



The Effects of Political Crises Events on the Venezuelan Bolívar

Daniel Schwindt, Wake Forest University

In the life of a nation, there are no greater dramas than that drama of political life and economics, and it is often the interplay of these variables that explains much of the success and failures of material life. Such interconnections play important roles in all nations, but in Venezuela we find an unusual opportunity to explore these interconnections by studying the effects that political crises have on one measure of economic and trade competitiveness, the exchange rate of the Venezuelan Bolívar. Venezuela is a nation rich in an intriguing political history, from its colonial period on down to the political conflicts of the Chávez years, and these political factors have played a great role in the economic life of the country. In particular, the economy of Venezuela can be tied closely to its exchange rates, which measure how much of one nation's currency or goods can be purchased with any other nation's currency or goods. Exchange rates are important to Venezuela's economy because of its extreme reliance on oil production and exportation,¹ making an analysis of exchange rates particularly important. In fact, during the 1980s, oil income made up almost 72 percent of total government receipts, making the oil sector extremely relevant to studies of Venezuela's economy. But it is also important that any examination of Venezuela's economy should attempt to incorporate her history and politics and to examine them in their own turn.

This paper attempts to answer one vital question: do political events have a demonstrable effect on the value of Venezuela's exchange rates? In order to answer that question, this paper will use the techniques of linear regression to create a series of models that aim to explain, as accurately and fully as they can, the effects of political events on the exchange rate. There are numerous measures of exchange rate values, but my analysis is restricted to three major measures: the nominal bilateral exchange rate with the United States, the real bilateral exchange rate with the United States, and the real effective exchange rate. Hopefully, the analysis of this one intersection point between the planes of politics and economics can shed light on how the interplay between these two factors influences the trade position of Venezuela, with important implications for the growth and development of a nation which is a major player in the politics and economics of Latin America, and is a major supplier of oil to the United States.²

I. Literature Review

Perhaps the most relevant article is a working paper from the International Monetary Fund (IMF) by Juan Zalduendo.³ Zalduendo (2006) attempts to estimate the equilibrium Real Effective Exchange Rate (REER) for the Venezuelan Bolívar. Zalduendo's findings are of key importance because they highlight important variables that must be considered when looking at the special case of Venezuela. Due to Venezuela's high dependence on oil revenue, Zalduendo incorporates into his exchange rate analysis the real oil price⁴. He next adds variables for the interest rate differentials between Venezuela and her major trading partners and the real GDP per capita differentials. The inclusion of GDP per capita differentials is designed to measure the productivity gap between Venezuela and her trading partners. Zalduendo, who uses annual and smoothed data, finds that all of these variables are significant and that an increase in all of them produces appreciation of the currency. Therefore, I have included similar variables in my analysis.

Ricardo Hausmann (2003) examines the economic history of Venezuela beginning in the 1920s and continuing through to the beginning of the Chávez administration.⁵ Hausmann hypothesizes that declining oil income and the rising cost of capital per worker, combined with various political crises, are responsible for the sudden collapse and subsequent stagnation of the Venezuelan economy during the 1980s and 1990s.

Mejia-Reyes, Osborn, and Sensier (2010) examined the effects that real exchange rate changes have on the output performance of six Latin American nations, including Venezuela, in their 2010 study.⁶ They found that depreciations were generally expansionary for Venezuela, while appreciations were contractionary. These results seem to be contradicted by evidence presented by Ahmed (1999) who found study that depreciations in six Central and South American nations had negative effects on economic output.⁷ However, these studies do have important bearing because if it is true that political crises events affect the exchange rate, then it may also be true that those changes could significantly affect output.

This paper is the first to systematically incorporate those historical and political variables into the economic models. That, then, is the purpose of this paper: to analyze Venezuela's exchange rates through lenses which combine history, politics, and economics.

II. Historical Context

The historical data in this study serves the important purpose of determining the events that will be included as political crises events. These specific events are then translated into mathematical notation where they are fed into the statistical models that are developed later in this paper. Unlike with the economic data which can be easily summarized in a spreadsheet, the historical data, while it too can be represented in mathematical notation, needs much more of an explanation. This explanation will then provide the reader some background into the political and economic state of Venezuela during the period from 1985 to 2003.

There are two major historical trends that must be examined if Venezuela's historical, political, and economic context can be properly understood. The first is the formation of the party system, beginning in 1958 with the overthrow of the last military dictator Marcos Pérez Jiménez.⁸ After the removal of Jiménez, the two major political parties Acción Democrática (AD) and the Comité de Organización Política Electoral Independiente (COPEI) signed what is called the Punto Fijo Pact which created an exclusionary political system where governance was controlled by either AD or COPEI.⁹ This strong party system ultimately fell apart from 1989 to 1999, precipitating many of the political events examined.¹⁰

The second important trend is the problem of oil rents. Venezuela has been a major oil producer since the 1930s and much of the policies from the central government concern dividing up the oil revenue.¹¹ In 1974 President Carlos Andrés Pérez nationalized the oil industry which would feed into the political struggles he would face in his second term, and would also serve as a source of political division during the Chávez administration. The high oil prices of the 1970s, precipitated by the OPEC oil crisis, began to decline in the 1980s before experiencing a sharp drop in 1986,¹² wrecking much of the government's finances. In February 1983, the Venezuelan government was forced to significantly devalue the Bolívar because of a sharp decrease in

foreign reserves, causing financial and political shocks.¹³ The government would have to devalue the currency again in 1986.

The results of these two trends, the overpowering strength of the political party system and the fall in oil income, are the political crisis years that peak from 1989 to 1993, but which extend until the election of President Hugo Chávez in 1999. There are several key events that happen during this rather broad period that deserve some greater description.

The first was the massive social uprising known as *el Caracazo*. Due to the large financial pressures facing the government, President Pérez announced a neo-liberal reform package upon entering office in January 1989. Among some of the policies he called for were cuts to transportation subsidies and an increase in gas prices.¹⁴ Three weeks later, on February 27, riots erupted in neighborhoods across Caracas. The riots lasted two days and were put down with extreme violence by military and police forces.¹⁵ The riots not only disrupted commerce, but weakened public support for the government, the two political parties, and economic reform. Three years later on February 4, a group of junior military officers led an unsuccessful coup attempt.¹⁶ On November 27, another coup attempt was launched and failed. These three events constitute the major indicators of political crisis from 1989 to 1993. It is not until 2002 that we reach another dramatic indicator of political crisis, the 2002 attempted coup against Chávez and the subsequent general strike. The 2002 Coup, launched in April, succeeded in removing Chávez, but Chávez was returned to power two days later.¹⁷ In December of that same year, the public oil monopoly *Petróleos de Venezuela, SA (PDVSA)* launched a three month general strike that crippled the economy.¹⁸

It is the effect of these events and others during the period from 1985 – 2003 that this paper is interested in; however, this broad historical background, which focuses on just a few of the events that are actually included, allows us to have a firm understanding of the broader issues facing Venezuela at the time.

III. Data and Conceptual Framework

This study looks at two general types of data to analyze political effects on the exchange rate of the Bolívar. The first type of data is the traditional quantitative economic variables, most of which have been identified by both past literature and theory. The second type of data is the qualitative historical data which attempts to highlight key events which are indicative of political crises. This paper takes the new step of coding these historical events into quantitative language to allow for statistical significance testing. Both types of data are monthly in frequency and cover the period from January 1985 to February 2003. Some data does run further into 2003, but no datasets extend into 2004. The reason for termination of the study at February 2003 is because in that month the Chávez government announced that the Bolívar would now be on a fixed exchange rate and that strict capital controls would be instituted. This policy shift made it seem unlikely that political events would have as significant an effect, if they had an effect at all, on some of the measures of exchange rate used in this study. Therefore, February 2003 is an appropriate stopping point. The range for all data is from 1985 to 2003.

A. Economic Data

The economic data used in my analysis comes from a variety of different sources, due to the rather difficult problem of finding monthly frequency data. The most important source of economic data has been the *International Financial Statistics* from the IMF. The *International Financial Statistics* is the source of the material for the data on REER, interest rates and inflation. In addition to data from the IMF, datasets from the Banco Central de Venezuela were also used in the calculation of the Nominal and Real Bilateral Exchange Rate with the United States (NBERUS and RBERUS, respectively). Data on inflation rates for Venezuela was taken from the Banco Central de Venezuela, while United States inflation rates came from the St. Louis Federal Reserve. Datasets from the United States Energy Information Administration (EIA) and the St. Louis Federal Reserve provided the information for oil prices. The information for Gross Domestic Product (GDP) for Venezuela and the United States came from datasets provided by the United Nations and the World Bank. The IMF's *International Financial Statistics* is the source for additional data on interest rates, inflation rates, and the current account balance of Venezuela.

One issue that came up with the organization and collection of data was the issue of frequency. In this study, monthly frequency data was used because monthly data lets us see more of the short-run variations in the data, allowing this paper to analyze the effects that political events from month to month have on the data. It was not possible to obtain monthly frequency data for some of the variables that this paper needed to examine, particularly data concerning GDP and, even in some cases, exchange rate data. For GDP the problem is practically unavoidable because most governments do not release monthly GDP data, and so those variables which are constructed using GDP have been frequency-corrected. To correct for the frequency problem, I took the GDP from a particular year and then made it the GDP entry for all 12 months in that year.¹⁹

A similar problem was encountered for other variables, including the REER, and a similar solution was devised.²⁰ The same solution was applied to quarterly data if monthly data could not be attained. In that case, the quarterly data would be copied into the three months of that quarter. Several of the economic variables used are not variables generally observed in statistical sources, but are rather the result of using multiple economic variables together. For example, the RBERUS was calculated from the monthly NBERUS collected by the Banco Central de Venezuela and the Consumer Price Indices (CPI) of the United States and Venezuela. All of the calculations of economic variables can be found in APPENDIX A of this paper.

B. Historical Data

The historical data proper, with dates and short descriptions of the events, can be found in Appendix B. The political events that have been identified are broken up into five distinct types. The first type of events are coups and riots. There are only four incidences of coups and riots occurring from 1985 to 2003. The second types of incidents are strikes and demonstrations. While there have been almost ten thousand protests in Venezuela since 1983, I have restricted myself to only the most significant episodes of protest identified by historical texts and by annual reports from Programa Venezolano de Educación (PROVEA), a human rights organization in Venezuela. In total, there are eleven events included in this type. Next, there are election events

which have also been restricted to include only the national contests. There are five such events. The fourth type is major government announcements of policy change and there are nine such events. The last type is an announcement of a change in the exchange rate regime. Over the period from 1985 to 2003 there are ten events that fit this category. There is, of course, some fluidity and subjectivity in determining a major political event. Indeed there may be some events which can be considered important but which I have not included. As such, it should be understood that the analysis is more tentative than if I had been able to collect information on every possible political event. Indeed, there are some instances of overlap between events; for example, one event that is included is the 1999 Constitutional Referendum which changed the structure of the central government. This has been included under the elections type, but there were also announcements being made about what would be in the Referendum and when it would be held, among other information. Due to the possibility that certain events may fit into two or more categories, I have placed events in the categories that make the most sense. I therefore placed the Constitutional Referendum in the election category because it was properly an election and because the political system was not changed until after the results of the election were known.

The next step after identifying and categorizing the political events is to encode them using mathematical notation. I opted to express these political events using dummy variables. The dummy variable uses a binary code where each month can have two possible values, a 1 or 0. A 0 means that no event of that type has occurred, while a 1 indicates that an event of that type has occurred. Since the different categories are not mutually exclusive, it is possible that one month could have had two or more political events occur, which can create a collinearity problem because of the high degree of correlation between the variables if too many months have more than one political event occurring. Fortunately, while there are months that do contain more than one political event, the number of months with more than one political event occurring is only six.

C. Conceptual Framework

This study has a very straightforward conceptual framework based off of structural forms identified in the literature. The models will be estimated using natural logarithmic transformations to correct for a couple of possible problems. First, taking the natural log of variables tends to lessen problems of heteroskedasticity, which will ensure that the variance estimators in the models are more accurate, thereby making the models more efficient.²¹ Second, log-log models make the interpretation of slope coefficients easier by removing confusion over units and giving all coefficients percent interpretations. I have therefore decided to use log-transformed dependent variables, along with log-transformed real oil prices in my regressions. The models are, however, still semi-log because of the inclusion of dummy variables which have not been log-transformed.²² The choice of specific variables in the regressions was based partly off of theory and partly off of previous regressions that were run before arriving at the final models. The specific choices and their underpinning logic will be discussed further in the Models and Methods section below.

IV. Models and Methods

My analysis of the effects of political crises events on Venezuela's exchange rate centers around five distinct models. The following are the main models that were estimated:

- (1) $l(NBERUS)_t = \beta_0 + \beta_1 GDPPC_t + \beta_2 l(NOIL)_t + \beta_3 IRD_t + \beta_4 INFD_t + \beta_5 CAB_t + \beta_6 VIOL_t + \beta_7 PROTEST_t + \beta_8 ELECT_t + \beta_8 ANNOUN_t + \beta_9 CHANGEER_t$
- (2) $l(NBERUS)_t = \beta_0 + \beta_1 INFD_t + \beta_2 VIOL_t + \beta_3 ANNOUN_t$
- (3) $l(RBERUS)_t = \beta_0 + \beta_1 GDPPC_t + \beta_2 l(ROIL)_t + \beta_3 IRD_t + \beta_4 CAB_t + \beta_5 VIOL_t + \beta_6 PROTEST_t + \beta_7 ELECT_t + \beta_8 ANNOUN_t + \beta_9 CHANGEER_t$
(Non-reduced, full range)
- (4) $l(RBERUS)_t = \beta_0 + \beta_1 GDPPC_t + \beta_2 l(ROIL)_t + \beta_3 IRD_t + \beta_4 CAB_t + \beta_5 VIOL_t + \beta_6 PROTEST_t + \beta_7 ELECT_t + \beta_8 ANNOUN_t + \beta_9 CHANGEER_t$
(Non-reduced, restricted range 1:1990 – 2:2003)
- (5) $l(REER)_t = \beta_0 + \beta_1 GDPPCD_t + \beta_2 l(ROIL)_t + \beta_3 IRD_t + \beta_4 CAB_t + \beta_5 VIOL_t + \beta_6 PROTEST_t + \beta_7 ELECT_t + \beta_8 ANNOUN_{t-1} + \beta_9 CHANGEER_{t-1}$

Each model regresses the same independent variables, but the dependent variables change. The first four models have dependent variables which measure only the relative exchange rate with the United States while the last model contains a dependent variable which measures the relative exchange rate with all major trading partners. Due to the differences in the way that the exchange rates are calculated, different independent variables were used. For the bilateral exchange rate models, all variables which contain differentials are computed using only data from the United States and Venezuela. For the multilateral exchange rate model, only the variable named GDPPCD was computed using data from the United States, Mexico, Brazil, Colombia, Germany and Japan.²³ The other variables with differentials were computed just as they were for the bilateral exchange models. Such a decision may seem inappropriate, but the United States, especially over the period from 1985 to 2003, is Venezuela's largest trading partner and so most of a weighted multilateral differential would be comprised of a difference with the United States anyways. In the case of interest rates, it seemed unnecessary to create a multilateral interest rate differential, but the case was different for the measures of productivity differentials.²⁴

Table 1. Variable Definitions

Variable Name	Description
NBERUS	Nominal exchange rate (Bolívars per US Dollar)
RBERUS	Real exchange rate (Venezuelan basket of goods per US basket of goods)
REER	Real effective exchange rate
NOIL	Nominal price of a barrel of oil
ROIL	Real price of a barrel of oil
GDPPC	Ratio of Venezuela GDP per capita to US GDP per capita, in percent
IRD	Venezuela real interest rate less US real interest rate
INFD	Venezuela inflation rate less US inflation rate
CAB	Venezuela Current Account Balance
GDPPCD	Ratio of Venezuela GDP per capita to major trading partners' GDP per capita
VIOL	=1 if a coup or riot occurs, 0 otherwise
PROTEST	=1 if a major protest occurs, 0 otherwise
ELECT	=1 if election or referendum occurs, 0 otherwise
ANNOUN	=1 if a major government announcement occurs, 0 otherwise
CHANGEER	=1 if announcement of change in exchange rate regime, 0 otherwise

In the case of productivity differentials, it was necessary to create one that would incorporate all of Venezuela's trading partners.²⁵ The calculations for this variable, as for the other variables, can be found in APPENDIX A.

The primary method of model estimation was the Prais-Winsten method of Generalized Least Squares (GLS) regression; however, models (1) and (2) were estimated using Cochrane-Orcutt methods of GLS because Prais-Winsten estimation did not produce efficient models.²⁶ Both Prais-Winsten and Cochrane-Orcutt were used to correct for the serial correlation of the error terms.²⁷ Prais-Winsten was preferred because it generally gives more efficient estimators than Cochrane-Orcutt, though the latter is the more common method. The necessity of correcting for serial correlation was determined upon running several Ordinary Least Squares (OLS) regressions of the same variables as the above five models, and running a Durbin-Watson test for serial correlation,²⁸ where the null hypothesis is that there is no serial correlation. In every model, the null hypothesis was rejected for the alternative that there is indeed serial correlation.

Table 2. Durbin-Watson Test for Serial Correlation

	Model 1	Model 3	Model 4	Model 5
d-stat	0.097	0.344	0.959	0.159
p-value	≈ 0.000	≈ 0.00	≈ 6.17 e-14	≈ 0.00

The assumption that underpins the use of the Durbin-Watson d-Test is that there is only first-order serial correlation, which is a fair assumption.²⁹ It is common for monthly data to have serial correlation where the error terms are related to the error term of the same month but in a

previous year, or to be related to some other higher order error relationship. In this case I think that is unlikely because the data is not seasonal, and intuitively it makes sense for exchange rates to adjust to new information within the period of about a month or so and there is not a strong logical argument for why the rates of one month should be related to the rates of the same month last year or the rates of eight months ago.

Other than the issue of serial correlation, heteroskedasticity and collinearity are other possible problems, but the log-transformations ensure that heteroskedasticity is not as serious of a problem, and collinearity tests of the models showed that collinearity would not be a concern.³⁰ In addition, perfect collinearity would be impossible because the models would not have been computable. However, the models were constructed so as to avoid any problems with collinearity. For example, INFD was strongly correlated with other independent variables such as IRD, which produced some unusual slope estimators. That is why INFD was not included in some of the other models (including Model 2).

Table 3. Summary Statistics

Summary statistics, using the observations 1985:01 - 2003:12 (missing values were skipped)				
Variable	Mean	Median	Minimum	Maximum
GDPPC	12.45	12.30	8.53	20.01
IRD	-16.03	-9.11	-97.40	31.89
INFD	35.48	29.14	5.03	112.17
CAB	796.99	1515.00	-5809.00	8279.00
GDPPCD	16.13	15.12	11.15	26.98
1(NBERUS)	5.02	5.14	2.56	7.52
1(RBERUS)	2.29	2.29	1.73	3.02
1(REER)	4.65	4.60	4.19	5.18
1(ROIL)	3.41	3.41	2.59	4.10

Variable	Std. Dev.	C.V.	Skewness	Ex. kurtosis
GDPPC	2.81	0.23	1.24	1.10
IRD	27.12	1.69	-1.13	0.85
INFD	25.53	0.72	1.26	0.95
CAB	3065.50	3.85	0.06	0.60
GDPPCD	3.93	0.24	1.40	1.37
1(NBERUS)	1.47	0.29	0.00	-1.38
1(RBERUS)	0.30	0.13	0.53	-0.45
1(REER)	0.29	0.06	0.34	-1.27
1(ROIL2)	0.27	0.08	0.11	1.11

One particular issue that must be raised concerns Models 3 and 4. Models 3 and 4 both run identical regressions, but are different in one important respect: Model 4 has a restricted sample. Model 3 is a regression using the full range of data, while Model 4 only uses the subset of data that spans the period from January 1990 to February of 2003. This choice was made because of some issues with data from the year 1989, which was a year of incredibly high inflation which resulted in some odd behavior in the RBERUS. Indeed the difference in the coefficients for the variable GDPPC in the two models suggests that the year 1989 was a shift year or an outlier year.

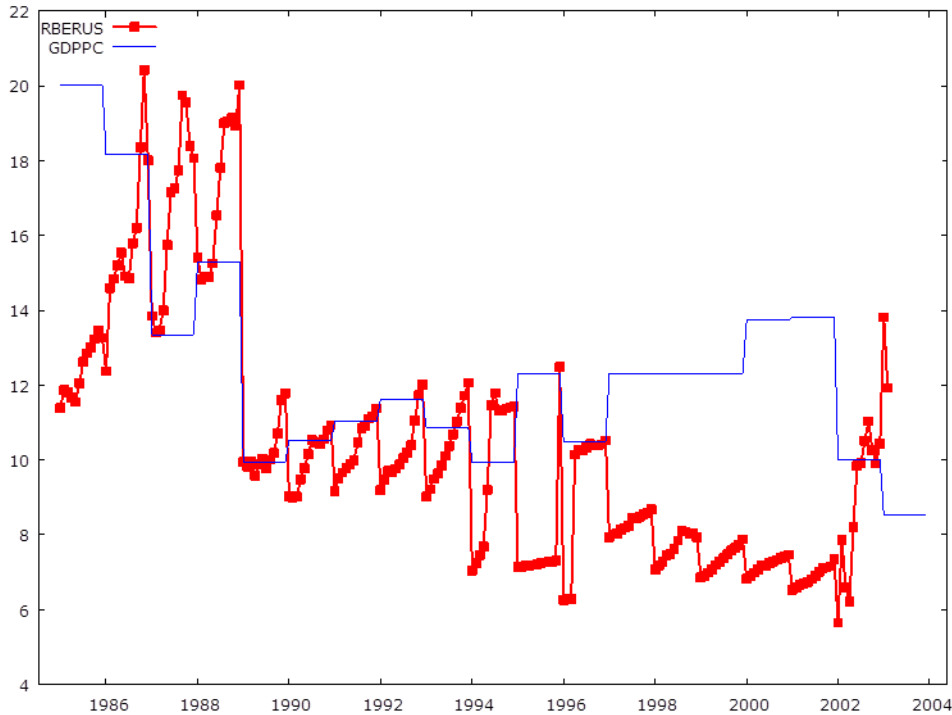


Figure 2. Graph of RBERUS versus GDPPC

Looking at the graph, it appears that the two variables, RBERUS and GDPPC, are inversely related, except for the year 1989 where both fall precipitously. To examine whether or not that precipitous fall affects the overall conclusions of Model 3, I have estimated Model 4, using the restricted data range for comparison.

V. Results

There is a great deal of diversity in the regression models that have been estimated, in the sense that many variables are not consistently significant. This is expected because of the changes in dependent variables, but there are some commonalities between models that emerge upon closer inspection. Out of three estimated models, GDPPC was a significant variable in two (Models 3 and 4). The coefficient on GDPPC in Model 3 is positive while the coefficient on the same variable for Model 4 is negative. This discrepancy is most likely caused by the restrictions that have been put on the range of data in Model 4. The stark difference in the slope estimates seems to suggest that my hypothesis that the year 1989 would impact the slope was justified. Intuitively

the slope estimate on Model 4 makes more sense. A 1 percent increase in the ratio of Venezuela's GDP per capita compared to that of the United States would suggest an increase in productivity and should create appreciationary pressures, which would be represented by a negative slope estimate. GDPPCD was a significant determinant of REER and had a positive sign. The coefficients on both GDPPC and GDPPCD were both surprisingly small. In Model 4, for every one percent increase in the ratio of Venezuela's GDP per capita to the US's GDP per capita, the RBERUS appreciates by just 0.06 percent.

Either nominal or real oil prices were included in every model except Model 2. Only the real oil price had significant effects on RBERUS and REER. The coefficients on ROIL for those two models (Models 4 and 5) were positive and negative, respectively. The real oil prices, then, have a consistent depreciationary effect on real exchange rates, something that was not expected.³¹ A 1 percent increase in price led to a real depreciation between 0.10 and 0.21 percent. This unexpected result may be explained by the volatility of the monthly real oil price, which may confound examination of a true underlying trend. For example, other papers analyzed real oil prices using annual and smoothed data, so the underlying trend in real oil prices was examined, not its short run fluctuations. Such results may suggest more tests be done to examine the effects of real oil prices on monthly exchange rates.

IRD was significant in two out of the four models in which it was estimated (Models 1 and 5). In both cases the coefficients were positive, but were quite small. The interpretations of IRD in the two models are different. In Model 1, for every one percent increase in the real interest rate differential, the NBERUS depreciates by 0.0025 percent, a miniscule amount.³² In Model 5, the opposite occurs. For every one percent increase in the real interest rate differential, the REER appreciates by 0.0013 percent. Even though both slope estimates are statistically significant, they do not seem to be very economically significant, since the magnitude of the slopes is so small. A similar story is told by the variable INFD which was significant in both Models 1 and 2. In both cases, the coefficients were positive, signifying a depreciation against the Dollar, but the effect was miniscule. In fact, the largest coefficients on any of the economic variables were the coefficients on ROIL and the coefficients on CAB, which was only significant in Model 4. CAB had a negative slope for Models 1, 3 and 4 and a positive slope for Model 5. These slope estimates show that an increase in the current account balance has an appreciationary effect on all measures of exchange, as expected.³³

As for the political variables, there is a greater deal of consistency. The most consistent variable is ANNOUN, which was significant in Models 1, 2 and 3, and whose one month lag, ANNOUN_{t-1}, was significant in Model 5. ANNOUN had positive coefficients in Models 1 through 4, and had a negative coefficient in Model 5. These coefficients signify that ANNOUN and ANNOUN_{t-1} have depreciationary effects on all measures of Venezuela's exchange rate. On average, a major government announcement causes between a 5.87 and 6.57 percent depreciation of the Bolívar against the Dollar.³⁴ According to Model 3, the announcement of a major new government policy was associated with a 5.89 percent real depreciation relative to the United States. In Model 5, on average if a major government announcement occurred in the previous month, then the REER would depreciate by 3.70 percent in the current month. The interesting feature of ANNOUN is that the content of many of the announcements are very different, though many are announcements of neo-liberal economic reforms. This indicates that the government was most

likely facing a credibility gap, particularly in terms of economic policy, which meant that the foreign exchange rates would not respond positively to new government policy, perhaps because of the unpopularity of the neo-liberal reforms and general cynicism towards the political process.

The two next most consistently significant political variables were ELECT and VIOL. ELECT was significant in both Models 3 and 4 and in both instances, ELECT had positive coefficients. On average if an election was held in the current month, there would be between an 8.02 and 11.12 percent real depreciation vis-à-vis the United States. It may be that the uncertainty associated with elections, particularly because these elections saw a gradual breakdown of faith in the two party system as represented by the victories of candidates running on third party tickets, pushed down the exchange rate.

VIOL was significant in Model 2 and in Model 5. The slope estimate on VIOL was negative in Model 2 and positive in Model 5. Those slopes suggest that coups and riots are associated with appreciations in both the NBERUS and the REER, a very shocking result. On average, a coup or riot will cause the NBERUS to appreciate by 4.41 percent, and will cause the REER to appreciate by 4.82 percent. This result is unintuitive. It was hypothesized that a coup or riot would be depreciatory because the violence and resulting political instability would create a climate of fear that would push domestic investors to unload Bolívares and hold onto Dollars which are more secure, and would lessen foreign demand for the Bolívar. However, what may be most important is the fact that all of the governments were able to survive the coups and riots. In fact, the coups lasted only about one day, while the one major riot lasted about two to three days. All these events were very dramatic and important, but the survival of the government may instill a degree of confidence on the part of foreign investors, businessmen, and other nations and international organizations trading in the foreign exchange markets.

The next political terms were the one-month lags of PROTEST and CHANGEER. Both were significant in Model 5, and both had negative slopes. These estimates show that, on average, a major protest in the previous month causes a 2.42 percent depreciation of the REER, while an announcement of an exchange rate regime change in the previous month causes a 4.52 percent real depreciatory shift. For both variables, the depreciatory effects are probably tied into the fact that both events foster a climate of uncertainty and decrease the credibility of the government. Protests and strikes in Venezuela serve as indicators of political stress and in many cases indicate a lack of credibility on the part of the government. An announcement of change in the exchange rate regime also undermines stability and confidence. The lagged effect is probably tied into an adjustment period, as it may take longer for countries and investors to grapple with the extent of the protests and the changes in exchange regime.

The model with the highest adjusted R-squared was Model 2, followed closely by Model 1. Model 1, however, had a relatively high model significance p-value at 0.0233. Model 2 had a much lower p-value than Model 1 and a higher adjusted R-squared, suggesting that it may be a better model than Model 1. Models 3 and 4 both had p-values that were approximately zero, but the fit of Model 3 is much higher. Model 5 also had an extremely small p-value. In fact, all the models had very high adjusted R-squared values because they are all autoregressive models. These results are shown more fully in Table 4. All values in the table are rounded off to four decimal places and the significance of the variables is shown by the inclusion of asterisks. One

asterisk represents significance at the 10 percent level; two indicates significance at the 5 percent level; three asterisks represents significance at the 1 percent level. All standard errors of the variables are included in parentheses.

Table 4. Regression Results

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Contant	9.186 (0.961)***	12.343 (1.575)***	1.391 (0.389)***	2.174 (0.342)***	4.880 (0.245)***
GDPPC	-0.007 (0.008)		0.042 (0.012)***	-0.062 (0.015)***	
GDPPCD					0.010 (0.006)*
I(NOIL)	0.017 (0.052)				
I(ROIL)			0.115 (0.101)	0.214 (0.087)**	-0.098 (0.049)**
IRD	0.003 (0.001)*		-0.001 (0.001)	-0.001 (0.001)	0.001 (0.006)**
INFD	0.004 (0.002)**	0.002 (0.001)*			
CAB	-0.006 (0.005)		-0.014 (0.077)	-0.014 (0.008)*	0.004 (0.003)
VIOL	-0.040 (0.025)	-0.045 (0.025)*	-0.041 (0.043)	-0.043 (0.057)	0.047 (0.022)**
VIOL _{t-1}					-0.0015 (0.0215)
PROTEST	0.012 (0.016)		0.018 (0.028)	0.047 (0.033)	-0.006 (0.014)
PROTEST _{t-1}					-0.024 (0.014)*
ELECT	0.002 (0.021)		0.106 (0.035)***	0.078 (0.044)*	-0.003 (0.017)
ELECT _{t-1}					-0.0031 (0.0175)
ANNOUN	0.064 (0.020)***	0.057 (0.019)***	0.058 (0.033)*	0.066 (0.041)	-0.013 (0.018)
ANNOUN _{t-1}					-0.038 (0.018)**
CHANGEER	-0.020 (0.017)		-0.019 (0.028)	-0.049 (0.037)	0.007 (0.015)
CHANGEER _{t-1}					-0.046 (0.016)***
Observations	208	217	209	158	210
Adj. R-squared	0.997	0.998	0.858	0.657	0.966
P-value (F)	0.023	0.003	≈ 0.00	≈ 0.00	≈ 0.00

VI. Conclusions

This paper has sought to answer the question do political events have a demonstrable impact on the value of Venezuela's exchange rate? Based on the above analysis, political events do have a statistically and economically significant effect on the Venezuelan exchange rate. The expectation was that political crises events, such as the events analyzed in this paper, would generally be associated with depreciations in the exchange rate, which weaken the purchasing power of the Bolívar. For all but one of the political variables examined, the supposition seems to be true. Major government announcements, changes in the exchange rate regime, elections, and instances of major strikes and demonstrations all matched that hypothesis. The most shocking result, however, was that coups and riots were associated with appreciations of exchange rates, which may be explained by the fact that all of the coup attempts lasted less than three days and failed, preventing a sense of deep uncertainty.

The larger question of the impacts of political events can still be answered conditionally. The analysis of this paper has shown that elections, announcements, and to a lesser degree changes in exchange regime and major protests have substantial impacts on Venezuela's exchange rates. These results are important for a couple of reasons. First, they suggest that political instability is an important factor in determining exchange rates. Second, this importance can translate into broader effects on the Venezuelan economy. Venezuela is an unusual economy in the sense that it is very heavily based on the export of one commodity, oil. The importance of this tradable sector to Venezuela's economy means that exchange rates can be a very important factor in determining output. Of course, the effects of a depreciation or appreciation of Venezuela's currency on output are not examined in my analysis, but a depreciation of the currency does mean that Venezuela has less purchasing power when it comes to foreign goods. This can harm sectors of the economy which rely on imports, such as manufacturing. But the effects could depend on a host of other factors.

It may be of interest for future studies to more closely examine the relationships between political events and the exchange rates of Venezuela, and to incorporate political events explicitly in models. Much of the literature examines the effects of political factors on exchange rates, but no study has yet built models testing the effects of political events for Venezuela; though it is possible that other researchers have done similar analysis for other countries. An intriguing extension of this study would be to analyze the relationship between political events and exchange rates for the years from 2003 through to the present. This study did not extend too far into the almost twelve years of the Chávez presidency, years which saw major protests, demonstrations, and elections. Analysis of those years could provide more evidence of the effects of politics on economic life and well-being in Venezuela, as well as explain with greater accuracy fluctuations in economic phenomena.

VII. APPENDIX A

Calculations of Economic Variables:

1. Real Exchange Rate (RBERUS) Calculations:

Let RER = real exchange rate, NER = nominal exchange rate, and CPI = Consumer Price Index of the country, then,

$RER = NER * (US\ CPI / VEN\ CPI) = (VEN\ B / USD) * (US\ CPI / VEN\ CPI)$, where NER equals the ratio of Venezuelan Bolívares to U.S. Dollars.

2. Real Effective Exchange Rate (REER) Calculations – Base Year Conversions:

The REER values reported in the IMF *International Financial Statistics* changed base years periodically. Therefore, the REER values had to be converted into a uniform base year. The values were all converted so that 1995 was the base year.

$$REER_{t, \text{new base year}} = REER_{t, \text{old base year}} * (REER_{t, \text{new base year}} / REER_{t, \text{old base year}})$$

Let the Conversion Factor (CF) be $(REER_{t, \text{new base year}} / REER_{t, \text{old base year}})$, then the following CF values were found for Venezuela:

1980 – 1985 base year CF: 1.111801

1985 – 1990 base year CF: 1.979417

1990 – 1995 base year CF: 0.717935

3. Calculations for Trade-weighted GDP per capita differential (GDPPCD):

$GDPPC_{weighted} = \frac{Venezuela\ GDPPC}{\sum_1^n c_i GDPPC}$, where c_i is the arithmetic mean of a nation's adjusted import and adjusted export weights.

The true weights for imports and exports were taken from data showing the percentage of Venezuela's imports that came from and exports that went to that nation over the period from 1995 to 2000. Since those true weights did not add up to one, because not all nations were included, an adjusted weight was calculated for each nation in the following way:

$Adjusted\ weight = (True\ weight) \left(\frac{1}{\sum_1^n True\ weight_i} \right)$, below are some sample tables demonstrating the calculated values.

Venezuela Import weights by country			Venezuela Export weights by country		
	True Weight ³⁵	Adjusted Weight		True Weight ³⁶	Adjusted Weight
United States	0.3	0.48	United States	0.6	0.86
Colombia	0.1	0.16	Colombia	0.03	0.05
Mexico	0.05	0.08	Mexico	0.02	0.03
Brazil	0.07	0.12	Brazil	0.03	0.04
Japan	0.04	0.06	Japan	0.0044	0.006
Germany	0.06	0.10	Germany	0.0073	0.01
Total	0.62	1.00	Total	0.70	1.00

VIII. APPENDIX B

List of Dependent Variables			
Variable	Description	Frequency	Range
NBERUS ³⁷	Official bilateral exchange rate between Venezuela and US (measured in BS/USD)	Monthly	1985-2003
REER ³⁸	Venezuela's Real Effective Exchange Rate	Monthly	1985-2003
RBERUS ³⁹	Real bilateral exchange rate between Venezuela and US	Monthly	1985-2003

List of Independent Variables			
Variable	Description	Type of Data	Range
NOIL ⁴⁰	Nominal oil price (from UK Brent Crude Oil Spot Price)	Monthly	1985-2003
ROIL ⁴¹	Real oil price	Monthly	1985 -2003
GDPPC ⁴²	GDP per capita differential with respect to US (in percent)	Annual	1985- 2003
GDPPCD ⁴³	Ratio of Venezuela GDP per capita to GDP per capita of major trading partners (in percent)	Annual	1985-2003
IRD ⁴⁴	Venezuela real interest rate less US real interest rate	Monthly	1985-2003
CAB ⁴⁵	Current Account Balance	Monthly/Quarterly	1985-2003
INFD ⁴⁶	Venezuela inflation rate less US inflation rate	Monthly	1985-2003

List 1. Historical Data

Coups/riots

1. Feb. & Mar. 1989 – El Caracazo riots
2. Feb. 1992 – Military Coup attempt led by Lt. Col. Hugo Chávez
3. Nov. 1992 – Military Coup attempt led by Air Force officers⁴⁷
4. Apr. 2002 – Coup attempt against President Chávez

Strikes/Protests⁴⁸

1. May 1989 – Confederaciones de Trabajadores de Venezuela (CTV) strike against Neo-liberal reform package announced by President Carlos Andrés Pérez
2. May 1990 – Major student protest in Caracas against Pérez⁴⁹
3. Mar. 1991 – Major student protest dispersed by military forces, 100 casualties result
4. Apr. 1991 – Major protest against water shortages in Los Teques, capital of Miranda State
5. Jul. 1991 – Major student protests in Valencia, capital of Carabobo State, dispersed by police
6. Nov. 1991 – Major anti-neoliberal protest in front of Congress
7. Mar. 1992 – Major protest in sympathy with coup leaders meets in front of Congress, dispersed by Military Police
8. Jul. 1992 – February Coup supporters protest in front of Congress
9. Jun. 1994 – Protests in Caracas and Carabobo erupt because of economic recession
10. Dec. 2001 – Federación de Cámaras y Asociaciones de Comercio y Producción de Venezuela (FEDECAMARAS) leads a general strike to protest land and economic reform legislation introduced by President Chávez⁵⁰
11. Dec. 2002 – Feb. 2003 – PDVSA management leads a three month general strike against Chávez administration

Elections⁵¹

1. Dec. 1988 – Election of Carlos Andrés Pérez, Acción Democrática (AD)
2. Dec. 1993 – Election of Rafael Caldera, La Convergencia (Independent)
3. Dec. 1998 – Election of Hugo Chávez, Partido Socialista Unido de Venezuela (PSUV, founded 2007)
4. Dec. 1999 – Constitutional referendum is held, the new Constitution passes
5. Jul.- Aug. 2000 – Reelection of Hugo Chávez

Major Government Announcements⁵²

1. Feb. 1989 – Carlos Andrés Pérez announces neo-liberal reform package
2. Mar. 1989 – Pérez temporarily suspends political rights
3. Jun. 1991 – VIASA (Venezuela's major airline) is privatized
4. Oct. 1991 – Announcement of Privatization of CANTV, the telephone provider for the country
5. May 1993 – Pérez is impeached on charges of corruption, the first time any president has been impeached in Venezuelan history⁵³
6. Jun. 1994 – Rafael Caldera announces suspension of some private property rights, nationalizes banks in response to economic crisis
7. Apr. 1996- Caldera announces neo-liberal reform package known as the Agenda Venezuela
8. Jul. 1997 – Caldera government begins opening oil market to foreign companies for first time since nationalization of oil production in 1974

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Change in Exchange Rate regime: ⁵⁴

1. Dec. 1986 – Devaluation and change in regime
2. Mar. 1989 – Change of exchange rate regime to freely falling
3. Mar. 1990 – Change of exchange rate regime to managed floating
4. Sep. 1992 – Change in exchange rate regime to freely falling
5. May. 1994 – Change in exchange rate regime to dual market, de facto crawling band around US dollar
6. Apr. 1996 - Change in regime to freely falling de facto crawling band around US dollar, no dual market
7. Jul. 1996 – Change in regime to pre announced crawling band around US dollar
8. Jul. 1997 – Change to different pre announced crawling band at revaluation
9. Jan. 2002 – Change in regime to managed floating
10. Feb. 2003 – Change in regime to a fixed peg to US dollar, strict capital controls are instituted

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X. NOTES

¹ Steve Ellner, and Miguel Tinker-Salas, "Venezuelan Exceptionalism Revisited: The Unraveling of Venezuela's Model Democracy," *Latin American Perspectives*, 32, no. 2 (2005): 5, "Venezuela's status as a major oil producer far removed from the political turbulence of the Middle East ... makes it unique."

² Central Intelligence Agency, "The World Factbook." Last modified 2013. Accessed July 26, 2013.

<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2242rank.html>. Venezuela is the tenth largest exporter of crude oil in the world. It is also the fourth largest economy in Latin America.

³ Juan Zaldueño, "Determinants of Venezuela's Equilibrium Real Exchange Rate," *IMF Working Papers*, (2006).

⁴ Zaldueño is following the logic of another study which determined that long-run exchange rates of commodity-dependent economies are usually functions of the real prices of those commodities. See Paul Cashín, Luis Céspedes, and Ratna Sahay, "Keynes, Cocoa, and Copper: In Search of Commodity Currencies," *IMF Working Papers* (2002).

⁵ Ricardo Hausmann, "Venezuela's Growth Implosion: A Neo-classical story?," *In Search of Prosperity: Analytic Narratives on Economic Growth*, ed. Danie Rodrik (Princeton, NJ: Princeton University Press, 2003).

⁶ Pablo Mejia-Reyes, Denise Osborn, and Marianne Sensier, "Modeling real exchange rate effects on output performance in Latin America," *Applied Economics*, 42 (2010).

⁷ Shaghil Ahmed, "Sources of Economic Fluctuations in Latin America and Implications for Choice of Exchange Rates Regimes," *International Finance Discussion Papers* (1999),

⁸ Steve Ellner, *Rethinking Venezuelan Politics: Class, Conflict, and the Chávez Phenomenon*, (London: Lynne Rienner, 2008), 51-64.

⁹ *Ibid.*, 59-60.

¹⁰ The collapse of the party system can be shown through the rise in rates of voter abstention and the fact that from 1993-1999 AD and COPEI saw large drops in voter share.

¹¹ Aníbal Romero, "Rearranging the Deck Chairs on the Titanic: The Agony of Democracy in Venezuela," *Latin American Research Review*, 32, no. 1 (1997): 8, "The elite pacts' fundamental premise was that a democratic state would be a more legitimate, stable, and efficient instrument for mediating the distribution of oil rents."

¹² José Martínez, "Causas e Interpretaciones del Caracazo," *Historia Actual Online*, no. 16 (2008): 85. A barrel of Venezuelan crude fell from 27.9 USD in 1973 to 10.9 USD in 1986.

¹³ *Ibid.*, 85: The Bolívar went from 4.3 Bs per USD to 7.0 Bs per USD

¹⁴ *Ibid.*, 88: Pérez called for a 30% increase in public transit fares and a 100% increase in gas prices

¹⁵ *Ibid.*, 89: The official body count was 246 dead, but estimates from foreign journalists indicated that there could have been 1,500 fatalities. The Division of Military Intelligence estimated a death count of 2,277.

¹⁶ The two leaders of the February Coup, Lt. Col. Hugo Chávez and Lt. Col. Francisco Cárdenas, were members of a Bolivarian Socialist movement and were imprisoned after the February Coup attempt, but were subsequently pardoned in 1994 by President Rafael Caldera.

¹⁷ Steven Barracca, "Military Coups in the Post-Cold War Era: Pakistan, Ecuador and Venezuela," *Third World Quarterly*, 28, no. 1 (2007): 137-54, and Fernando Coronil, "State Reflections: The 2002 Coup against Hugo Chávez," ed. Thomas Ponniah and Jonathan Eastwood (Cambridge, MA: Harvard University David Rockefeller Center for Latin American Studies, 2011). For an account of the November coup attempt see Román Orozco, "Golpe a golpe, el caos se apodera de Venezuela," *La Nacional*, December 7, 1992.

¹⁸ Ellner, *Rethinking Venezuelan Politics*, 118-119.

¹⁹ Annual data was used in lieu of quarterly data for expedience. Quarterly data for GDP extending back to 1985 is not as easy to come by as annual data is.

²⁰ The IMF did not begin collecting monthly REER data for Venezuela until 1989, and so the four year gap between 1985 and 1989 was filled using either quarterly or annual data.

²¹ Heteroskedasticity occurs when the variance of data does not remain constant, but is correlated with the x 's

²² The coefficients on the dummy variables will therefore have a different interpretation because of this semi-log form which will be discussed further in the Results section of the paper.

²³ These countries were the major trading partners with Venezuela for the years 1985 – 2003. The data from these nations was then used to construct a trade weighted GDP per capita measure.

²⁴ Investment in Venezuela, like trade, is particularly lopsided, in that the United States is the major source of investment. As such, I determined that when it came to interest rates, the most important interest rate differential to look at would be between the United States and Venezuela. This is not an unusual step, as Reyes et al. (2010) also used that variable.

²⁵ While Venezuela's largest trading partner is the United States (which made up almost 60% of Venezuelan exports for much of the period), there are other significant trading partners which have had different growth rates from both Venezuela and the United States and so they would have a different GDP per capita. It is fair to say that this measure will be more accurate for the purposes of the multilateral exchange model.

²⁶ The Prais-Winsten estimated models (1) and (2) both had p-values of 1.00 for the F-test for overall model significance. The Cochrane-Orcutt estimated models did not produce this strange output.

²⁷ S.J. Prais, and C.B. Winsten, "Trend Estimation and Regression Analysis," *Cowles Commission Discussion Papers* (1954): 1-26, and D. Cochrane, and G.H. Orcutt, "Application of Least Squares Regression Containing Autocorrelated Error Terms," *Journal of the American Statistical Association* (1949): 32-61.

²⁸ Model 2 was not tested because it is simply the reduced form of Model 1

²⁹ That is, $\varepsilon_t = \rho \varepsilon_{t-1} + u_t$, where u_t is the non-serially correlated error term

³⁰ If heteroskedasticity is present, though, it will not imply biasedness, but only inefficient estimators, therefore the slope estimators can still be assumed to be unbiased.

³¹ The results for real oil prices seem to fly in the face of the results obtained by Zalduendo (2006), who showed that increases in real oil prices had appreciatory effects on REER.

³² IRD's changing effects on exchange rates may have been caused by correlation with INFD since IRD incorporates measures of inflation. Due to that concern, IRD was removed from Model 2.

³³ A negative slope for models using NBERUS and RBERUS signifies that an increase in the independent variable causes the bilateral rates to get smaller, meaning an appreciation because NBERUS and RBERUS are measuring how much of Venezuelan currency or goods a US Dollar or good can buy. The opposite is true of REER. The IMF constructs the REER to have a straightforward interpretation. An increase in the REER is a real appreciation, while a decrease is a real depreciation.

³⁴ The interpretation of dummy variable coefficients differs from the interpretations of normal quantitative variables in semi-log models. Normally, to find the partial effect of an independent, non-logged variable on a log dependent variable, one multiplies the slope estimate by 100, giving the percentage effect. Because dummy variables are only coded in either a 0 or 1, this interpretation does not work. Instead the proper interpretation is given by the following equation: $100 \times \left(\left(e^{\beta - \frac{\sigma^2(\beta)}{2}} \right) - 1 \right)$, where β represents the slope estimate and $\sigma^2(\beta)$ represents the variance of β .

³⁵ Alexander Simoes. The Observatory of Economic Complexity, "Venezuela." Accessed August 7, 2013. <http://atlas.media.mit.edu/country/ven/>.

³⁶ Ibid.

³⁷ Banco Central de Venezuela, "Tipos de Cambio BS./US\$(1)" [computer file], Caracas, Venezuela, <http://www.bcv.org.ve/c2/indicadores.asp>; and, Banco Central de Venezuela, "Tipos de Cambio de Referencia /1" [computer file], Caracas, Venezuela, <http://www.bcv.org.ve/c2/indicadores.asp>.

³⁸ International Monetary Fund, "Venezuela," *International Financial Statistics* (Washington, DC: International Monetary Fund), 1986-2004.

³⁹ St. Louis Federal Reserve Branch, "US Inflation Monthly 1985-2002" [computer file], (St. Louis, MO: St. Louis Federal Reserve Branch), <http://research.stlouisfed.org/fred2>; and,

⁴⁰ St. Louis Federal Reserve Branch, "UK Brent Light Crude Oil Prices" [computer file], (St. Louis, MO: St. Louis Federal Reserve Branch), <http://research.stlouisfed.org/fred2>; and, Asdrúbal Baptista, *Bases Cuantitativas de la economía venezolana, 1830-2002* (Caracas: Polar Foundation, 2006); and, Energy Information Administration, "Short Term Energy Outlook, June 2013 Monthly Average Imported Crude Oil Price" [computer file], (Washington, DC: Energy Information Administration), 2013.

⁴¹ Energy Information Administration, "Short Term Energy Outlook."

⁴² United Nations Statistics Division, "Country Profile – Venezuela (Bolivarian Republic of)" [computer file], (New York: United Nations), [http://data.un.org/CountryProfile.aspx?crName=Venezuela%20\(Bolivarian%20Republic%20of\)](http://data.un.org/CountryProfile.aspx?crName=Venezuela%20(Bolivarian%20Republic%20of)).

⁴³ United Nations Statistics Division, "Venezuela"; and, World Bank, "GDP per capita (constant 2005 international \$)," *World DataBank: World Development Indicators*, 2014, <http://databank.worldbank.org/data/views/reports/tableview.aspx>.

⁴⁴ International Monetary Fund, "Venezuela."

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ Ellner, *Rethinking Venezuelan Politics*, 96.

⁴⁸ A valid critique that can be made against the choices of Strikes/Protests is that the years from 1995–2001 are very quiet. This was not true, in the sense that protests did occur during that period, but tended to be smaller and fewer. Over the period from 1995–1998 we see a sharp decrease in the number of protests across the board in Venezuela. From 1999, when Chávez took office, to 2003 we see an increase in number of protests. None of the historical materials indicated any between 1995 and 2001 which were major enough to warrant inclusion in the list. For more information on the frequency of protests and what peak years of protests during the period studied were, see Margarita Maya, Luis Lander, and Dick Parker, “Popular Protest in Venezuela: Novelties and Continuities,” *Latin American Perspectives*, 32, no. 2 (2005): 92-108.

⁴⁹ The source for protest events two through nine is Programa Venezolano de Educación, “Informes Anuales,” *Situación de los Derechos Humanos en Venezuela*, (1990-2003).

⁵⁰ Mark Weisbrot, "Venezuela in the Chávez Years: Its Economy and Influence on the Region," ed. Thomas Ponniah and Jonathan Eastwood (Cambridge, MA: Harvard University David Rockefeller Center for Latin American Studies, 2011); and, Steve Ellner, "Revolutionary and Non-Revolutionary Paths of Radical Populism: Directions of the "Chavista" Movement in Venezuela," *S&S Quarterly*, 69, no. 2 (2005): 160-90.

⁵¹ See Ellner, *Rethinking Venezuelan Politics* for a discussion of all national elections that occurred from 1985-2003.

⁵² See Ellner, *Rethinking Venezuelan Politics* for the timing and content of major government announcements of the period.

⁵³ Rickard Lalander, "The Impeachment of Carlos Andrés Pérez and the Collapse of Venezuelan Partyarchy," ed. Mariana Llanos and Leiv Marsteintredet (New York: Palgrave MacMillan, 2010).

⁵⁴ The source for entries 1 through 10 of Change in Exchange Rate Regime is Zaldueño (2006).