independent variables in the above model are highly significant at 5 % level of significance except MIDTERM which is significant at 7% level of significance. The Durbin Watson statistic of the model is 2.249 and model F statistic is 36.420 with p-value 0.000004. This shows that model is highly significant and can be used for forecasting U.S. Presidential elections. The above regression results for the model are summarized in Table C.

Table C: Proposed Estimated Model using Data from 1948-2008 for Forecasting 2012 Election

Dependent Variable: VOTE		Included observations: 16		
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	40.687	2.159	18.848	0.000
GROWTH	0.646	0.162	3.981	0.003
GALLUPJUNE	0.303	0.048	6.388	0.000
SCANDAL	-3.110	0.753	-4.128	0.002
GINDEX	-2.202	0.815	-2.702	0.022
MIDTERM	-1.000	0.482	-2.074	0.065
R-squared	0.94794	Mean dependent var		52.091690
Adjusted R-squared	0.92192	S.D. dependent var		5.591696
S.E. of regression	1.56252	Akaike info criterion		4.010478
Sum squared resid	24.41480	Schwarz criterion		4.300199
Log likelihood	-26.08382	F-statistic		36.419810
Durbin-Watson stat	2.24900	Prob(F-statistic)		0.000004

2008 Presidential Election

The 2008 election was a closely fought election between the Democratic candidate Mr. Barack Obama and Republican candidate Mr. John McCain. The independent variables for the election of 2008 take the following values:

Independent Variable	Value
Growth (%)	0.22
Gallup	28.000
Scandals	1
Midterm	-0.816
Index	0

Using the data from 1948-2004, the model developed predicts 47.830% vote for the incumbent party and a victory for Mr. Barack Obama. The forecasting model has the following statistics:

- Root Mean Square Error: 1.250 %
- Mean Absolute Error: 1.025 %
- Theil Inequality Coefficient: 0.012

with the following model parameters:

Table D: Proposed Estimated Model using Data from 1948-2004 for Forecasting 2008 Election

Dependent Variable: VOTE		Included observations: 15		
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	41.358	2.506	16.504	0.000
GROWTH	0.620	0.173	3.572	0.006
GALLUPJUNE	0.298	0.050	5.975	0.000
GINDEX	-2.384	0.897	-2.656	0.026
MIDTERM	-1.099	0.526	-2.089	0.066
SCANDAL	-3.214	0.799	-4.023	0.003
R-squared	0.94619	Mean dependent var		52.45780
Adjusted R-squared	0.91630	S.D. dependent var		5.58593
S.E. of regression	1.61609	Akaike info criterion		4.08707
Sum squared resid	23.50577	Schwarz criterion		4.37029
Log likelihood	-24.65305	F-statistic		31.65163
Durbin-Watson stat	2.40401	Prob(F-statistic)		0.00002

The actual results were slightly different from this predicted value and John McCain lost to Barack Obama with the vote percentage being 46.6-53.4. The developed model predicts the 2008 election closely. It combines the significant economic and non-economic variables and offers a more holistic forecasting model than those present in the contemporary literature. The above results validate the proposed model. Hence, it can be used for forecasting the 2012 U.S. Presidential election.

5. Forecasting 2012 Presidential Election

The 2012 election is being contested between the Democratic candidate Mr. Barack Obama and Republican candidate Mr. Mitt Romney. The incumbent, President Obama is seeking reelection after holding office during a period of slow economic recovery. Mr. Romney is a successful businessman turned politician and is a former Governor of Massachusetts.

The values of the independent variables in the proposed model for the election of 2012 are as follows:

Independent Variable	Value
Growth (%)	1.62
Gallup	48.000
Scandals	0
Midterm	-0.632
Index	1

The proposed model forecasts that the vote percentage share of the incumbent Democratic Party candidate Mr. Barack Obama in the two-party Presidential election for 2012 is likely to be 54.239%. The forecast statistics given by the proposed model are as follows:

- Root Mean Square Error (RMSE): 1.235%
- Mean Absolute Error: 0.992%
- Theil Inequality Coefficient: 0.011

The model parameters are presented in Table C above.

The forecast of vote share of the incumbent Democratic candidate is 54.239 %, with 95% lower confidence interval on forecast to be 51.818 % -54.239 %. Hence, the model predicts the victory of the incumbent President Mr. Barack Obama.

Conclusion

The model predicts a comfortable victory for the Democrat party candidate Mr. Barack Obama in the 2012 election. The proposed model also predicted the 2008 Presidential election successfully, with the predicted incumbent vote percentage being 47.830 %, that is close to the actual vote percentage share (46.6 %) received by then Republican party candidate Mr. John McCain.

The model suggested illustrates the following features for US Presidential election outcome forecasts:

a) US Presidential election results are not just decided by economic variables: Our study shows that GDP growth rate is the only key economic factor. Various other economic factors such as unemployment rate, interest rate, public debt, budget deficit/surplus, exchange rate, inflation, percentage change in oil price and gold price, healthcare spending were insignificant. This is in contrast with the model presented by Fair (1978) and the contemporary discussions about the

forthcoming 2012 election that suggest that the US Presidential election results are mostly determined by economic conditions like unemployment rate and inflation.

b) Impact of non-economic variables: The model shows that non-economic factors play a large part in determining election results. The important factors are not only the Presidential scorecard determined by the Gallup job approval rating in June (as suggested by Lewis-Beck et al (1982)), but also non-economic factors like average rating during the tenure, presence/absence of scandals linked to the incumbent President and the midterm performance of the parties.

These results signal a shift in the US Presidential forecasting research since the 2008 Presidential election. The emergence of non-economic factors highlights the changing dynamics of US Presidential election outcomes.

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Appendix

Table 1: Scandals during Presidential Terms and the Corresponding Ratings

Election Year	Incumbent President	Scandals	Scandal Rating
1948	Franklin D. Roosevelt	• Budget cuts for the military • Recognition of Israel • Taft- Harley Act: Reducing the power of the labor unions	1
	Harry S. Truman	• None	
1952	Harry S. Truman	• Continuous accusations of spies in the US Govt. • Foreign policies: Korean war, Indo China war • White house renovations • Steel and coal strikes • Corruption charges	1
1956	Dwight D. Eisenhower	• None	0
1960	Dwight D. Eisenhower	• U-2 Spy Plane Incident • Senator Joseph R. McCarthy Controversy • Little Rock School Racial Issues	1
1964	John F. Kennedy	• Extra marital relationships	0
	Lyndon B. Johnson	• None	
1968	Lyndon B. Johnson	• Vietnam war • Urban riots • Phone Tapping	1
1972	Richard Nixon	• Nixon shock	0
1976	Richard Nixon	• Watergate Scandal	2
	Gerald Ford	• Nixon Pardon	
1980	Jimmy Carter	• Iran hostage crisis • 1979 energy crisis • Boycott of the Moscow Olympics	1
1984	Ronald Reagan	• Tax cuts and budget proposals to expand military spending	0
1988	Ronald Reagan	• Iran-Contra affair • Multiple corruption charges against high ranking officials	1
1992	George H. W. Bush	• Renegation on election promise of no new taxes • "Vomiting Incident"	1
1996	Bill Clinton	• Firing of White House staff • "Don't ask, don't tell" policy	1
2000	Bill Clinton	• Lewinsky Scandal	2
2004	George W. Bush	• Poor handling of Katrina Hurricane- None	0
2008	George W. Bush	• Midterm dismissal of 7 US attorneys • Guantanamo Bay Controversy and torture	1
2012	Barack Obama	• None	0

Table 2: Military Interventions during Presidential Terms and the Corresponding Ratings

Election Year	Incumbent President	Military Interventions	War Rating
1948	Franklin D. Roosevelt	• World War 2	1
	Harry S. Truman	• Hiroshima/Nagasaki	
1952	Harry S. Truman	• Korean War	-1
1956	Dwight D. Eisenhower	• Ended Korean War	1
1960	Dwight D. Eisenhower	• None	0
1964	John F. Kennedy	• Bay of Pigs • Cuban Missile crisis • Vietnam	-1
	Lyndon B. Johnson	• Vietnam	
1968	Lyndon B. Johnson	• Vietnam • Isarel	-1
1972	Richard Nixon	• Vietnam	-1
1976	Richard Nixon	• Vietnam	1
	Gerald Ford	• Vietnam (end)	
1980	Jimmy Carter	• None	0
1984	Ronald Reagan	• Cold War	0
1988	Ronald Reagan	• Cold War	0
1992	George H. W. Bush	• Panama • Gulf War • Somalia	-1
1996	Bill Clinton	• Somalia • Bosnia	0
2000	Bill Clinton	• Serbians (Yugoslavia)	0
2004	George W. Bush	• Afghanistan • Iraq	1
2008	George W. Bush	• Afghanistan • Iraq	-1
2012	Barack Obama	• Ended Iraq war • Increased presence in Afghanistan • Military Intervention in Libya	1

Table 3: Gallup Ratings

Election Year	Incumbent President	Period of Gallup Measurement	Rating	June Gallup Rating	Average Gallup Rating	Gallup Index
1948	Harry S. Truman	May 27-June1	39	39.5	55.6	1
		June 17-23	40			
1952	Harry S. Truman	May 29-June 3	31	31.5	36.5	0
		June 14-19	32			
1956	Dwight D. Eisenhower	May 30-June 4	71	72	69.6	2
		June 14-19	73			
1960	Dwight D. Eisenhower	June 15-20	61	59	60.5	2
		June 29-July 4	57			
1964	Lyndon B. Johnson	June 3-8	74	74	74.2	2
		June 10-15	74			
		June 24-29	74			
1968	Lyndon B. Johnson	June 12-17	42	41	50.3	1
		June 25-30	40			
1972	Richard Nixon	June 15-18	59	57.5	55.8	1
		June 22-25	56			
1976	Gerald Ford	June 10-13	45	45	47.2	1
1980	Jimmy Carter	May 29-June 1	38	33.6	45.5	1
		June 12-15	32			
		June 26-29	31			
1984	Ronald Reagan	June 5-7	55	54	50.3	1
		June 21-24	54			
		June 28-July 1	53			
1988	Ronald Reagan	June 9-12	51	50	55.3	1
		June 23-26	48			
		June 30-Jul 6	51			
1992	George H. W. Bush	June 3-6	37	37.3	60.9	2
		June 11-13	37			
		June 25-29	38			
1996	Bill Clinton	June 17-18	58	55	49.6	1
		June 26-29	52			
2000	Bill Clinton	June 5-6	60	57.5	60.6	2
		June 21-24	55			
2004	George W. Bush	June 2-5	49	48.5	62.2	2
		June 20-22	48			
2008	George W. Bush	June 8-11	30	29	36.5	0
		June 14-18	28			
2012	Barack Obama	May 27-June 2	46	46.4	49.0	1
		June 3-9	47			
		June 10-16	46			
		June 17-23	46			
		June 24-30	47			

Source: Gallup Presidential Poll (2012)

Table 4: Midterm Elections Results (1944-2010)

Year	Incumbent Party	Midterm Election Year	House Seats		$House_{Result}$	Senate Seats		$Senate_{Result}$	Midterm Values
			Democratic	Republican		Democratic	Republican		
1948	Democratic	1944	243	190	-1	57	38	-1	-1.00
		1946	188	246		45	51		
1952	Democratic	1948	263	171	1	54	42	1	1.00
		1950	234	199		48	47		
1956	Republican	1952	213	221	-1	46	48	-1	-1.00
		1954	232	203		48	47		
1960	Republican	1956	234	201	-1	49	47	-1	-1
		1958	283	153		64	34		
1964	Democrat	1960	262	175	1	64	36	1	1.00
		1962	258	176		67	33		
1968	Democrat	1964	295	140	1	68	32	1	1.00
		1966	248	187		64	36		
1972	Republican	1968	243	192	-1	58	42	-1	-1.00
		1970	255	180		54	44		
1976	Republican	1972	242	192	-1	56	42	-1	-1.00
		1974	291	144		61	37		
1980	Democrat	1976	292	143	1	61	38	1	1.00
		1978	277	158		58	41		
1984	Republican	1980	242	192	-1	46	53	1	-0.63
		1982	269	166		46	54		
1988	Republican	1984	253	182	-1	47	53	-1	-0.63
		1986	258	177		55	45		
1992	Republican	1988	260	175	-1	55	45	-1	-1.00
		1990	267	167		56	44		
1996	Democrat	1992	258	176	-1	57	43	-1	-1.00
		1994	204	230		48	52		
2000	Democrat	1996	207	226	-1	45	55	-1	-1.00
		1998	211	223		45	55		
2004	Republican	2000	212	221	1	50	50	1	1.00
		2002	204	229		48	51		
2008	Republican	2004	202	232	-1	44	55	0	-0.82
		2006	233	202		49	49		
2012	Democrat	2008	256	178	-1	55	41	1	-0.63
		2010	193	242		51	47		

Source: Office of the Clerk (2010)

Table 5a: Macroeconomic Variables

Year	Unemployment Rate (%)[a]	Interest Rate (%)[b]	Inflation (%)[c]	Healthcare Budget (%)[d]	Growth Rate (%)[e]
1944	N/A	N/A	0.000	1.228	4.279
1948	3.800	N/A	0.000	3.679	3.579
1952	3.000	N/A	2.362	3.070	0.691
1956	4.100	2.730	1.935	3.567	-1.451
1960	5.500	3.210	1.967	4.692	0.377
1964	5.200	3.500	1.260	4.777	5.109
1968	3.600	5.660	3.139	5.924	5.043
1972	5.600	4.440	4.815	7.739	5.914
1976	7.700	5.050	7.630	9.854	3.751
1980	7.100	13.350	7.831	9.842	-3.597
1984	7.500	10.230	5.259	9.771	5.440
1988	5.500	7.570	2.906	9.419	2.178
1992	7.500	3.520	3.280	11.600	2.662
1996	5.400	5.300	2.062	11.594	3.121
2000	4.000	6.240	1.605	10.543	1.219
2004	5.500	1.350	2.325	11.889	2.690
2008	5.800	1.920	3.052	13.000	0.220
2012	N/A	N/A	N/A	N/A	1.620

a: Bureau of Labor Statistics (2012b), b: Federal Reserve (2012), c: Fair(2006,2008), d: Bureau of Economic Analysis (2012), e: Fair (2006, 2008,2012)

Table 5b: Macroeconomic Variables

Year	Vote (% share of incumbent party)[a]	Budget Surplus/Deficit (%)[b]	Public Debt (%)[c]	Gold Prices ($ per Ounce)[d]	Oil Prices ($/bbl.)[e]	Exchange Rate ($/£)[f]
1944	53.774	-22.700	91.490	33.850	N/A	4.032
1948	52.370	4.600	93.580	34.710	2.770	4.032
1952	44.595	-0.400	72.255	34.600	2.770	2.793
1956	57.764	0.900	62.272	34.990	2.940	2.793
1960	49.913	0.100	54.291	35.270	2.910	2.809
1964	61.344	-0.900	46.916	35.100	3.000	2.793
1968	49.596	-2.900	38.133	39.310	3.180	2.392
1972	61.789	-2.000	35.145	58.420	3.600	2.500
1976	48.948	-4.200	34.485	124.740	13.100	1.805
1980	44.697	-2.700	42.277	615.000	37.420	2.326
1984	59.170	-4.800	50.896	361.000	28.750	1.337
1988	53.902	-3.100	61.941	437.000	14.870	1.783
1992	46.545	-4.700	70.736	343.820	19.250	1.767
1996	54.736	-1.400	70.299	387.810	20.460	1.563
2000	50.265	2.400	54.835	279.110	27.390	1.515
2004	51.233	-3.500	61.420	409.720	37.660	1.832
2008	46.600	-3.200	71.221	871.960	91.480	1.852
2012	N/A	N/A	N/A	N/A	N/A	N/A

a: Fair (2006, 2008), b: The White House (2012), c: International Monetary Fund (2010), d: United States National Mining Association(2011),e: InflationData.com(2012), f: Bank of England(2010)