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Personal Charisma or the Economy?

Macroeconomic Indicators of Presidential Approval Ratings in Brazil

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 2010M5, show that unemployment and the real exchange rate are the main variables that affects the ratings. There is also evidence that President Luis Inácio Lula da Silva has a higher approval rate 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. When controlled for a time trend, differences in popularity between both presidents vanish as the sample grows.

Keywords: Brazilian President, Approval Ratings, Macroeconomy.

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

Resumo

O artigo testa em que medida as taxas de aprovação do presidente do Brasil estão relacionadas com uma série de indicadores econômicos, controlando para o cenário político. Os resultados, de 1999M9 até 2010M5, mostram que o desemprego e a taxa de câmbio real são as principais variáveis econômicas que afetam a aprovação. Também existe evidência que o Presidente Luis Inácio Lula da Silva tem uma maior taxa de aprovação que o Presidente Fernando Henrique Cardoso, mantendo constante um número razoável de importantes indicadores domésticos e estrangeiros. Os resultados permitem concluir que o bom estado da economia (supondo a ausência de choques políticos) é um dos principais fatores que explica e prediz a alta popularidade do Presidente Lula. Quando se controla para uma tendência determinista, as diferenças de popularidade entre os dois presidentes desaparecem com o aumento da amostra.

Palavras-chave: taxa de aprovação, presidente, macroeconomia.

Classificação JEL: H11, H77, H83, E02, C52.

Área 5: Crescimento, Desenvolvimento Econômico e Instituições

Introduction

The former president of Brazil, Luis Inácio Lula da Silva (Lula) reached a staggering 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 evaluation¹.

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 2010M5, 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 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.

¹The trough, in June 2004, happened at the heat of a corruption scandal involving members of the government that were very close to the president.

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 based on the theory of reduction, which is later explained.

This paper has three further sections, besides this introduction. Section 1 discusses the economic and political background while Section 2 presents the related literature concerning government evaluation and economic performance. Section 3 describes the methodological approach and the dataset explored in the empirical tests. The estimation results are presented and discussed in Section 4. Finally, the concluding remarks are 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 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 was 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.

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 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 review

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 usually 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. Regarding other single-country studies analyzed by the most recent literature, Jordahl (2006) also found evidence that good macroeconomic conditions increase the number of votes received by the incumbent government 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. Finally, shedding light to multi-country studies, 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. In developed countries and consolidated democracies, the result is 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 1977 - 2002 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.

The number of studies concerned with the Brazilian Political Economy has been increasing. As a first example, consider Sakurai & Menezes-Filho (2008) who find that, in a panel of Brazilian municipalities from 1988 to 2000, mayors who spend more during their terms in office increase the probability of their own reelection or of a successor of the same political party. In particular, higher capital spending over the years preceding elections and higher current expenditures in election years are beneficial to their reelection. Motivated by a different reason, but still regarding political aspects in the Brazilian society, Ferraz & Finan (2011) concludes that first-term mayors are associated with significantly less corruption than those in their second and final term. The level of corruption is especially lower in those cities with a higher level of political competition. According to the authors, these results suggest that the possibility of re-election creates a “discipline effect”, inducing first-term mayors with re-election incentives to extract fewer rents from power. However, in a related empirical assessment regarding Brazil, Pereira et al. (2009) argue that when corruption is not likely to be detected and the pay-offs involved are very large, Brazilian politicians do not align their interests with that of the voters and are likely to engage in corrupt practices. Their results are quite opposite to those of Ferraz & Finan (2011) and suggest that enhancing the quality and quantity of information available to citizens is not enough to foreclose the incentive to commit crimes. However, irrespective of their conclusions and purposes, the latter studies and our own have the Brazilian Political Economy as a common motivation.

3 Methodology

Our objective is to estimate the following log-linear model

$$a_t = \gamma_0 + \gamma_1 t + \sum_{j=1}^n \alpha_j f_t^{(j)} + \varepsilon_t \quad (1)$$

where the subscript t refers to time, a_t is the approval rating of the president, $f_t^{(j)}$ is the j^{th} 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), γ_1 controls for a deterministic time trend, ε_t aggregates all random unobserved variables that affect the president’s approval, α_j are parameters. 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

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

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 macroeconomic conditions that affect opinion polls. The characteristics that make Lula differ from FHC will be summarized in an intercept dummy, D_{lula} . In order to control for changes in the political scenario stemming from corruption scandals, we will use an 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 reduction². 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 (Hendry & Krolzig (2005)).

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 explanatory variables, lags and deterministic specification in our general unrestricted model, we would have to estimate separately 2^{36} sub models and consider $36!$ 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 [Doornik (2009)]. 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 the algorithm to select automatic dummies for large residuals and we relaxed the constraints on heteroscedasticity and ARCH effects, as those tests would be important for inference but not parameter consistency.

3.1 Data

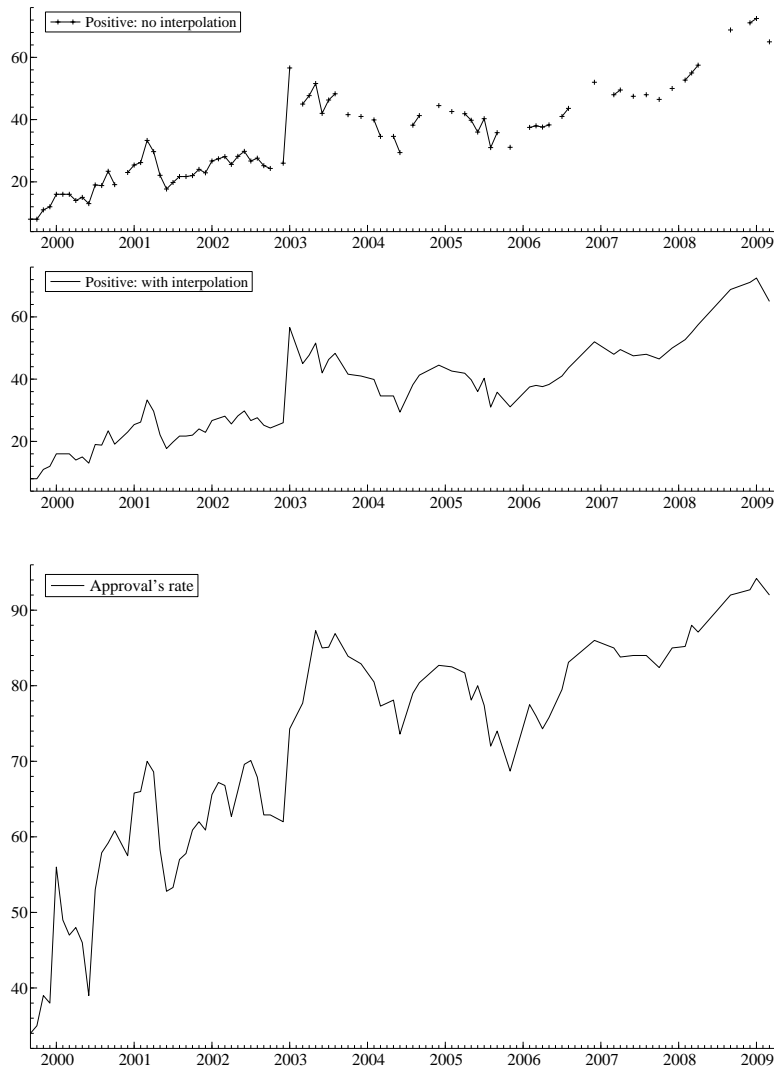
Our dataset comprises monthly observations covering the period that spans from 1999M9 until 2010M5. The dependent variable, the presidential approval rate, was obtained from Sensus and Datafolha, two of the most important opinion research institutes in Brazil. In order to measure the evaluation of the President as the Executive chief, both institutions provide the respondents three alternatives: positive, regular and negative. We constructed the series of approval rating by summing the proportion of positive and regular evaluations. In what follows, we used approval ratings for the tests. Figure 1 shows the linear interpolation that was carried out with the data, due to missing observations, and also presents the approval ratings series.

It is worth emphasizing that two main questions are addressed in this study. At a more general level, our work aims at investigating how the President’s rate of approval is influenced by macroeconomic conditions - in order to achieve this goal, we include a set of macroeconomic variables, such as domestic and foreign unemployment and risk, for instance, in our estimations of approval ratings. The second question relates to the existence of significant differences between FHC and Lula’s approval rates, after having controlled for the macroeconomic conditions. If such differences do exist, then personal characteristics exert an important influence on the way Brazilian citizens evaluate their federal executive chief.

All macroeconomic control variables were obtained from different sources at Ipeadata, an official institute maintained by the Brazilian Ministry of Planning³. An explanation of these covariates is presented in Table 1, including their respective expected signs. It can be seen in Table 1, for example,

²For a summary discussion of this theory see Krolzig & Hendry (2004) and Hendry & Krolzig (2003). For a description of the algorithm see Doornik (2009) and for recent applications see Castle & Hendry (2009) and Ferreira (2010).

³With the exception of the EMBI+, which was obtained from Valor Econômico, a well known Brazilian newspaper focused on economic issues.



Graph 1: President's Approval Ratings

that domestic unemployment is a proxy for real sector performance, the ratio of imports to total foreign exchange and public deficit to GDP ratio are proxies for liquidity and solvency problems while the North-American rate of unemployment is a proxy for external shocks.

A list with the description of the variables with their IPEA codes can be seen in Table 2. A plot of a selected number of variables that were used in the GUM is presented in Figures 2 and 3.

In order to capture the effects of the internal political atmosphere, we included an original index for the political scenario, which was constructed using the front cover of *Veja*, the main weekly Brazilian magazine. More precisely, we constructed this index by analyzing the front cover of this publication, which were classified as “Bad” and “Good”, each variable showing 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 9 one can see the magazine titles that motivated this characterization. Finally, with the intention of evaluating the idiosyncratic Lula and FHC's rate of approval, we included a dummy variable which assumes 1 during Lula government and 0 during FHC's - if this variable is

Table 1: Control (Proxy) Variables and Expected Signs

Control for:	Variable	Description	Expected Sign	<i>Ceteris paribus</i> explanation
Liquidity and Solvency problems	Current account deficit to GDP ratio	Current account deficit of the previous 12 months divided by GDP.	Negative	An increase in the current account deficit to GDP ratio enlarges foreign obligations.
	Public deficit to GDP ratio	The first difference of the total public debt to GDP ratio.		Indicative measure of the health of the public accounts
	Ratio of imports to total foreign exchange reserves	Monthly imports divided by total reserves.		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	Seigniorage, especially coming from inflation tax can raise political instability. It might also signalize structural problems in government finances.
International Shocks	Real exchange rate	The ratio of the foreign to domestic price level times the nominal exchange rate.	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.
	US inflation	Annual change of the CPI in percentage.		Worsening in overall risk but it can raise awareness of relatively better situation in the domestic economy.
	US unemployment	Percentage of the unemployed in the workforce.		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.

statistically significant, there is evidence that citizen's perception about their President is not only related to economic indicators, but also to his or her own idiosyncrasy.

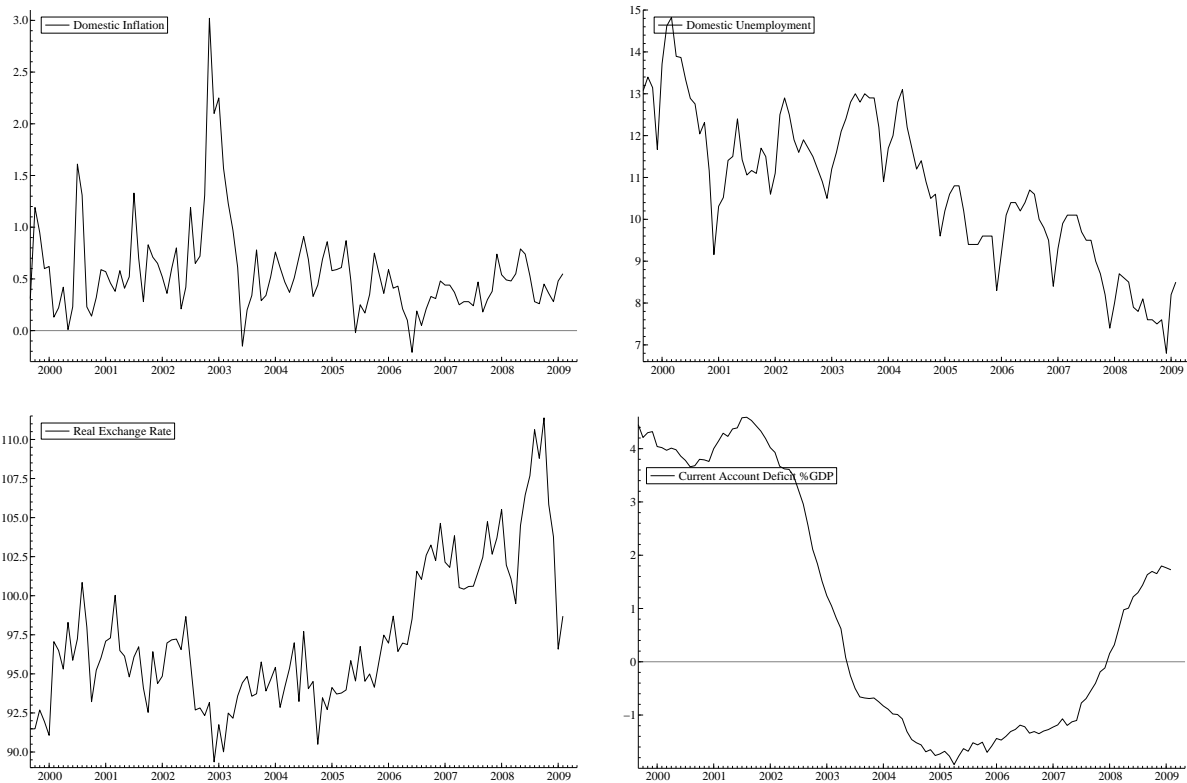
Descriptive statistics are shown in Table 3. It is possible to conclude from the analysis of descriptive statistics only, that the economy was relatively stable (in comparison to the 1980s and 1990s). One can see, for instance, that average monthly inflation was 0.5% in Brazil in comparison to 0.2% in the US. Risk was approximately 6%, the average current account deficit remained at nearly 1% of the GDP and the public deficit as a percentage of the GDP was, on average, balanced. 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.

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 or to identify a partial effect. In order to eliminate or alleviate possible endogeneity problems, we discuss the results obtained with the tests that exclude the contemporaneous variables⁴ and present the final selection using Autometrics.

⁴The absence of the contemporaneous variables in the right-hand side of the estimated equation eliminates any possible correlation with the contemporaneous error, as far as there is no error autocorrelation.

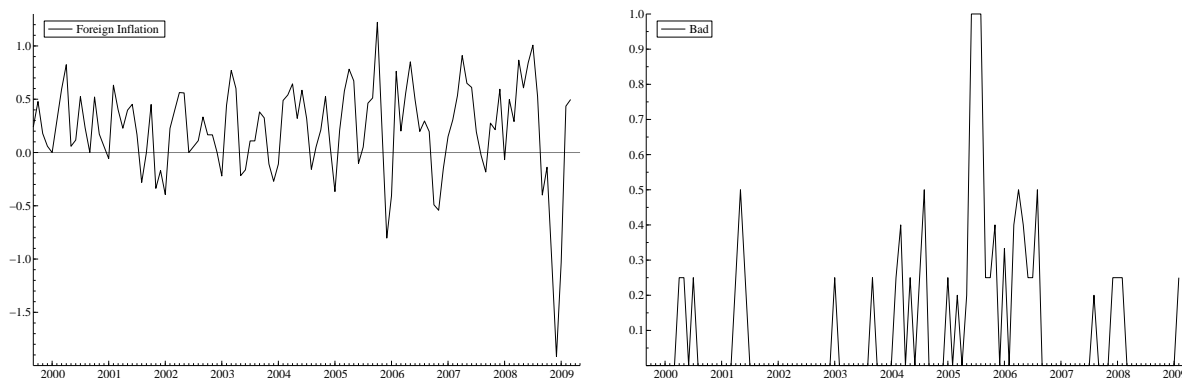
Table 2: Data from IPEA

Variable	Description and Notes	Code
Domestic Unemployment	We used the 1 st code from 2001M10 and the	1 st Taxa de desemprego - referência: 30 dias - RMs - IBGE/PME - PMEN12_TD12 Taxa de desemprego aberto 2 nd 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



Graph 2: Selected Domestic Economic Indicators

However, before presenting the test results, we must stress that all variables included in the GUM are stationary or stationary around a deterministic time trend. The stationary model was constructed



Graph 3: Selected Foreign Economic Indicators and Political Scenario

Table 3: **Descriptive Statistics**

	Mean	Std. Deviation	Maximum	Minimum
Approval	75.9	14.6	96.0	34.00
Risk	5.7	4.1	20.4	1.3
Real Exchange Rate	105.3	20.9	157.5	72.6
Domestic Inflation	0.5	0.4	3.0	-0.2
Imports over Reserves	9.7	3.1	17.3	3.9
Current Account Deficit	1.0	2.2	4.6	-1.9
Domestic Unemployment	10.4	1.9	14.8	6.8
Public Deficit	0.0	1.1	6.7	-4.0
Foreign Inflation	0.2	0.4	1.2	-1.9
Foreign Unemployment	5.7	1.6	10.2	3.9
Bad	0.1	0.2	1.0	0.0
Good	0.0	0.0	0.3	0.0

using the results of the stationarity tests that can be found in Table 5. It can be seen that one cannot reject the null of a unit root for risk, real exchange rate, domestic unemployment, foreign unemployment and import over reserves at the 10% significance level. We first detrended and then used the first difference of risk, the logarithm of the real exchange rate and import over reserves in the GUM, as the model included a deterministic time trend. We also used the first difference of the logarithm of both the domestic and foreign unemployment.

4 Results

This section present the results obtained with Autometrics. First, we show the Ordinary Least Squares regression using the GUM as presented in Table 4. As can be seen, the GUM presents no specification problem, with the exception of heteroskedasticity, which is not rejected at 5%. Although inference can be affected by the violation of the homoskedasticity assumption, White corrected standard errors (not presented in the paper but available upon request) suggest that some variables are significant while others are not, which reinforces the case for model reduction. In sequence, we

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

	FHC		Lula	
	Mean	Std. Deviation	Mean	Std. Deviation
Approval	57.5	9.9	84.2	6.6
Risk	9.8	3.9	3.8	2.5
Real Exchange rate	95.3	2.5	142.4	16.9
Domestic Inflation	0.7	0.6	0.5	0.3
Imports/Reserves	12.6	2.5	8.4	2.5
Current Acc. Deficit	3.8	0.7	-0.3	1.3
Unemployment	12.0	1.2	9.7	1.7
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	6.1	1.8
Bad	0.0	0.1	0.1	0.2
Good	0.0	0.0	0.0	0.0

Table 5: **Unit Root Tests**

	Lags	Specification	ADF-Statistic	t-Prob.
Ln Approval	1	constant and trend	-4.48	0.0024
Risk	1	constant and trend	-3.24	0.0805
Ln Real Exchange Rate	1	constant and trend	-3.26	0.0781
Domestic Inflation	0	constant and trend	-5.46	0.0001
Imports over Reserves	1	constant and trend	-3.08	0.1147
Current Account Deficit	1	constant and trend	-3.81	0.0188
Ln Domestic Unemployment	0	no deterministic	-1.12	0.2361
Public Deficit	0	constant and trend	-12.91	0.0000
Foreign Inflation	1	constant and trend	-7.29	0.0000
Ln Foreign Unemployment	0	no deterministic	2.42	0.9963

perform the automated model selection using expert settings in Autometrics⁵. The final selection is presented in Table 7. Diagnostic tests imply that the final model is absent of misspecification at 5%, with the exception of the heteroscedasticity problem.

One can see in Table 4 that several variables were selected as regressors in the final model. A first result suggests that the rate of approval is relatively persistent over time - the coefficient regarding the first lag is 0.82 and the coefficient regarding the second lag, in its turn, is negative and equal to -0.19 (both statistically significant at 1%). This dynamics can be related to other macroeconomic or social conditions that are not captured by the other fundamentals but were present in the previous periods. It could also be due to the slow dissemination of news regarding president's evaluation.

The second lag of the first difference of both (the detrended log of the) real exchange rate and the unemployment rate (also in natural logarithm) affect popularity negatively. An explanation for the first result is that the appreciation of the real exchange rate, keeping liquidity constant, ease domestic absorption of foreign output, which increases investment and domestic consumption. Regarding

⁵As mentioned before, we relaxed the restriction on heteroscedasticity and ARCH effects, since there is no effect in the consistency of the estimated parameters.

Table 6: General Unrestricted Model - Log of Approval is the dependent variable

	Coefficient	Std.Error	t-value	t-prob
Log of approval (1 st lag)	0.935	0.093	10.000	0.000
Log of approval (2 nd lag)	-0.253	0.099	-2.540	0.013
Log of approval (3 rd lag)	-0.015	0.074	-0.207	0.837
Constant	1.261	0.242	5.220	0.000
Risk (1 st lag)	0.002	0.007	0.231	0.818
Risk (2 nd lag)	-0.014	0.011	-1.270	0.208
Risk (3 rd lag)	0.013	0.007	1.790	0.077
Real exchange rate - detrended, 1 st diff. (1 st lag)	-0.093	0.135	-0.686	0.494
Real exchange rate - detrended, 1 st diff. (2 nd lag)	0.203	0.152	1.340	0.185
Real exchange rate - detrended, 1 st diff. (3 rd lag)	0.077	0.114	0.673	0.503
Domestic Inflation (1 st lag)	-0.034	0.014	-2.470	0.016
Domestic Inflation (2 nd lag)	0.018	0.015	1.210	0.231
Domestic Inflation (3 rd lag)	-0.006	0.012	-0.485	0.629
Current account deficit (1 st lag)	0.015	0.030	0.501	0.618
Current account deficit (2 nd lag)	-0.033	0.046	-0.715	0.477
Current account deficit (3 rd lag)	0.030	0.031	0.995	0.323
Domestic unemployment - 1 st diff. (1 st lag)	-0.199	0.064	-3.120	0.003
Domestic unemployment - 1 st diff. (2 nd lag)	-0.135	0.060	-2.250	0.027
Domestic unemployment - 1 st diff. (3 rd lag)	-0.067	0.061	-1.100	0.277
Public deficit (1 st lag)	0.000	0.003	0.052	0.959
Public deficit (2 nd lag)	-0.009	0.004	-2.190	0.031
Public deficit (3 rd lag)	-0.002	0.004	-0.526	0.600
Foreign inflation (1 st lag)	-0.001	0.010	-0.069	0.945
Foreign inflation (2 nd lag)	0.022	0.011	2.030	0.045
Foreign inflation (3 rd lag)	-0.010	0.009	-1.120	0.268
Foreign unemployment - 1 st diff. (1 st lag)	-0.195	0.116	-1.680	0.096
Foreign unemployment - 1 st diff. (2 nd lag)	0.062	0.105	0.595	0.554
Foreign unemployment - 1 st diff. (3 rd lag)	0.012	0.109	0.110	0.912
Lula's dummy	0.193	0.067	2.900	0.005
Lula's trend	-0.003	0.002	-1.900	0.061
Imports over reserves (1 st lag)	0.001	0.003	0.386	0.700
Imports over reserves (2 nd lag)	-0.006	0.003	-1.980	0.051
Imports over reserves (3 rd lag)	-0.006	0.003	-1.990	0.050
Good (1 st lag)	-0.077	0.078	-0.988	0.326
Bad (1 st lag)	-0.037	0.018	-2.050	0.043
Trend	0.003	0.001	2.460	0.016

Diagnostic Tests

AR1-7	F(7,96)=	0.706[0.6669]
ARCH1-7	F(7,89)=	1.677[0.1247]
Normality	$\chi^2(2)=$	4.910[0.0859]
Heteroscedasticity	F(24,78)=	1.856[0.0219]
RESET	F(1,102)=	2.252[0.1365]

domestic unemployment, an example can provide a rough measure of its *ceteris paribus* correlation to approval. By the end of 2002, when FHC was concluding his second mandate, unemployment rate

Table 7: **Final Selection Using Autometrics - Log of Approval is the dependent variable**

	Coefficient	Std.Error	t-value	t-prob
Log of Approval (1 st Lag)	0.82	0.0643	12.7	0.0000
Log of Approval (2 nd Lag)	-0.19	0.0521	-3.81	0.0002
Constant	1.46	0.1590	9.17	0.0000
Log of Real exchange rate - 1 st diff. (2 nd Lag)	-0.20	0.0604	-3.36	0.0011
Log Unemployment - 1 st diff. (2 nd Lag)	-0.13	0.0434	-2.88	0.0048
Current account deficit (3 rd Lag)	0.02	0.0024	4.42	0.0000
Foreign Inflation (1 st Lag)	-0.02	0.0059	-3.17	0.0020
Foreign Inflation (2 nd Lag)	0.01	0.0063	2.05	0.0424
Bad (1 st Lag)	-0.05	0.0122	-4.01	0.0001
Lula's intercept dummy	0.19	0.0271	7.21	0.0000
Lula's trend dummy	-0.002	0.0006	-3.40	0.0010
Time trend	0.002	0.0006	4.13	0.0001
Dummy 2001(1)	0.13	0.0256	5.08	0.0000
Dummy 2001(3)	0.12	0.0271	4.61	0.0000
Dummy 2005(11)	-0.08	0.0251	-3.28	0.0946

Diagnostic Tests

AR1-7	F(7,96)=	0.706[0.6669]
ARCH1-7	F(7,89)=	1.677[0.1247]
Normality	$\chi^2(2)=$	4.910[0.0859]
Heteroscedasticity	F(24,78)=	1.856[0.0219]
RESET	F(1,102)=	2.252[0.1365]

was 11.20% and 10.90% in October and November, respectively (a fall of 2.7%). Given that FHC's approval rate was 62% in December, his predicted approval rate would be about 62.22% by January 2003, if he had hypothetically continued in office. If unemployment went down to 10.2%, his approval rate would increase to, roughly, 62.76%. This is an indication that, although decreasing rates of unemployment cause an increase in approval ratings, this channel is not as strong as one could expect. A possible reason for the smaller impact might be related to our choice of treating unemployment rate as a unit root - we may have thrown away information contained in the level of this variable⁶. However, this is a preferred strategy than risking to have performed a spurious regression, as the presence of the deterministic time trend in the approval rate could be correlated to the stochastic trend in the unemployment series. Nonetheless, we provide a throughout discussion regarding the relationship between approval rates and unemployment in the sub-section below.

In regards to the unexpected signs, we can point out that the higher the current account deficit is, the bigger the approval. A possible explanation is that citizens enjoy a rising level of domestic absorption, keeping real exchange rates constant. Regarding international shocks, it was found that foreign inflation also belong to the final model and negatively affects approval rates.

Having discussed the coefficients regarding the macroeconomic variables⁷, we now analyze the

⁶Results that were obtained using unemployment in levels, which can be found in an working paper version of this paper, show that this specific effect is higher.

⁷A dummy for an outlier in 2001M1, 2001M3 and 2005M11 were selected. The time trend is significant and positive for FHC but negative for the period under Lula's office.

political variables. The first lag of “Bad”, which is a proxy for the political environment, takes a negative value, suggesting that approval rates are negatively correlated to our measure of political humor. Because of the stationary nature of the model, this effect dissipates as long as the bad news disappears. Finally, our second political variable provides an interesting result: according to the value of 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 President Cardoso - as previously stated, this idiosyncratic characteristic can be due to his popular charisma. Given that the coefficient is equal to 0.19 (statistically significant at 1%), the *ceteris paribus* difference between Lula and FHC is about 13 percentage points, not as big as the raw numbers on approval ratings *per se* indicate.

However, notice that the positive time trend found for FHC’s office cancels out during Lula’s administration. This means that, although the intercept is higher under Lula, FHC’s approval rate was growing 0.02 percentage points each month. The finding of a positive time trend is very important: if he stayed in office until 2010M5, his predicted popularity would be higher than Lula’s, i.e., 95.3% against, approximately, 101%⁸. However, the interpretation of the time trend is harder to make, as personal charisma is unlikely to be changing over time. It could be reflecting some missing variable that was affecting FHC’s popularity positively (Graph 1 may provide the reader with convincing visual evidence on the existence of a positive trend). In any case, it is possible to conclude that when controlled for the macroeconomic and political variables, a constant and deterministic time trends, the conclusion is that differences between both presidents vanish⁹.

4.1 Popularity and Employment

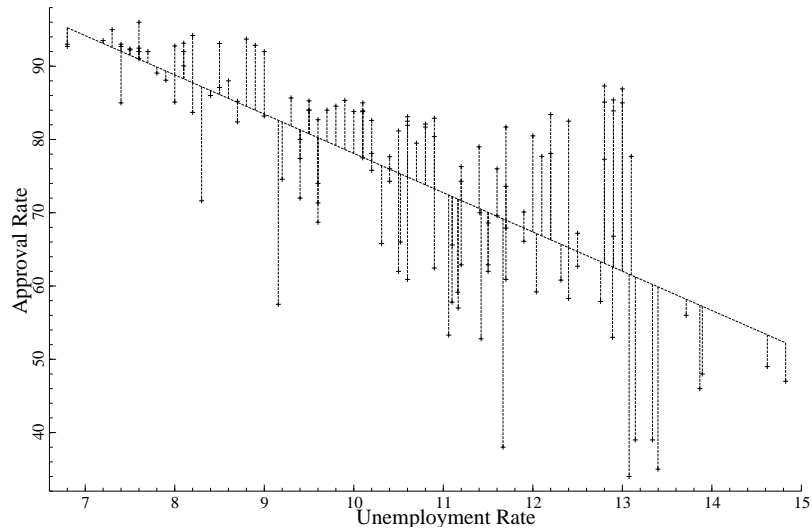
Figure 4 below helps us to analyze one of the most interesting results found in the paper: the relationship between approval rates and unemployment. Observe that the regression line presented in the same figure suggests a significant relationship between approval rates and unemployment. In fact, an ordinary least squares regression between the logarithm of the approval rate, a constant and the logarithm of the unemployment rate reveals an estimated elasticity of -0.41% , with a significant coefficient at the 1% confidence level. In other words, the figure suggests a sort of a “Phillips Curve” with approval rates in the place of inflation rates: the lower the unemployment rate, the bigger the president’s approval is.

We had already seen that this is not a spurious relationship as we have controlled for the deterministic trend. Figures 1 and 2 suggest that a deterministic trend or a stochastic trend could be a common feature for both series during this time period. Nevertheless, unit root tests showed that the unemployment series is very persistent and, for this reason, we have employed its first difference in the GUM.

As previously explained, by using the first difference of the unemployment rate instead of its level, we ran the risk of ignoring an important variable for the GUM. Nonetheless, this strategy was preferred than the one of possibly finding a statistical spurious relationship (in the sense that

⁸Due to the nature of the linear estimation strategy, predicted approval rates can exceed the lower and higher bounds at 0% and 100%, respectively. Although this might be considered a weakness of the model, it must be stated that parameter estimates are still consistent if the assumptions about the error term are as in the classical linear time series model. These assumptions “hold” with the Autometrics selection, as far as the residuals in the GUM passes all the relevant tests.

⁹Several test specifications (i.e., different specifications for the GUM, for example, including contemporaneous variables) were performed using Autometrics. The general conclusion is that Lula’s dummy and FHC’s positive time trend were present in the final selection of nearly all of them. This might reflect the fact that they are already highly significant in the GUM, as shown in Table 4.



Graph 4: Approval Rates and Unemployment

trends are correlated) whenever one does not exist. As we found a significant correlation between the first difference of the logarithm of unemployment and the log of approval rates, controlling for other variables and with residuals passing the standard diagnostic tests, we decided to discuss the relationship between both variables in levels in this separate sub-section.

In summary, the results point out to the existence of such a relationship. The “naive” curve (model) estimated above implies stronger effects of changes in unemployment on approval rates than the ones found with the GUM using first differences. For a decrease of 2.7% on unemployment rate and an initial level of approval rate of 62%, the predicted rate would increase to 62.68% against 62.22% as previously shown. These findings lead us to speculate on a more elaborate association between both variables as given by an augmented “Phillips Curve”, for instance. Some questions could emerge from our evidence: is there a “natural” approval rate, for example, one that could be observed when the unemployment rate is equal to its natural rate? This question could become a theme for future research.

The relationship that is presented in Figure 4 holds for the period when Brazil experienced low or moderate inflation levels. A possibly convincing theoretical explanation for the moderate observed inflation rates that were observed in that period is the problem of dynamic inconsistency. This problem generally presupposes the existence of an optimum income level that is higher than the flexible level price of output and, hence, an optimal unemployment rate smaller than the natural rate. In order to justify why monetary authorities would engage in policies of inflationary surprises, one also needs to assume a dilemma between inflation and unemployment, at least in the short run.

This theoretical framework allow us to elaborate hypothesis on the functional form of Figure 4. Since the President has some control of the fiscal and monetary policy, he or she can choose policies that lead to a unemployment rate below the natural rate which, in its turn, would imply higher levels of popular approval. These low levels of unemployment would cause (demand) inflation. According to the results that were found in the paper, the average individual does not penalize the President for the moderate inflation (statistically speaking). During the period of monetary stability, the main punishment is given by higher levels of unemployment. Nevertheless, the moderate levels of inflation that were observed during the period under analysis would be due to the higher weight given by the

monetary authority to deviations of inflation from target.

The analogy with dynamic inconsistency models is also interesting for another reason. In repeated games models, in which reputation is important, some optimal strategies are characterized by “planting” reputation in order to “harvest” deviations from the natural rate of unemployment. Higher popularity could increase the chance of an incumbent being reelected or help winning an election if approval rates can be “transferred” to a preferred candidate. In spite of the fact that approval rates are correlated to the past whereas votes are connected to the future, the possibility of transference of approval rates (between the incumbent and his/hers chosen candidate) is possible if approval rates and votes are highly correlated, in other words, if the electorate uses the past in order to anticipate the future. In that sense, the very low unemployment rate and the pressure on real wages and prices that were observed at the end of Lula’s mandate along with the victory of the Workers Party’s candidate in the 2010 elections, could be explained by monetary theory and the curve unveiled above.

Concluding Remarks

In which degree is the rate of president approval determined by macroeconomic conditions? Are these conditions more important than personal charisma (or any other personal trait) to determine citizen’s perception about the president?

By having analyzed the performance of monthly president approval rates from 1999M9 to 2010M5 via an automated selection procedure, and having the estimations controlled for a significant set of economic and political variables, the present paper provided original evidence regarding Brazil, a developing country and a young democracy. During the sample period, Brazil was not only governed by two presidents with very different backgrounds, but was also subject to different economic conditions.

Our paper showed that domestic and foreign indicators are able to explain and predict a significant part of presidential approval ratings in Brazil. The variables that seemed to be most strongly correlated to approval ratings, in a *ceteris paribus* interpretation, are the real exchange rate, unemployment, current account deficit and foreign inflation. 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 inflation means that citizens’ evaluation is relative to the situation in the rest of the world (the United States of America was used as proxy). The international liquidity and an easier access to the international market of goods and services are also likely to enhance the President’s image among Brazilian citizens.

Our most important result is that President Lula’s approval rate is higher than President’s FHC, even after controlling for the economic and political scenario. However, this difference seems not to be as high as the sample averages comparison (between approval rates) would suggest. Also, when controlled for a time trend, the popularity differences between both presidents vanish as the sample size grows. The interpretation of the significant time trend during FHC’s office is difficult to make, but this result suggest a missing variable growing with time (which is less likely to be personal charisma). Hence, our findings support the conclusion that the economy (given no political turmoil) is a very important factor that explains popularity, but personal characteristics are also likely to exert a influence on citizen’s evaluation.

The study may have inaugurated an avenue of research on the macroeconomic determinants of presidential approval rates in Brazil. Further works that investigate the response of citizens to deviations of variables from their equilibrium values (or optimal values), such as unemployment from natural unemployment or the real exchange rate from its (hypothetical) long run equilibrium would

be interesting. One can also analyze the effects on approval rates of positive versus negative deficits, or deviations of inflation from target.

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Table 8: Veja's front cover - I

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
February/04	25	PT illegal source of funds
March / 2004	10, 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	Allegations 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

Table 9: Veja's front cover - II

Month / Year	Day of the week	Veja's front cover
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	Allegations 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	Allegations 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
September / 2009	30	"Brazilian Imperialism"
November / 2009	25	Movie based on Lula's life
December / 2009	2	Corruption
January / 2010	27	Lula's health problems
March / 2010	10,17	Workers' party (PT) finances