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Article

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Personal charisma or the economy? 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 2010M5, show that unemployment and the minimum wage are the main variables that affect 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. However, when controlled for a time trend, differences in popularity between both presidents vanish as the sample size grows. 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.

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Keywords: Brazilian President; Approval ratings; Macroeconomy

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 o salário mínimo 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. No entanto, quando se controla para uma tendência determinista, as diferenças de popularidade entre os dois presidentes desaparecem com o aumento da amostra. Os resultados permitem concluir

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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.

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Palavras-chave: Taxa de aprovação; Presidente; Macroeconomia

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1. Introduction

Two of the most important opinion research institutes in Brazil, Sensus and Datafolha, collect measures of the President's public evaluation, providing their poll respondents with three alternative answers to his/her performance: positive, regular and negative. The former president of Brazil, Luis Inácio Lula da Silva (Lula) reached a staggering positive rate of 72.5% in February 2009. By adding the proportion of respondents that evaluated the president as being regular, which is the rating that we define as "approval", 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, the "honeymoon" period, Lula's average positive rating was at nearly 50%. Even after the end of this period, ratings never fell below 29% positive evaluation.¹

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 – 1995–2002 – was the frequency and strength of negative international shocks. In January 1999, Brazil devalued its domestic currency as a response to capital outflows and a deteriorating Balance of Payments. 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, the 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 the 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 a 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 rate 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 more than 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. Studies in this area had been carried

¹ 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.

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 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 2 discusses the economical and political background while Section 3 presents the related literature concerning government evaluation and economic performance. Section 4 describes the methodological approach and the dataset explored in the empirical tests. The estimation results are presented and discussed in Section 5. Finally, the concluding remarks are presented.

2. Economic and political background

After 20 years of military dictatorship, Fernando Collor de Mello was the first president elected by direct voting, in 1989. Amidst great political turmoil, Collor de Mello was impeached in 1992 after being accused of corruption. His vice-president, Itamar Franco, assumed the office and managed to finish the mandate. Franco's Finance Minister, FHC, who was elected president in 1994, was the first democratically elected one 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 3000% 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 these 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 ratings 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 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 pass an amendment to the constitution that allowed for reelection also negatively impacted on the president's image. In 2005, during Lula's first term, Brazilian citizens became aware of a corruption scheme called "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 a 41% positive evaluation and the sum of positive and regular evaluation, the “approval” rate, 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?

3. 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 and Kiewiet (1981), Peltzman (1990) and Leigh and 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 and 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 on multi-country studies, Brender and Drazen (2005) evaluate how the probability of reelection of chief executives is affected by fiscal behavior in a panel of 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 usually monthly or quarterly frequency data 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 (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 quarterly data from 1953 to 1988 for the United States of America (US henceforth) – 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 from 1985 to 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 presidential 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 the public's evaluation of the president remains steady through good and bad times. Finally, still regarding studies that emphasize rates of presidential approval, [Geys and Vermeir \(2008\)](#) analyzes the rates of presidential approval in the 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.

[Bernhard and Leblang \(2006\)](#) carry out an interesting investigation of opinion polls and economic news for a parliamentary system. The authors study the relationship between unexpected exchange rate changes and opinion polls in the United Kingdom from the June 11, 1987 election until June 21st, after the 2001 election, using a weekly time series. Their hypothesis is that variables are endogenous in the sense that currency market activity affect opinion polls, as exchange rates can be related to welfare (and vice-versa), as traders anticipate a change in cabinet and thus economic policy. They estimate a voting intention model for the government, including the first difference of the voting intention on the left hand side and controls, such as lagged vote intention, changes in inflation and unemployment and a great number of dummies for economic and political events – for example, dummies for a "honeymoon" period, election dates, the stock market crash of 1987, the foot-and-mouth disease and so on.² Results show that changes in unemployment are significantly related to changes in voting intention whereas inflation and other control variables are not significant (with the clear exception of the dummy variables). They use the residuals of this estimation to create a variable that would supposedly reflect unexpected positive and negative news regarding political support. Finally they test the correlation between political news and exchange rate surprises.³ Their finding is that unexpected depreciations lead to a decrease in the voting intention for the government and that negative public opinion shocks cause a currency depreciation. Also, exchange rate volatility increases when opinion polls do not clearly indicate the outcome of an electoral outcome.

The number of studies concerned with the Brazilian Political Economy has been increasing over the recent years. As a first example, [Sakurai and Menezes-Filho \(2008\)](#) 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 and Finan \(2011\)](#) conclude 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 and 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.

² See the detailed list of dummies in [Bernhard and Leblang \(2006, p. 37\)](#).

³ For details of how they estimated exchange rate surprises, see the aforementioned paper.

4. Methodology

Our objective is to estimate the following model

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

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 and finally, 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 variables, as can be seen below:

$$a_t = \gamma_0 + \gamma_1 \cdot t + \gamma_2 \cdot DLula + \gamma_3 \cdot DLula \cdot t + \sum_{j=1}^n \sum_{i=0}^{p_j} \alpha_{j,i} f_{t-i}^{(j)} + \sum_{k=1}^T \beta_k a_{t-k} + \epsilon_t, \quad (2)$$

where $\alpha_{j,i}$, β_k , γ_2 and γ_3 are parameters; n , p_j and T are self-explanatory. 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, $DLula$, which assumes 1 during Lula government and 0 during FHC's – if this variable is 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. 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 based on the theory of reduction.⁴ Designed to simplify dynamic and linear model regressions, they build on the search processes put forward by Hoover and 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 and 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^{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 rigour 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 impose no constraints on heteroscedasticity and ARCH effects, as those tests would be important for inference but not parameter consistency.

4.1. Data

Our dataset comprises monthly observations covering the period that spans from 1999M9 until 2010M5. As mentioned in the Introduction, 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

⁴ For a summary discussion of this theory see Hendry and Krolzig (2004) and Hendry and Krolzig (2003). For a description of the algorithm see Doornik (2009) and for recent applications see Castle and Hendry (2009) and Ferreira (2010).

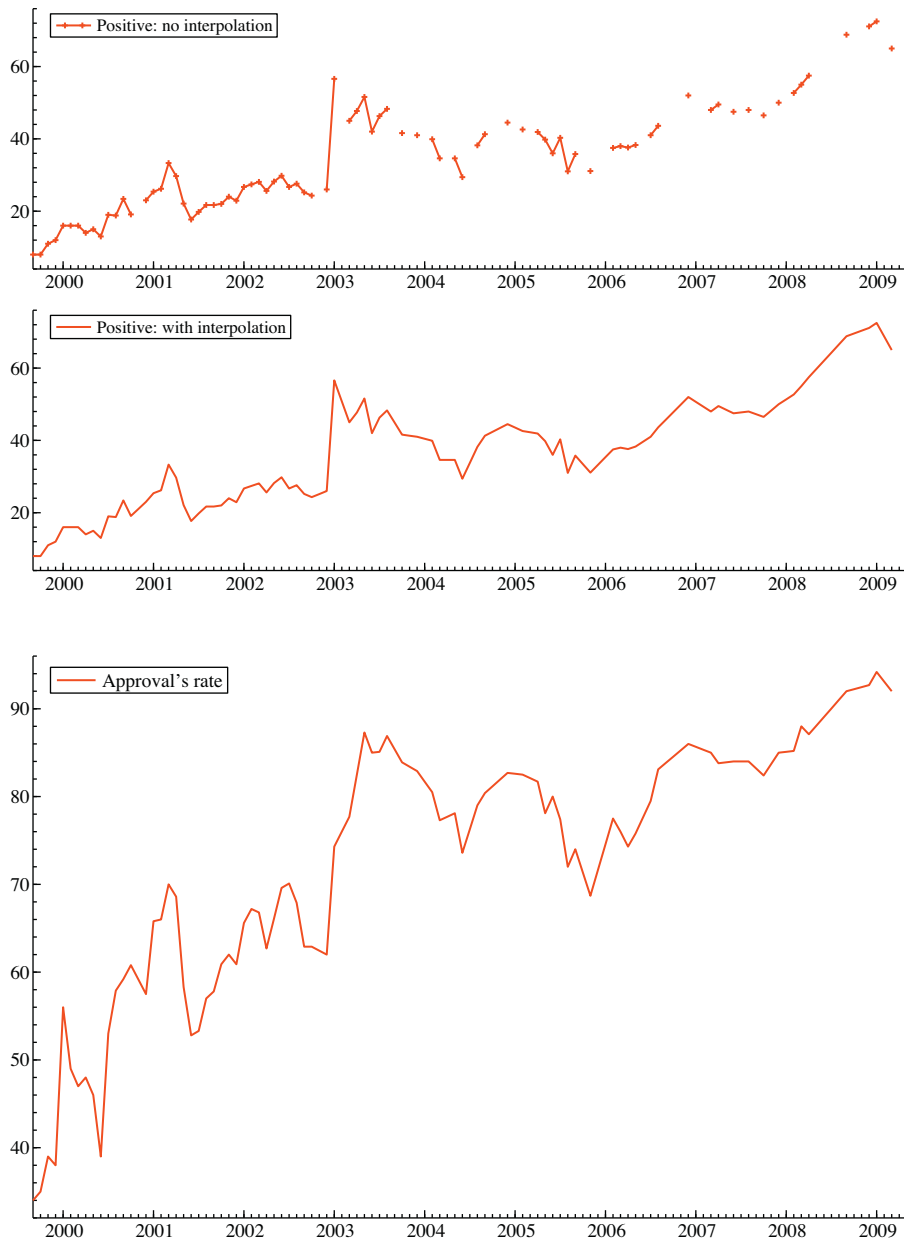


Fig. 1. President's positive ratings and approval ratings.

Source: own elaboration using data from Sensus and Datafolha.

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.

Fig. 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

Table 1
Control (proxy) variables and expected signs.

Control for	Variable	Description	Expected sign	<i>Ceteris paribus</i> explanation
Liquidity and solvency problems	Public deficit to GDP ratio	The first difference of the total public debt to GDP ratio.	Negative	Indicative measure of the health of the public accounts.
Real sector	Unemployment	Unemployment in several metropolitan regions of Brazil.	Negative	Less employment decreases total welfare.
Purchasing power	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.
	Minimum wage	Value of the minimum wage.	Positive	An increase in the minimum wage, which can be directly mapped into president's actions, may increase popularity, keeping inflation constant.
International shocks	US inflation	Annual change of the CPI in percentage.	Unknown	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	Selic Brazil	The monthly annualised nominal base interest rate (determined by the Central Bank).	Negative	Since the president of the Central Bank is appointed by the federal government during his own term, the change in the interest rate can affect his popularity.
Political instance	good and bad	News regarding the president were taken from <i>Veja's</i> 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.

Source: own elaboration.

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 Strategic Affairs Secretariat of the Brazilian Presidency. An explanation of these covariates is presented in [Table 1](#), including their respective expected signs. It can be seen in [Table 1](#), for example, that domestic unemployment is a proxy for real sector performance, the public deficit to GDP ratio is a proxy 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 [Figs. 2 and 3](#).

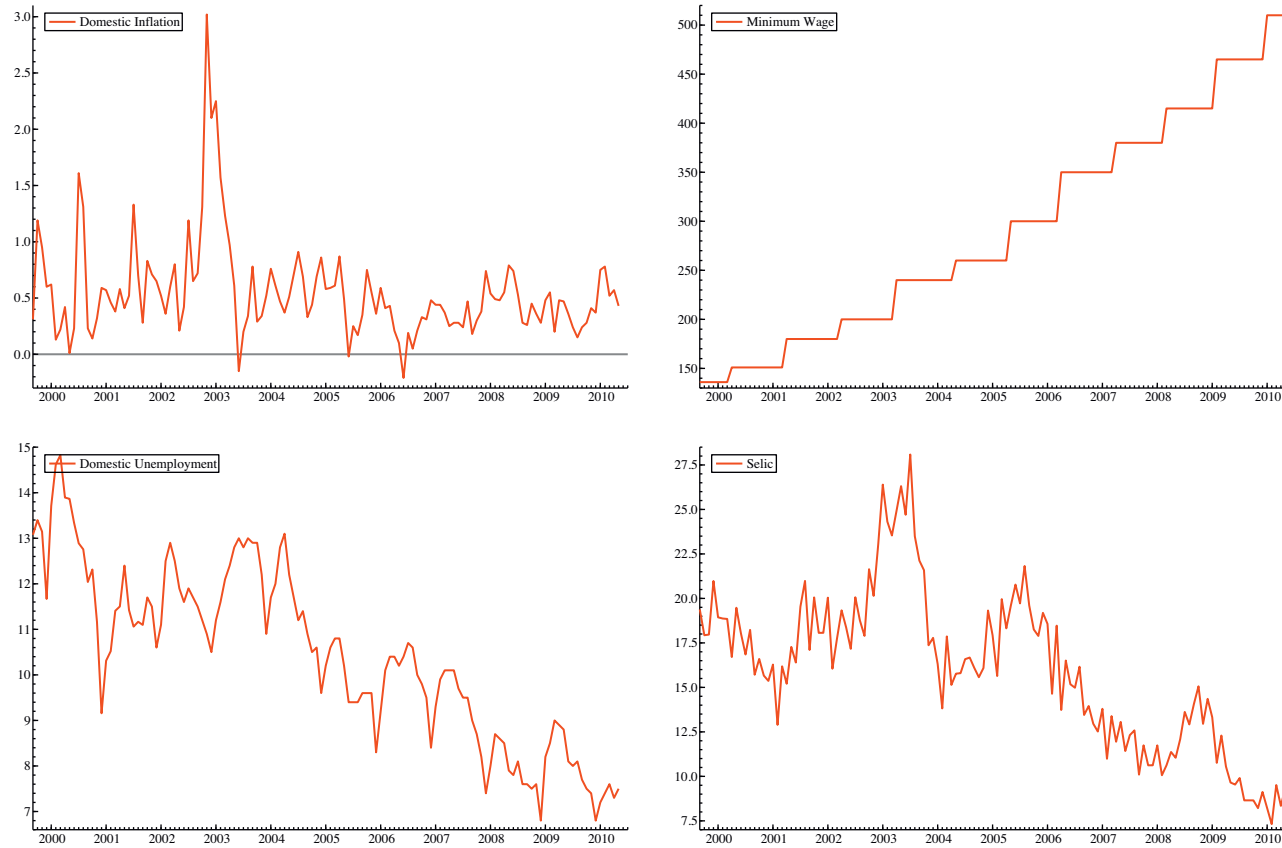


Fig. 2. Selected domestic economic indicators.

Sources: Domestic Inflation and Domestic Unemployment from IBGE, Minimum Wage from Ministério do Trabalho e Emprego, Selic from the Brazilian Central Bank.

Table 2
Data obtained from IPEADATA (different sources).

Variable	Description and notes	Sources and codes
Domestic unemployment	We used the 1st code from 2001M10 onwards and used the rate of change of the second code in order to fill the gap from 1999M9 to 2001M9.	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
Public deficit	First difference of the total public sector debt	Dívida – total – setor público – líquida – (% PIB) – BCB Boletim F. Públ. – BM12_DTSPY12
Minimum Wage	No transformation on the raw data.	Salário mínimo – R\$ – MTE – MTE12_SALMIN12.
Selic	No transformation on the raw data	Taxa de juros – Over/Selic – (% a.m.) – Banco Central do Brasil, Boletim, Seção mercado financeiro e de capitais (BCB Boletim/M. Finan.) – BM12_TJOVER12
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 - força de trabalho – (%) – Economist – ECONMI12_USU12

Source: own elaboration.

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 the first Table of Annex A, 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, as previously explained, assumes 1 during Lula government and 0 during FHC’s.

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. The Brazil risk as measured by the EMBI+ (roughly the average spread between a Real and Dollar denominated Brazilian assets) 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. Lula’s government benefited from lower levels of country risk, domestic inflation, nominal interest rates,

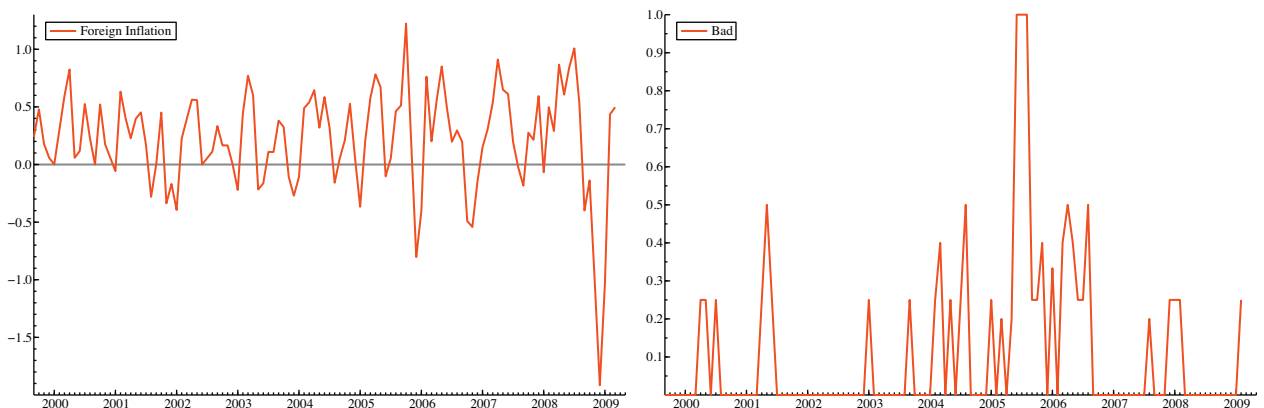


Fig. 3. Selected foreign economic indicator and political scenario.

Source: Foreign Inflation is the Consumer Price Index for All Urban Consumers – U.S. city average (all items), not seasonally adjusted, from the Bureau of Labour Statistics. “Bad” corresponds to own elaboration.

Table 3
Descriptive statistics.

	Mean	Std. deviation	Maximum	Minimum
Approval	75.9	14.6	96.0	34.00
Nominal interest rate (Selic)	15.9	4.4	28.1	7.3
Minimum wage	290.5	110.7	510.0	136.00
Domestic inflation	0.5	0.4	3.0	−0.2
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

Source: own elaboration.

Table 4
Descriptive statistics: FHC × Lula.

	FHC		Lula	
	Mean	Std. deviation	Mean	Std. deviation
Approval	57.5	9.9	84.2	6.6
Nominal interest rate (Selic)	18.1	2.0	15.0	4.8
Minimum wage	168.1	23.5	345.5	87.7
Domestic inflation	0.7	0.6	0.5	0.3
Domestic unemployment	12.0	1.2	9.7	1.7
Public deficit	0.3	1.6	−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

Source: own elaboration.

domestic unemployment, current account deficit and public deficit. As can be seen, foreign (US) unemployment and the minimum wage were higher. On the negative side, “bad news” (reflecting the political scenario) were particularly 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 avoid possible endogeneity problems (due to simultaneity, for instance), we performed tests using instrumental variables. We used two lags of the contemporaneous variables in the right-hand side of the estimated equation as instruments, eliminating or alleviating any possible correlation with the contemporaneous error. As far as there is no error autocorrelation in the regression residuals and that there is some degree of persistence with the explanatory variables, which is the general case, the instruments are likely to perform well.

Before presenting the test results, we must stress that all variables included in the GUM were tested for unit roots and there is evidence that the GUM includes variables that are either stationary or stationary around a deterministic time trend. Stationarity tests can be found in Table 5. We also used a general to specific approach to determine the lag-length of the unit root tests, starting with a general model with three lags and then reducing the model. Table 5 shows that one cannot reject the null of a unit root for the Selic rate and foreign unemployment at the 10% significance level. We used the first difference of the variables that were found to be non-stationary during this sample period in the GUM and also included a deterministic time trend in the model.

5. Results

We first show the results obtained with the Instrumental Variables Estimation (IVE) using two stage least squares and the GUM as presented in Table 6. Besides the economic and political explanatory variables, the constant, the

Table 5
Unit root tests.

	Lags	Specification	ADF-statistic
Approval	0	Constant and trend	−3.66*
Nominal interest rate (Selic)	3	no deterministic	−1.07
Minimum wage	0	Constant and trend	−3.41***
Domestic inflation	0	Constant and trend	−5.46*
Domestic unemployment	0	Constant and trend	−3.81**
Public deficit	0	Constant and trend	−12.91*
Foreign inflation	1	Constant and trend	−7.29*
Foreign unemployment	2	No deterministic	1.47

Source: own elaboration.

* Stands for rejection of the null of a unit root at 1% confidence level.

** Stands for rejection of the null of a unit root at 5% confidence level.

*** Stands for rejection of the null of a unit root at 10% confidence level.

We also tested for unit roots using a constant and time trend for the Selic rate and the foreign unemployment series.

time trend and Lula's dummies, we also included two other dummies in order to control for the variation in approval rates that were not properly captured by these explanatory variables, especially during Cardoso's presidency. The first dummy, "negative FHC", receives the value 1 for June 2000, May and June 2001, −1 for July 2000 and 0 otherwise. We believe that it reflects the volatility in the rate of approval due to the federal political crisis that was sparked by the violation of the senate's electronic voting panel by senator Antônio Carlos Magalhães, a president's political ally, as mentioned before. The other dummy is interesting and points out to the existence of a calendar effect during FHC's second term. Inspection of the data shows that approval rates increased from 38% in 1999M12 to 56% in 2000M1, from 57.5% in 2000M12 to 65.8% in 2001M1 and, finally, from 60.9% in 2001M12 to 65.6% in 2002M1 without any major change in the economic or political scenario, as measured by our choice of variables. Its inclusion considerably

Table 6
General Unrestricted Model (IVE) – approval is the dependent variable

	Coefficient	Std.Error	t-Value	t-Prob
approval (1st lag)	0.71	0.08	8.72	0.00
Constant	31.96	9.72	3.29	0.00
Domestic inflation	−1.49	1.57	−0.95	0.34
Minimum wage	0.09	0.04	1.96	0.05
Change in Selic	−0.09	0.21	−0.43	0.66
Domestic unemployment	−2.11	0.77	−2.76	0.01
Public deficit	0.35	0.53	0.66	0.51
Foreign inflation	−0.001	0.010	−0.069	0.945
Foreign unemployment – 1st diff.	−0.195	0.116	−1.680	0.096
Lula's dummy	17.77	6.06	2.93	0.00
Trend	−0.16	0.13	−1.27	0.21
Lula's trend	−0.23	0.12	−1.95	0.05
Good	5.80	16.05	0.36	0.72
Bad	−10.98	4.43	−2.48	0.01
Negative FHC	−8.17	1.71	−4.77	0.00
January FHC	7.29	2.12	3.44	0.00

Diagnostic tests

AR1-7	$F(7, 104) = 0.880[0.5247]$
ARCH1-7	$F(7, 97) = 0.605[0.7499]$
Normality	$\chi^2(2) = 1.900[0.3867]$
Heteroscedasticity	$F(28, 82) = 1.878[0.0150]$

Source: own elaboration.

Table 7
Final selection using Autometrics and IVE – approval is the dependent variable.

	Coefficient	Std.Error	t-Value	t-Prob
approval (1st lag)	0.68	0.08	8.66	0.00
Constant	31.78	8.76	3.63	0.00
Domestic inflation	−2.07	1.46	−1.41	0.16
Minimum wage	0.06	0.03	1.86	0.06
Change in Selic	−0.13	0.21	−0.63	0.54
Domestic unemployment	−1.66	0.57	−2.89	0.00
Public deficit	0.00	0.57	0.00	0.99
Lula's dummy	16.40	5.43	3.02	0.00
Lula's trend	−0.25	0.12	−2.13	0.03
Good	12.34	14.23	0.87	0.39
Bad	−11.54	3.96	−2.92	0.00
Negative FHC	−7.84	1.69	−4.64	0.00
January FHC	7.58	2.00	3.78	0.00

Diagnostic tests

ARI-7	$F(7, 107) = 0.483[0.8449]$
ARCH1-7	$F(7, 100) = 0.285[0.9582]$
Normality	$\chi^2(2) = 4.064[0.1310]$
Heteroscedasticity	$F(22, 91) = 2.915[0.0002]$

Source: own elaboration.

Note: It is important to re-emphasise that two lags of the explanatory variables were added as instruments in the GUM.

reduced the normality problem of the GUM.⁵ Hence, we included a dummy variable, named “January FHC”, which receives the value 1 in all January months during Cardoso’s presidency and zero otherwise.

Table 6 shows that approval rates rise when there is an increase in the minimum wage, public deficit, good news and during January months in Cardoso’s office. On the other hand, approval rates fall when there is an increase in domestic inflation, a positive change in the Selic rate, domestic unemployment, foreign unemployment, foreign inflation and bad news. Lula’s intercept dummy is positive and both trends are modelled with a negative sign, however the negative parameter is higher during Lula’s period.

As can be seen in Table 6, the GUM presents no specification problem, with the exception of heteroskedasticity, which is not rejected at 5%. Although we have to be cautious about inference, as it can be affected by the violation of the homoskedasticity assumption and also dampened by higher standard errors due to the use of two stage least squares, results suggest that some variables are significant while others are not, which reinforces the case for model reduction.

In sequence, we performed the automated model selection using expert settings in Autometrics.⁶ The final selection is presented in Table 7. Diagnostic tests imply that the final model is absent of mis-specification at 5%, with the exception of the heteroscedasticity problem.

One can see in Table 7 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 0.68, 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.

⁵ The $\chi^2(2)$ statistics, which tests for normality, decreases from a value of 12.4 and rejection of normality at 1%, to 1.9 and no rejection of the null hypothesis of normal residuals at a high confidence level.

⁶ As mentioned before, we relaxed the restriction on heteroscedasticity and ARCH effects, since there is no effect in the consistency of the estimated parameters.

The signs that were presented for the first GUM do not change in the final selection, however there is a small variation in parameter values.⁷ Although we have to be cautious with respect to the interpretation of the point estimates, a simple exercise can help to provide a rough measure of the *ceteris paribus* correlation of the explanatory variables to approval rates. As can be inferred from Table 7, an increase of one percentage point in the rate of inflation, decreases approval by 2.07 percentage points, although the coefficient appears to be insignificant. An increase in the minimum wage of 1 R\$ during this period, increases approval by 0.06 percentage points, keeping inflation constant, with a significant coefficient at 10%. A decrease of one percentage point in the domestic unemployment rate, increase approval rates by 1.66 percentage points (i.e., for instance, when unemployment falls from 11% to 10%, approval rates increase 1.66%, for example, from 60% to 61.66%). The unemployment effect is not only relatively large, but also significant at the 1% level.⁸ Nonetheless, we provide a thorough discussion regarding the relationship between approval rates and unemployment in the next section.

Having discussed the coefficients regarding the macroeconomic controls, we now analyze the political variables. The “Bad” index, which is a proxy for the political environment, takes a negative value, meaning that approval rates are negatively correlated to our measure of political mood. Because of the stationary and autoregressive nature of the model, this effect dissipates asymptotically after the bad news disappears. A proportion of four consecutive *Veja* front covers highlighting negative news with regards to the presidency, decreases approval rates by 11.5 percentage points.⁹ Although the index seems to be explaining approval rates reasonably well during the whole period, as reflected by a large and very significant parameter for bad news, there was a need to include an additional dummy for the bad political scenario during Cardoso’s presidency, “negative FHC”, as well as positive (the “January effect”).

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 could be due to his popular charisma. The coefficient is statistically significant at 1% and it shows that, *ceteris paribus*, the difference between Lula and FHC is about 16.4% percentage points.¹⁰

However, notice that the negative time trend found for FHC’s office is eliminated from the final model while it is still present during Lula’s administration. This means that, although the intercept is higher under Lula, the difference between FHC’s and Lula’s approval rate decreases 0.25 percentage points each month, when controlled for a time trend and keeping everything else constant. The finding of a negative time trend is very important not only for estimation purposes: given the same economic conditions, Lula’s head start in comparison to Cardoso disappears in 65.6 months

⁷ Several specifications that were tested for the GUM show that parameter signs are mostly as expected – see Table 1, for a brief discussion on expected signs. However, it must be stressed that the final selection can be sensitive to the specification of the GUM and the choice of technique (OLS with contemporaneous or lagged variables, for example, and IVE).

⁸ This effect was found to be smaller in a working paper version of the present work, Ferreira and Sakurai (2009). This was due to the fact that the first difference of the log of the unemployment rate was used as an explanatory variable and the log of the approval rate was used as the left hand side variable. We thus concluded that, “although decreasing rates of unemployment caused an increase in approval ratings, this channel was 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 variable.” In the current version of the paper, we have employed the level of approval rates in order to avoid confusion with the interpretation of the elasticities, since many variables are already expressed in percentage terms. We also used the level of unemployment as one of the right hand side variables, as results using the general to specific method for lag selection indicate that we can reject the unit root when controlling for a time trend in the level of unemployment. The different variables that appear in this version of the paper and not in the aforementioned working paper version, were due to the incorporation of interesting feedbacks. In particular, we dropped the real exchange rate and risk and substituted them for the nominal interest rate which is able to partially summarise these combined effects. We also included the minimum wage, as a measure for increases in purchasing power directly related to the president’s actions.

⁹ The choice of *Veja*’s magazine has been revealed to be a controversial one, as there are many other media vehicles that could have been used instead and because there is as perception that some journals and magazines can be viewed as more biased towards one president or another. It follows that the interpretation of the news parameter has to be properly explained in order to avoid confusion. The objective of the index is to control for political news (good and bad) that could have affected opinion polls significantly, thus explaining that part of the variability in approval rates that was not related to changes in economic conditions *per se*. These stories could have first appeared on TV, radio or any other newspaper. Clearly, *Veja* could also be the main original source of these news, especially the bad ones that plagued both presidencies, but this is less important. *Veja*’s cover is obviously a limited and imperfect measure of the political scenario. However, its choice for the creation of the index, despite being arbitrary, was based on the hypothesis that the constructed index would reflect most of political news.

¹⁰ This number is not as big as the raw numbers on approval ratings *per se* indicate. However, due to the autoregressive nature of the model, the long run equilibrium effect of the dummy is much higher (about 50%). Nonetheless, as it will be shown, this effect should not be overstated, as there is a marked difference between time trends in both presidencies.

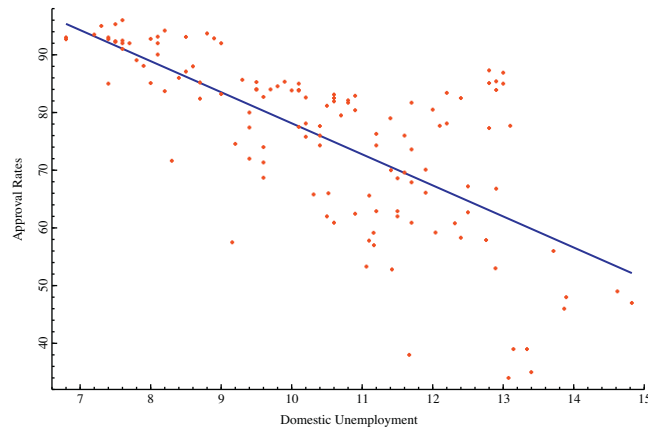


Fig. 4. Approval rates and domestic unemployment.

Sources: Approval rates are own elaboration using data from Sensus and Datafolha. Domestic unemployment is from IBGE.

($65.6 \times 0,25 = 16,4\%$), when his predicted popularity would thus be higher than Lula's.¹¹ However, there are two important remarks to be made. First, the interpretation of the time trend is very hard 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 more strongly than Lula's – Graph 1 may provide the reader with convincing visual evidence of the existence of a increasing approval rate for FHC, when compared to Lula's. Second, the negative value of the trend and its size are due to a scale choice. If we had chosen the logarithm of the minimum wage instead of the value in Reais, the parameter size would drop significantly (to $-0,08$), so we should not overstate the interpretation of the point estimate. In any case, it is possible to conclude that when controlled for the macroeconomic and political variables, a constant and deterministic time trends, differences between the presidents vanish as the sample grows.¹²

5.1. Popularity and employment

Fig. 4 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 negative relationship between approval rates and unemployment. In fact, a simple ordinary least squares regression between the approval rate, a constant and the unemployment rate reveals an estimated parameter of $-5,38$, 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.

Figs. 1 and 2 suggest that a deterministic trend or a stochastic trend could be a common feature for both series during this time period. We had already seen that this is not a spurious relationship as we have controlled for the deterministic trend in addition to other control variables (generating a smaller parameter value, $-1,66$). Also, as previously mentioned, we have tested the model with the first difference of the unemployment series in the GUM in an earlier version of this paper. 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. As the results point out to a robust correlation, we decided to discuss the relationship between both variables in this separate section.

¹¹ Due 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 pass all the relevant tests.

¹² Several 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 the time trends 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 6.

The “naive” curve (model) estimated above implies stronger effects of changes in unemployment on approval rates than the ones found with the GUM. For a drop of one percentage point in unemployment rates, the predicted rate would increase 1.66 percentage points, as discussed earlier and shown in Table 7. 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 Fig. 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 allows us to elaborate a hypothesis on the functional form of Fig. 4. Since the President has some control of the fiscal and monetary policy, he or she can choose policies that lead to an 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 moderate inflation (on a statistic basis). During a 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 revealed above.

6. Concluding remarks

To what 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 of the president?

By having analyzed the performance of monthly presidential 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 economic and political indicators are able to explain and predict a significant part of presidential approval ratings in Brazil. The economic variables that seemed to be most strongly correlated to approval ratings, in a *ceteris paribus* interpretation, are the minimum wage and domestic unemployment. 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 (Annex A).

Another 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 a significant time trend is difficult to make, but this result suggests a missing variable, which is less likely to be personal charisma because it is growing with time. Hence, our findings support the conclusion that the economy (given no political turmoil) is a very important

factor that explains popularity in Brazil, but personal characteristics are also likely to exert an influence on a citizen's evaluation.

In spite of its limitations, this study may have opened up an avenue of research on the macroeconomic determinants of presidential approval rates in Brazil. Further works could investigate the response of citizens to deviations of variables from their equilibrium values, such as unemployment from natural unemployment or optimal values, the inflation rate from its (hypothetical) optimal inflation or even deviations of inflation from target. One could also analyze possible asymmetric effects of positive and negative deficits on approval rates and to overcome the difficulties regarding the availability of data on approval rates and other economic and political measures.

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Annex A.

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	Brasília: 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

Annex (Continued)

Month/year	Day of the week	Veja's front cover
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
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 Palocci
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

References

- Arce, M., 2003. Political violence and presidential approval in Peru. *Journal of Politics* 65 (2), 572–583 <http://www.jstor.org/stable/3449822>
- Bernhard, W., Leblang, D., 2006. Polls and pounds: public opinion and exchange rate behavior in Britain. *Quarterly Journal of Political Science* 1, 25–47 <http://www.irere.net/media/Journal-Article-PDFs/100.00000004.pdf>
- Brender, A., Drazen, A., 2005. How do budget deficits and economic growth affect reelection prospects? Evidence from a large cross-section of countries, Working Paper 11862. National Bureau of Economic Research <http://www.nber.org/papers/w11862>
- Castle, J.L., Hendry, D.F., 2009. The long-run determinants of UK wages, 1860–2004. *Journal of Macroeconomics* 31 (1), 5–28 <http://www.sciencedirect.com/science/article/pii/S0164070407001358>
- Cerda, R., Vergara, R., 2007. Business cycle and political election outcomes: evidence from the Chilean democracy. *Public Choice* 132 (1), 125–136 <http://ideas.repec.org/a/kap/pubcho/v132y2007i1p125-136.html>
- Chappell Jr., H.W., 1990. Economic performance voting and political support: a unified approach. *The Review of Economics and Statistics* 72 (2), 313–320 <http://www.jstor.org/stable/2109721>
- Doomik, J., 2009. *Autometrics*. In: *The Methodology and Practice of Econometrics: A Festschrift in Honour of David F. Hendry*. Oxford University Press, pp. 464 <http://EconPapers.repec.org/RePEc:oxp:obooks:9780199237197>
- Ferraz, C., Finan, F., 2011. Electoral accountability and corruption: evidence from the audits of local governments. *American Economic Review* 101 (4), 1274–1311 <http://www.aeaweb.org/articles.php?doi=10.1257/aer.101.4.1274>
- Ferreira, A.L., 2010. The determinants of default risk in Brazil. *Applied Economics Letters* 17 (17), 1703–1708, <http://dx.doi.org/10.1080/13504850903120741>.
- Ferreira, A.L., Sakurai, S.N., 2009. Personal charisma or the economy? *Macroeconomic Indicators of Presidential Approval Ratings in Brazil, Working Paper 09/09*. Universidade de São Paulo, Faculdade de Economia, Administração e Contabilidade de Ribeirão Preto.
- Geys, B., Vermeir, J., 2008. Taxation and presidential approval: separate effects from tax burden and tax structure turbulence? *Public Choice* 135 (3/4), 301–317 <http://www.jstor.org/stable/27698270>
- Hendry, D.F., Krolzig, H.-M., 2003. New developments in automatic general-to-specific modelling. In: Stigum, B.P. (Ed.), *Econometrics and the Philosophy of Economics*. MIT Press.
- Hendry, D.F., Krolzig, H.-M., 2004. We ran one regression. *Oxford Bulletin of Economics and Statistics* 66 (5), 799–810.
- Hendry, D.F., Krolzig, H.-M., 2005. The properties of automatic gets modelling. *The Economic Journal* 115 (502), C32–C61 <http://www.jstor.org/stable/3590369>

- Hoover, K.D., Perez, S.J., 1999. Data mining reconsidered: encompassing and the general-to-specific approach to specification search. *Econometrics Journal* 2 (2), 167–191, <http://dx.doi.org/10.1111/1368-423X.00025>.
- Jordahl, H., 2006. An economic analysis of voting in Sweden. *Public Choice* 127 (3/4), 251–273 <http://www.jstor.org/stable/30026589>
- Kinder, D.R., Kiewiet, D.R., 1981. Sociotropic politics: the American case. *British Journal of Political Science* 11 (2), 129–161 <http://www.jstor.org/stable/193580>
- Kramer, G.H., 1971. Short-term fluctuations in U.S. Voting Behavior, 1896–1964. *The American Political Science Review* 65 (1), 131–143 <http://www.jstor.org/stable/1955049>
- Leigh, A., Wolfers, J., 2006. *Competing approaches to forecasting elections: economic models, opinion polling and prediction markets*. *The Economic Record* 82 (258), 325–340.
- McAvoy, G.E., 2006. Stability and change: the time varying impact of economic and foreign policy evaluations on presidential approval. *Political Research Quarterly* 59 (1), 71–83 <http://www.jstor.org/stable/4148076>
- Peltzman, S., 1990. How efficient is the voting market? *Journal of Law and Economics* 33 (1), 27–63 <http://www.jstor.org/stable/725510>
- Pereira, C., Melo, M., Figueiredo, C., 2009. *The corruption-enhancing role of reelection incentives? Counterintuitive evidence from Brazil's audit reports*. *Political Research Quarterly* 62 (4), 731–744.
- Sakurai, S.N., Menezes-Filho, N.A., 2008. Fiscal policy and reelection in Brazilian municipalities. *Public Choice* 137 (1/2), 301–314 <http://www.jstor.org/stable/40270863>