Texto para Discussão

Série Economia

Personal Charisma or the Economy?
Macroeconomic Indicators of Presidential Approval Ratings
in Brazil

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Macroeconomic Indicators of Presidential Approval Ratings in Brazil

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Abstract

We test the degree to which presidential approval ratings are related to a series of economic indicators, controlling for the political scenario in Brazil. Results, from 1999M9 until 2009M2, show that unemployment is the main variable that affects the ratings. There is also evidence that President Luis Inácio Lula da Silva has a higher approval rate (approximately 7%) than President Fernando Henrique Cardoso, keeping constant a reasonable number of important domestic and foreign indicators. Our results support the conclusion that the good state of the economy (given no political turmoil) is the main factor that explains and predicts Lula's high popularity.

Keywords: approval rating, president, economy.

JEL Classification codes: H11, H77, H83, E02, C52.

Introduction

The incumbent president of Brazil, Luis Inácio Lula da Silva (Lula) reached a positive approval rating of 72.5% in February 2009. By adding the proportion of respondents that evaluated the president as being regular, the figure rises to an outstanding 94.2%, making him one of the most popular presidents in the history of Brazil. In the first hundred days in office, which is called the "honeymoon" period, Lula's average positive rating was at nearly 50%. Even after the end of the "honeymoon", ratings never fell below 29% positive evaluation[2].

Data on approval ratings in Brazil is incipient, starting in 1999M9 when President Fernando Henrique Cardoso (FHC) was still in office. This president, who managed to tackle and bring under control a long-standing inflationary process, reached a maximum positive rating of almost 30%. After years promoting modernizing economic reforms, he finished his mandate with a positive evaluation of 26%, nearly half of Lula's average. A characteristic of FHC's period in office - 1995 to 2002 - was the number and strength of negative international shocks. In January, 1999, Brazil devalued its domestic currency as a response to the accumulation of their effects. In contrast, Lula's administration was little troubled by international shocks, at least until the middle of 2008, which could explain his advantage.

In April, 2009 at the G-20 summit in London, President of the United States, Barack Obama, said of President Lula: "That's my man right here. Love this guy. He's the most popular politician on earth. It's because of his good looks." Data on Lula's evaluation and Obama's comments raise an interesting question: were there idiosyncratic characteristics that define Lula's high popularity or was it the economy, which benefited both from inheritance of FHC's price stability and from high foreign demand and liquidity? In fact, one can pose a more general question: how is the presidential approval rating influenced by domestic and foreign economic indicators in Brazil?

The main purpose of this paper is to investigate the relationship between presidential approval ratings and economic performance in a consolidating democracy, having been controlled for political factors, international shocks and the impact of president's personality. By using time-series data from 1999M9 until 2009M2, we are able to unveil how Brazilian citizens evaluate the performance of their president, giving special emphasis to economic indicators like exchange rates and inflation, on the one hand, and political issues, on the other. Rather than analyze either poll results or approval ratings by means of descriptive statistics examination, our approach aims to provide a deeper understanding of voter opinion by applying a rigorous econometric modeling strategy.

As well as analyzing the fascinating case of Lula's high popularity *vis a vis* the economic and political scenario, the importance of the present paper rests on three further factors. First of all, Brazil is the largest and wealthiest country in Latin America. With a population of almost 190 million, it represents 34% of Latin America's total population, and its 2006 GDP of approximately US$ 1.1 billion, corresponds to nearly 38% of the

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[2]The trough, in June 2004, happened at the heat of a corruption scandal involving members of the government that were very close to the president.

region's figure.

Secondly, the country can be regarded as a relatively young democracy, having returned to this political regime in 1984, after 20 years of military dictatorship. As the democratic regime is relatively new, voters may have limited experience in the process of choosing their representatives. For this reason, it is especially interesting to investigate how Brazilian citizens evaluate their political leaders according to the economic and political environment.

Thirdly, to our knowledge, the study is original in the econometric use of the Brazilian time-series data. As will be shown, the related literature is particularly focused on the results of election polls. Studies in this area had been carried out for several countries but not for Brazil. Our work thus complements the Political Science and the New Political Economy literature by providing evidence on the relationship between approval ratings and a series of economic and political indicators in Brazil. The sample period, ultimately determined by data availability, covers a significant part of both offices of former President FHC and the ongoing administration of President Lula. Nevertheless, as will be shown, changes in the economic and political variables in the period being investigated were substantial. Regarding the econometric methodology, our study is also innovative. Since there are thousands of models to be investigated (for our choice of independent variables, deterministic components and lags), we apply an automated model selection approach, meaning that our methodology is rigorous. In order to account for possible endogeneity problems, we also use instrumental variables techniques.

This paper has three further sections, besides this introduction. Section 2 presents some of the related literature concerning government evaluation and economic performance. Section 3 describes the methodological approach and the dataset explored in the empirical tests. Finally, the estimation results are presented and discussed in section 4 and the concluding remarks presented.

1 Economic and Political Background

After 20 years of military dictatorship, democracy was returned to Brazil in 1989, when citizens elected their President, Fernando Collor de Mello by direct vote. Amidst great political turmoil, Collor de Mello suffered an impeachment in 1992 after being accused of corruption. His vice-president, Itamar Franco, assumed office and managed to finish the mandate. Franco's Finance Minister, FHC, was elected president in 1994. FHC was the first democratically elected president since Juscelino Kubitschek (1956-1961) to complete his political mandate, meaning that democratic stability was a novelty in that political scenario.

The economy under FHC was subjected to many international shocks in the 1990s (the contagion from economic crises in Mexico-1995, Asia-1997 and Russia-1998). Domestic shocks also hit the economy hard at the end of that decade and into the beginning of the next. Managing to successfully control the Brazilian inflationary process, from close to 3,000% in 1993 to 15% in 1995 - is likely to be the most important factor that helped FHC

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to win reelection in 1998. The pegged exchange rate regime adopted as a monetary anchor survived the various episodes of international crises, but the Central Bank was not able to sustain the peg, leading to Brazil's own financial crisis in January 1999. Further shocks occurred in 2001 with the energy crisis, which seriously limited aggregate production, and with the terrorist attacks against the United States at the end of that year. A final shock (the consequences of which were only fully felt under the next government), came with the sharp depreciation of the domestic currency in 2002. This significant hike in the exchange rate was observed after the polls indicated an increased likelihood of the left-wing candidate's victory (Lula).

President Lula took office in 2003. After a bad first year, the Brazilian economy presented higher economic growth rates relative to those observed during FHC's government. A significant part of this growth can be credited to the high level of international liquidity, an elevated growth in foreign demand (particularly economic growth in countries that were, or became, important trade partners), the increased international price of commodities and the absence of significant international shocks (at least before the financial crisis at the end of 2008). Furthermore, there was also an increase in domestic consumption, both in the private and public sectors, which led to decreasing unemployment throughout this period. The changing economic scenario points to the need to condition the approval rates to economic developments.

In addition to the changing economic scenario, the sample period also covers two leaderships that can be seen as representing different ideological views and interest groups. FHC, a former university professor, has been associated with the richest groups of Brazilian society. Despite belonging to a center political party (PSDB), he has been seen as a right-wing politician whose main economic purpose was to control the huge inflationary process, while leaving discontentment regarding unemployment and social welfare to his successor. President Lula, in turn, was a former syndicate leader and is the founder of the Worker's Party (PT - Partido dos Trabalhadores). Lula was elected mainly due to the high number of votes provided by those living in the poorest regions of the country[3]

Although there were differences, both offices shared one common aspect: they were hit by several political scandals that consequentially damaged the image of the president. For instance, in 2001, during FHC's second mandate, Antônio Carlos Magalhães, a former Brazilian senator who was politically aligned to the Federal government, decided to leave office after being accused of violating the Senate's electronic display. Accusations of buying congressional votes to try to pass an amendment to the constitution that allowed for reelection, also negatively impacted on the president's image. In 2005, during Lula's first government, Brazilian citizens became aware of a corruption scheme denominated "Mensalão" ("Big Monthly Allowance"). In this scheme, Brazilian federal deputies received cash payments in exchange for approving certain central government projects. Some of these agreements were arranged during the pre-election campaign. In spite of the clear involvement of several leading politicians that were closely linked to the president, Lula managed to secure reelection in 2006. In the midst of this scandal, he had 41% of positive

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[3]In fact, he was born in Brazil's Northeast region, which has the worst social indicators in the country.

evaluation and the sum of positive and regular evaluation, which we define as "approval", reached 82.9%. The question is: was this due to Lula's personal charisma or was the approval related to the economic situation, since annual inflation was 3.4% and real GDP growth reached 3.7% in 2006?

2   Literature

The literature that focuses on the evaluation of political leaders based on economic performance is diverse. Some of the papers consider that economic voting is based on the idea that the electorate relies, at least in part, on past economic performance when evaluating the incumbent relative to alternative candidates. Aggregate data supports the perception that in presidential and congressional elections, the incumbent gets credit for good economic times and is blamed for bad ones. Kramer (1971) was one of the first to show such evidence for the USA - Kinder (1981), Peltzman (1990) and Leigh & Wolfers (2006) are additional references that give support to the same idea. More recently, Jordahl (2006) found evidence that macroeconomic variables influence voting in Sweden. Concerning a Latin-American country, Cerda & Vergara (2007) use a panel of Chilean municipalities and conclude that a rise in the national rate of unemployment decreases the incumbent's share of votes in presidential elections.

Some papers in this area give special emphasis to particular economic issues instead of analyzing a broad range of macroeconomic variables. In regards to the influence of fiscal policy on the electoral performance of incumbents, Peltzman (1992) suggests that American voters are especially averse to higher spending, penalizing candidates irrespective of the political office up for grabs Voters also consider the timing of these expenditures; that is, the nearer spending increases are to elections, the more they punish their candidates. Brender & Drazen (2005) evaluate how the probability of reelection of chief executives is affected by fiscal behavior in 74 countries between 1960 and 2003. The results indicate that voters do not reward politicians who engage in an election-year budget manipulation. Especially in developed countries and consolidated democracies, the result is exactly the opposite and suggests that voters are more likely to return chief executives to power if they have promoted reductions in the debt to GDP ratio. This suggests that voters in developed and in developing countries are influenced differently by the economic policies carried out by their respective governments.

The previous papers tend to evaluate the performance of politicians in polls, which is measured by the proportion of votes received or by evaluating whether the politician has been reappointed or not to the office. A different strand of the related literature analyzes not only the voting period, but the entire political mandate using higher frequency data (usually monthly or quarterly, for instance) concerning public opinion of the executive chiefs. By doing so, it is possible to evaluate not only the periods closer to elections, but also to provide a deeper evaluation of government approval.

In this context, Chappell Jr. (1990) is a relevant work, as it clearly states that presidential voting and presidential approval should not be taken as the same thing. By jointly

estimating equations that explain presidential voting and presidential approval ratings - using US quarterly data from 1953 to 1988 - results show that GNP growth and inflation appear to matter for both voters and poll respondents. Interestingly, estimates indicate that poll respondents are more concerned with inflation and less concerned with GNP growth than voters. These results may be seen as highly relevant in this context, as it shows that one must be cautious regarding the analysis of voting data and poll data. When considering why voting and approval ratings might differ in the way they respond to economic indicators, a distinction between retrospective and prospective considerations are likely to be more important. While approval ratings might be more related to the past actions of a leader, voting would also be associated with the electoral campaign when promises for the future are made. This is one of the important reasons to analyze data concerning government approval ratings, since we can base our analysis on past economic and political data.

In line with the previous discussion, there are some papers worth mentioning for our purposes: Arce (2003) analyzes the popular approval of Peruvian presidents during 1985 and 1997, based on two specific criteria: economic performance and government policies carried out to control political violence in that country. Concerning the first of these two criteria, the study reveals there were not major differences between Presidents Alan Garcia and Alberto Fujimori. Rising inflation had a consistently negative impact on presidential support, independent of the type of economic management program adopted (that were, in practice, different). Regarding political violence, the empirical evidence shows that this factor appears as a significant predictor of presidential approval for both Garcia and Fujimori. More importantly, rising guerrilla activities affected their popularity in a different manner. Garcia was perceived by the population as being soft on political violence, while Fujimori was seen on the opposite extreme. In this view, higher levels of guerrilla activity ought to hurt a left-leaning government like Garcia's because voters are likely to attribute the violence to his "softness". In contrast, higher levels of guerrilla activity may not necessarily hurt a right-leaning government like Fujimori's because voters are likely to see violence as rationalizing a hard-line stance.

Another study concerning evaluation of president approval is McAvoy (2006), who focuses on American opinion polls for the 19772002 period. Besides emphasizing economic indicators, like Arce (2003), special attention was paid to another key issue, foreign policy approval. By using quarterly data concerning American's opinions on the performance of the President's government, the empirical results show that both economic policy and foreign policy matter in the public's evaluation of the president. The findings also suggest that the public learns and changes the way it uses foreign policy in their assessment of the president. On the other hand, the weight of the economy on public's evaluation of the president remains steady through good and bad times. Finally, still regarding studies that emphasize rates of presidential approval, Geys & Vermeir (2008) analyzes the rates of presidential approval in US: more precisely, they test the influence of the tax burden and the change in the tax structure by using a time series approach (quarterly data covering the period from 1959 to 2006). Their results indicate that fiscal policy has an important influence on presidential approval ratings, as ratings appear to be influenced by increases

in both the tax burden and the deficit.

3 Methodology

Our objective is to estimate the following log-linear model

$$a_t = \gamma_0 + \sum_{j=1}^{n} \alpha_j f_t^{(j)} + \epsilon_t \qquad (1)$$

where the subscript t refers to time, a_t is the approval rating of the president, $f_t^{(j)}$ is the jth economic or political indicator, γ_0 is the idiosyncratic characteristic of the president that is important for his/hers popularity (we assume that this is some constant level of approval given by people's preferences), ϵ_t aggregates all random unobserved variables that affect the president's approval, α_j are parameters; all lower case variables are in natural logarithms. Given that the approval rating might exhibit some dynamics, we add memory to the process of the dependent variable and we also add lags to the independent variable, as can be seen below

$$a_t = \gamma_0 + \sum_{j=1}^{n} \sum_{t=1}^{p_j} \alpha_{ji} f_{t-i}^{(j)} + \gamma_1 Dlula + \sum_{k=1}^{T} \beta_k L^k a_t + \epsilon_t, \qquad (2)$$

where α_{ji} are parameters and L is the lag operator. The implicit test assumption is that the linear combination of fundamentals can be a proxy for the economic conditions that affect opinion polls. The characteristics that make Lula differ from FHC will be summarized in an intercept dummy, $Dlula$. In order to control for changes in the political scenario stemming from corruption scandals we will use a index variable that will be explained in the next section.

As mentioned earlier, we use the automated selection procedure embedded in the econometric package Oxmetrics - Autometrics. This algorithm performs a general-to-specific model selection and is based on the theory of reduction [for a summary discussion of this theory see Krolzig & Hendry (2004) and Hendry & Krolzig (2003). For a description of the algorithm see Doornik (2009). Designed to simplify dynamic and linear model regressions, they build on the search processes put forward by Hoover & Perez (1999). Autometrics is able to select the relevant variables from those that compose a General Unrestricted Model (GUM), according to specified diagnostic tests and significance levels. If the GUM contains the variables that are important to the Data Generation Process (DGP), it is shown to retrieve a final model that is encompassing.

Political Science, New Political Economy and Economic theory help us to specify the variables in the GUM, to ensure that variables are orthogonalized, to perform appropriate data transformations, to calibrate the algorithm and, finally, to interpret the results. The method is appropriate because, for the 17 explanatory variables in the chosen specification, we would have to estimate separately 2^{16} sub models and consider 16! possible paths. This computational burden justifies the need for the automated process. We are also able to

use a standardized testing procedure for different models and can benefit from the rigor of the "theory of reduction". Autometrics considers a tree search that corresponds to the whole model space, which are tested until a dominant encompassing reduction is selected. The objective is to reduce a model, possibly finding a specification that is absent of misspecification.

Tests were performed using expert settings for Autometrics. We departed from the customized settings and calibrated significance levels to 10% - aiming to keep the maximum number of variables that matter in the DGP. The program was also calibrated to select automatic dummies for large residuals. Finally, we relaxed the constraints on heteroscedasticity and ARCH effects, as those tests would be important for inference but not consistency.

4   Results

Monthly data on presidential ratings was obtained from CNT-sensus. As some months were missing, we replaced them by using the database of Datafolha. We constructed the series of approval rating by summing the positive and regular evaluations. In what follows, we used approval ratings for the tests. However, we must stress that tests were also performed using positive ratings and results are qualitatively very similar to the ones using approval ratings. Control variables were obtained from ipeadata, with the exception of the EMBI+ and the index for the political scenario which was constructed using Veja's front cover. Veja is the principal weekly Brazilian magazine. We constructed this index by analyzing the front cover of this magazine. We created the variables "Bad" and "Good", which show the proportion of front covers in a month that mention the president or the central government in a negative and positive way, respectively. In table 5 one can see the titles that motivated this characterization.

An explanation of the controls is presented in Table 1 and a list with the description of the variables can be seen in Table 2. A plot of the complete series is presented in Figures 1, 2 and 3. Figure 1 is presented in order to show, graphically, the interpolation that was carried out with the data. One can also see that the dynamics is preserved when using data on approval ratings by comparing the series in Figure 1.

Descriptive statistics are shown in Table 3. It is possible to conclude from the analysis of descriptive statistics only, that the economy was relatively stable (in comparison to the 1980s and 1990s). One can see, for instance, that average monthly inflation was 0.56 in Brazil in comparison to 0.21 in the US. Risk was approximately 6%, the average current account deficit remained at nearly 1% of the GDP and the public deficit was, on average, negative. On the other hand, the political scenario was not as good. The index for Veja's front cover shows that negative news predominated during the period. A comparison between both presidents is presented in Table 4. As can be seen, Lula's government benefited from lower risk, inflation, unemployment, current account deficit and public deficit. Foreign (US) unemployment, the real exchange rate and "bad news" (reflecting the political scenario) were higher during Lula.

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We did not present the correlation coefficients between approval ratings and the variables that were chosen to control for the economic and political scenario, as our objective is to obtain a *ceteris paribus* interpretation (possibly eliminating problems of endogeneity). For this reason, we will analyze the results obtained with the tests using Instrumental Variables and the final selection using Autometrics. Before presenting the test results, we must stress that all variables are stationary or non-stationary around a time trend[4]. Many variables, such as the approval rating or unemployment, are bounded process (0 to 100%), so they cannot contain an unbounded stochastic unit root. Because the hypothesis of a determinist trend is more reasonable, we control any non-stationary problem by leaving a time trend in the GUM.

Table 6 shows the results using Instrumental Variables. In terms of the signs of the coefficients, the model points to risk, real exchange rate, domestic inflation and the public deficit (as a proportion of the GDP) as the economic indicators that reduce approval rates. On the other hand, the current account deficit to GDP ratio and import over reserves would increase approval ratings. One can see in Table 1 that these signs were either unknown or as expected. In regards to the unexpected signs, we can point out that the higher the current account deficit (domestic absorption) is, the bigger is the approval. Also, the coefficient on imports over reserves might be reflecting a somewhat similar effect as higher imports, keeping the real exchange rate constant, are beneficial to the general public. It is unlikely that this variable would proxy for liquidity problems. So it seems that, once controlled for the depreciation in the real exchange rate, the public likes to absorb foreign savings and ends by attributing this fact to the president.

As can also be seen, few variables were significant. We would expect this result from the use of two stage least squares, especially if there is not much memory in the process of the explanatory variables (which means that endogenous variables would not be strongly correlated to their instruments). In order to overcome this problem, we decided to use a GUM with the first lag of the variables that are possibly endogenous, besides the other contemporaneous variables and a time trend. We also added the square of unemployment and domestic inflation, because the first OLS estimation indicated problems of functional form specification.

The next step was to apply the selection criteria of Autometrics. We ran the test using the GUM presented in Table 7and default settings. The selection is presented in Table 7. Diagnostic tests imply that the final model is absent of misspecification. One can see that 1st lag of the real exchange rate and the squared unemployment were selected. Foreign unemployment and the "Bad" index also belong to the final model. It follows that citizens evaluate their leader in relation to the foreign environment. In what regards to Lula's dummy, there is strong evidence that, irrespective of the improved fundamentals and the smaller number of shocks during his period in office, he has a head start in comparison to Cardoso (about 7%). This idiosyncratic characteristic can be due to his popular charisma, as previously stated. However, the difference implied by the dummy is not a big as the raw numbers on approval ratings *per se* would indicate[5].

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[4]Results can be obtained from the corresponding author upon request.

[5]A dummy for an outlier in 2000M1 was selected as well as another dummy +1 for 2000M6 and −1

Concluding Remarks

Our paper showed that domestic and foreign indicators are able to explain and predict presidential approval ratings in Brazil. The variables that seemed to be most strongly correlated to approval ratings, in a *ceteris paribus* interpretation, are both domestic and foreign unemployment. The domestic unemployment in a period of price stability, seems to be penalizing the Brazilian population most, if one considers that this penalty is further reflected in a poor evaluation of the president. Foreign unemployment means that citizens' evaluation is relative to the situation in the rest of the world (the US was used as Proxy). Furthermore, President Lula's approval is higher than President's FHC, even after controlling for the economic and political scenario. However, the difference is not as great as the approval ratings numbers suggest. Hence, results support the conclusion that the economy (given no political turmoil) is the main factor that explains (and predicts) Lula's high popularity.

2000M7.

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Table 1: **Control (Proxy) Variables and Expected Signs**

Control for:	Variable	Description	Expected Sign	*Ceteris paribus* explanation
Liquidity and Solvency problems	Current account deficit to GDP ratio Public deficit to GDP ratio Ratio of imports to total foreign exchange reserves	Current account deficit of the previous 12 months divided by GDP. The first difference of the total public debt to GDP ratio. Monthly imports divided by total reserves.	Negative	An increase in the current account deficit to GDP ratio enlarges foreign obligations. Indicative measure of the health of the public accounts A rise in the variable means that less months of imports can be paid with foreign reserves.
Real Sector	Unemployment	Unemployment in several metropolitan regions of Brazil.	Negative	Less employment decreases total welfare.
Inflation tax	Domestic inflation	Consumer price inflation.	Negative	Seignoriage, especially coming from inflation tax can raise political instability. It might also signalize structural problems in government finances.
International Shocks	Real exchange rate US inflation US unemployment	The ratio of the foreign to domestic price level times the nominal exchange rate. Annual change of the CPI in percentage. Percentage of the unemployed in the workforce.	Unknown	If the Marshall-Lerner condition holds, a rise means that the economy becomes more competitive. For the general public, a rise means that imports become expensive. Worsening in overall risk but it can raise awareness of relatively better situation in the domestic economy. Worsening in the foreign demand. However, it can raise awareness of relatively better situation in the domestic economy.
Economic Scenario	EMBI+ Brazil	The monthly spread between a domestic dollar-denominated asset and the American counterpart.	Negative	Part of the change in the country's overall default risk might be credited to the actions of the president.
Political Instance	Good and Bad	News regarding the president were taken from Veja's front cover in order to construct indexes variables that capture the political scenario.	Negative	Instability, mainly due to corruption scandals involving either the president or members of the government (or close allies), damage the president's image.

Table 2: **Data from IPEA**

Variable	Description and Notes	Code
Domestic Unemployment	We used the 1st code from 2001M10 and the	1st Taxa de desemprego - referência: 30 dias - RMs - IBGE/PME - PMEN12_TD12 Taxa de desemprego aberto 2nd RMs (referência 30 dias) IBGE PME antiga: PME12_TDA12
Domestic Inflation	No transformation on the raw data.	IPCA - geral - índice (dez. 1993 = 100) IBGE/SNIPC - PRECOS12_IPCA12
Real exchange rate	No transformation on the raw data.	Taxa de câmbio - efetiva real - INPC - exportações - índice (média 2000 = 100) - IPEA - GAC12_TCERXTINPC12
Public deficit	First difference of the Total Public Sector Debt	Dívida - total - setor público - líquida - (% PIB) - BCB Boletim F. Públ. - BM12_DTSPY12
Current Account Deficit as a % of GDP	No transformation on the raw data.	Transações correntes - últimos 12 meses - (% PIB) - BCB Boletim/BP - BPN12_STCPIB12
Imports over reserves	No transformation on the raw data	**Imports**: Importações - (FOB) - US$(milhões) - MDIC Secex - SECEX12_MVTOT12; **Reserves**: Reservas internacionais - liquidez internacional - US$(milhões) - BCB Boletim/BP - BM12_RESLIQ12
Risk	We used the EMBI+ until July 2008 and the "bônus global da república" afterwards because of availability of free (costless) data. No transformation was done on the bonus.	EMBI+ and Bônus global República (40) - spread - (p.p.) - Valor Econômico - VALOR366_GLOBAL40366
Foreign Inflation	Percentage change	Estados Unidos - IPC - índice (média 1982-84 = 100) - BLS - BLS12_IPCEUAS12
Foreign Unemployment	No transformation on the raw data.	Estados Unidos - taxa de desemprego - fora de trabalho - (%) - Economist - ECONMI12_USU12

Table 3: **Descriptive Statistics**

	Mean	Standard Deviation	Maximum	Minimum
Approval	73.75	14.03	94.20	34.00
Risk	6.15	4.06	20.39	1.47
Real Exchange Rate	97.29	4.51	111.38	89.37
Domestic Inflation	0.56	0.45	3.02	-0.21
Imports over Reserves	10.30	2.80	17.28	3.92
Current Account Deficit	0.95	2.32	4.59	-1.93
Domestic Unemployment	10.76	1.75	14.82	6.80
Public Deficit	-0.08	1.01	4.66	-3.72
Foreign Inflation	0.21	0.44	1.22	-1.92
Foreign Unemployment	5.08	0.70	6.70	3.90
Bad	0.11	0.20	1.00	0.00
Good	0.01	0.04	0.25	0.00

Table 4: **Descriptive Statistics: FHC x Lula**

	FHC		Lula	
	Mean	Std. Deviation	Mean	Std. Deviation
Approval	57.5	9.9	82.4	5.7
Risk	9.8	3.9	4.2	2.5
Real Exchange rate	95.3	2.5	98.4	5.0
Domestic Inflation	0.7	0.6	0.5	0.3
Imports/Reserves	12.6	2.5	9.1	2.1
Current Acc. Deficit	3.8	0.7	-0.6	1.1
Unemployment	12.0	1.2	10.1	1.6
Public Deficit	0.1	1.4	-0.2	0.7
Foreign Inflation	0.2	0.3	0.2	0.5
Foreign Unemployment	4.8	0.8	5.2	0.6
Bad	0.0	0.1	0.1	0.2
Good	0.0	0.0	0.0	0.0

Table 5: **Veja's front cover**

Month / Year	Day of the week	Veja's front cover
April / 2000	12	Corruption
May / 2000	3	Failures on Brazil's 500-year celebration
July / 2000	19	Eduardo Jorge
September / 2000	6	FHC leads Latin-American meeting
April / 2001	11	Corruption in Brazilian Sudan
May / 2001	16	Apagão (Energetic sector crisis)
May / 2001	23	Chico Lopes & Salvatore Cacciola
June / 2001	6	Apagão (Energetic sector crisis)
January / 2003	8	Lulas's election victory
January / 2003	15	Lula's confusion in the beginning of mandate
September / 2003	10	Brasilia: the island of fantasy
October / 2003	15	Brasil against USA at Alca meeting
fev/04	25	PT illegal source of funds
March / 2004	10	José Dirceu
March / 2004	31	José Dirceu as a trouble for Lula
May / 2004	19	Lula banishes foreign reporter
June / 2004	9	The success of Palocci as ministry of Finance
July / 2004	7	Unpunished corruptors
August / 2004	11	Henrique Meirelles
August / 2004	18	PT against Brazilian media
January / 2005	26	PT and Brazilian illiteracy
March / 2005	16	FARC donations to Brazilian PT
May / 2005	25	Corruption in Brazilian Correios
June / 2005	1	Roberto Jefferson
June / 2005	8	Corruption in Brazilian PT
June / 2005	15	Delúbio Soares
June / 2005	22	José Dirceu has been fired
June / 2005	29	PT's great mistake
July / 2005	6	Marcos Valério
July / 2005	13	Did Lula know about the "mensalão"?
July / 2005	20	Lula had been warned about "mensalão"
July / 2005	27	Marcos Valério
August / 2005	3	José Dirceu
August / 2005	10	Is Lula's government similar to Collor's?
August / 2005	17	Lula against impeachment
August / 2005	24	Denounces against Palocci
September / 2005	21	PT Crisis
October / 2005	19	The death of Celso Daniel
November / 2005	2	Illegal campaign donation from Cuba to Lula
November / 2005	30	Palocci's vulnerability
January / 2006	18	Duda Mendonça & foreign bank accounts
March / 2006	8	Marcos Valério
March / 2006	29	Angela Guadagnin dancing in the Legislative
April / 2006	5	Denounces against Pallocci
April / 2006	19	Crisis in Brazilian PT
May / 2006	10	Hugo Chaves against Brazilian Petrobrás
May / 2006	31	Thomaz Bastos as the Lula guardian
June / 2006	14	Depredation of the Brazilian Legislative House
July / 2006	26	Corruption in the Brazilian health system
September / 2006	27	Was Lula aware of corruption?
October / 2006	18	PT illegal source of funds
October / 2006	25	Denounces against Lula's son
August / 2007	15	Marcos Valério
December / 2007	19	The defeat of PT on CPMF voting
January / 2008	30	Scandals in Brazilian Correios
February / 2008	13	Scandals about payment cards (tapioca)
February / 2009	25	Corruption

Table 6: **Instrumental Variables Estimation**

	Coefficient	Std.Error	t-value	t-prob
Risk	-0.18	0.34	-0.54	0.591
Real exchange rate	-0.25	0.26	-0.98	0.328
Domestic inflation	-0.15	2.45	-0.06	0.952
Current account deficit	0.81	0.55	1.47	0.145
Unemployment	-1.05	0.56	-1.87	0.065
Public deficit	-0.65	1.13	-0.57	0.569
Imports over reserves	0.16	0.31	0.51	0.612
Lag of approval	0.76	0.11	6.83	0.000
Constant	43.30	29.36	1.47	0.144
Foreign inflation	-1.03	1.13	-0.92	0.362
Foreign unemployment	1.13	0.95	1.19	0.237
Bad	-4.22	2.23	-1.89	0.062
Good	3.64	8.94	0.41	0.685
Lula's dummy	7.30	3.59	2.03	0.045

Diagnostic Tests

AR 1-7	$F(7,89)=$	1.785[0.1001]
ARCH 1-7	$F(7,82)=$	13.788[0.0000]
Normality	$\chi^2(2)=$	24.216[0.0000]
Heteroscedasticity	$F(25,70)=$	1.868[0.0217]

Notes:
1. We considered as endogenous variables: risk, real exchange rate, inflation, imports over reserves, current account deficit, domestic unemployment and public deficit as a % of GDP. We used the first lag of the respective variables as instruments.
2. The period selected in this estimation finishes in 2008M11 because this was the last observation available for the US unemployment rate.

Table 7: **Final Selection Using Autometrics**

	Coefficient	Std.Error	t-value	t-prob
Approval (1st Lag)	0.76	0.04	17.30	0.00
Real exchange rate (1st Lag)	0.19	0.03	5.86	0.00
Unemployment Squared (1st Lag)	-0.05	0.01	-4.35	0.00
Foreign Unemployment	1.23	0.39	3.13	0.00
Bad	-4.24	1.17	-3.64	0.00
Lula's dummy	7.22	1.26	5.76	0.00
Time trend	-0.07	0.03	-2.90	0.00
Dummy 2000(1)	12.60	2.52	5.00	0.00
Dummy 2000(6-7)	10.07	1.69	5.96	0.00

Diagnostic Tests

AR1-7	$F(7,94)=$	$0.967[0.4597]$
ARCH1-7	$F(7,87)=$	$0.799[0.5903]$
Normality	$\chi^2(2)=$	$3.921[0.1408]$
Heteroscedasticity	$F(16,84)=$	$1.954[0.0260]$
RESET	$F(1,100)=$	$1.274[0.2617]$

Note: the GUM comprises the first lag of risk, real exchange rate, domestic inflation, imports over reserves, current account deficit, domestic unemployment, public deficit, domestic unemployment (squared) and domestic inflation (squared). We also add the following contemporaneous variables: foreign inflation, foreign unemployment, good and bad. A constant, a time trend and Lula's dummy were also included.
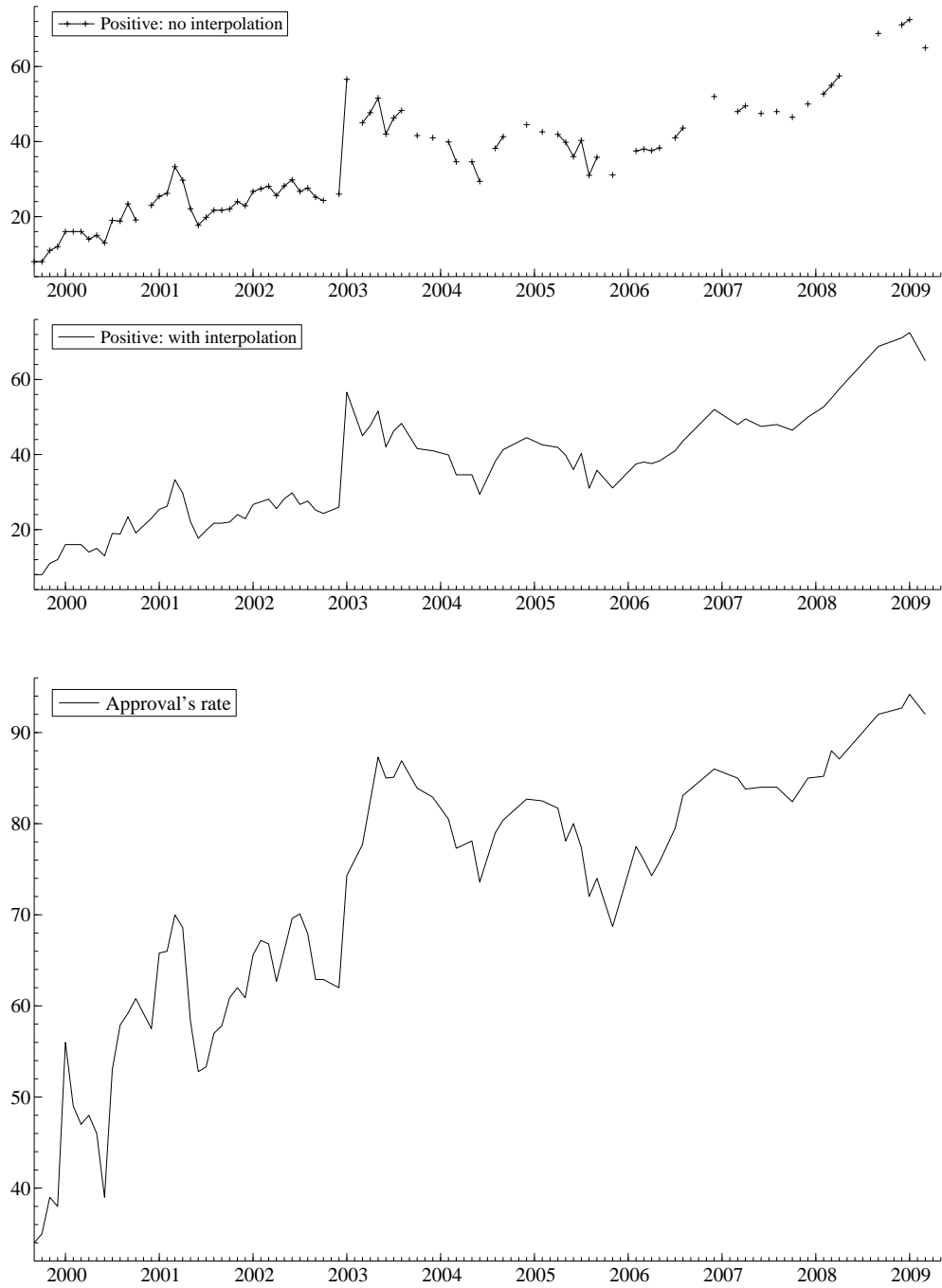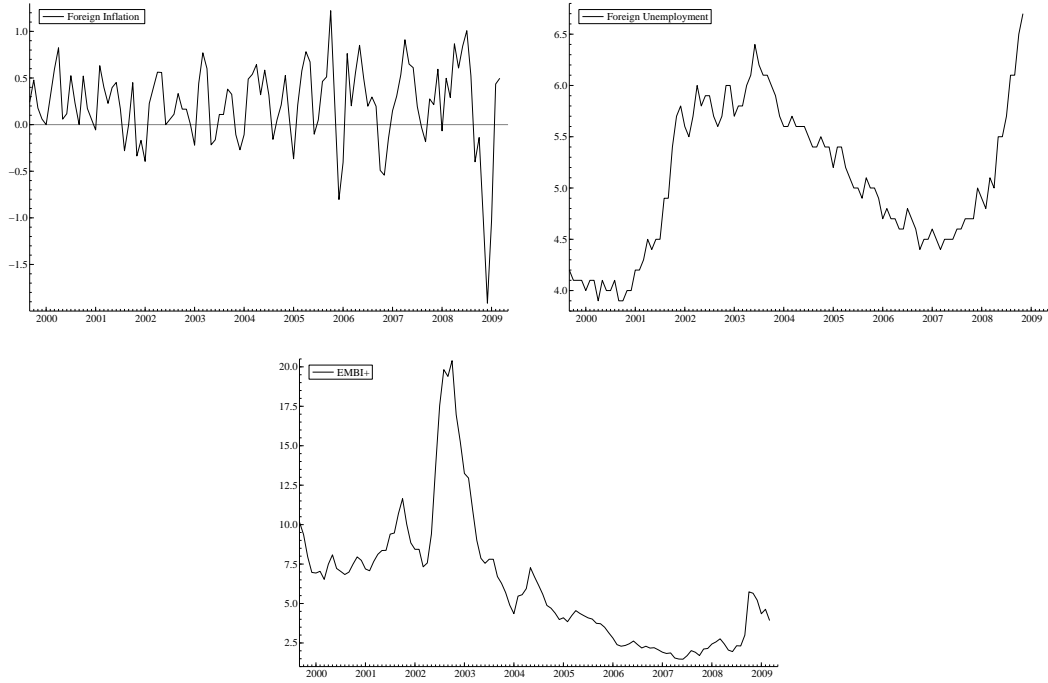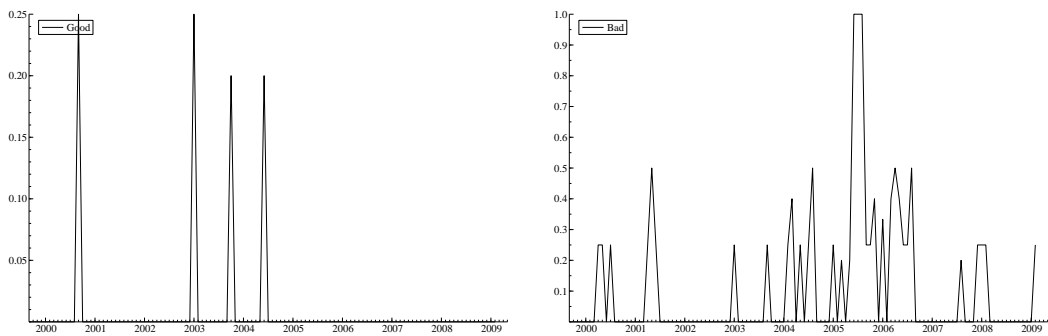
Graph 1: President's Positive and Approval Ratings

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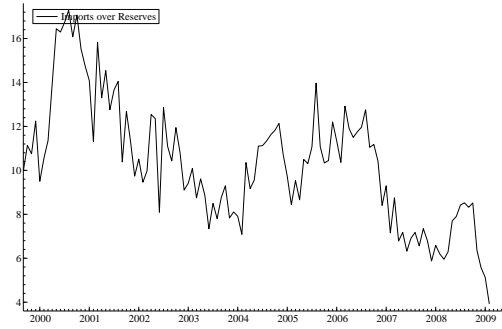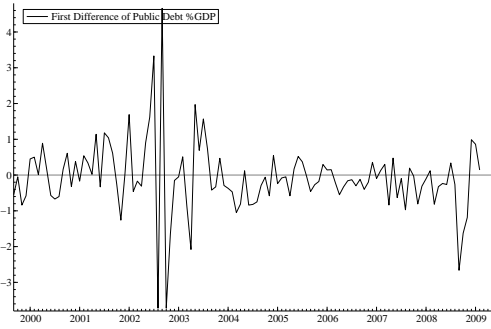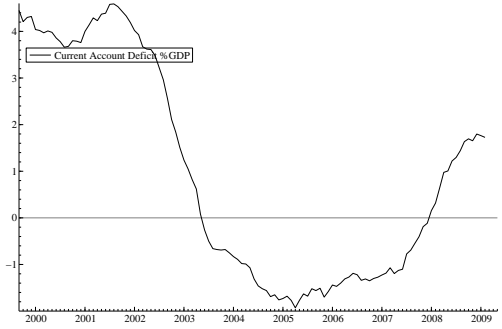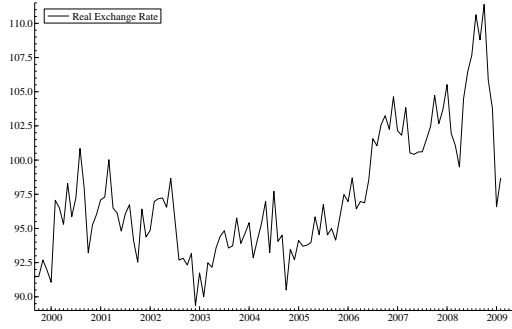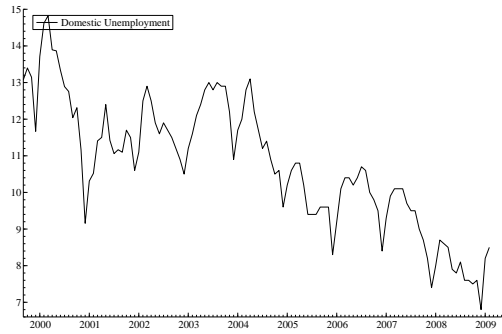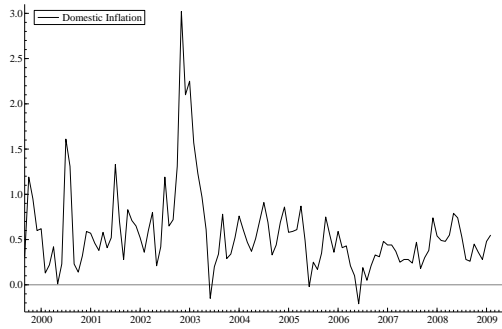
Graph 2: Domestic Economic Indicators

Graph 3: Foreign Economic Indicators and Risk

Graph 4: Political Scenario

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