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Frustration and voting behavior: Evidence from stock market data

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TEXTO PARA DISCUSSÃO

No. 655

Frustration and voting behavior:
Evidence from stock market data

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Frustration and Voting Behavior: Evidence from Stock Market Data*

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Abstract

We document that a huge frustration shock, clearly unrelated to government's actions, was perceived to lead to substantial punishment at the polls months later. In particular, we provide evidence that Brazil's 7-1 humiliating defeat to Germany in the 2014 World Cup was perceived by financial market participants as a political shock against the incumbent president. To do so, we explore an empirical strategy that allows us to extract daily political news content from stock market data. Among the many events that affected the convoluted 2014 presidential election, the 7-1 defeat to Germany was among those perceived to have high political impact. We propose an explanation whereby this huge frustration shock triggered a transfer of domains that led Brazilians to update their beliefs regarding government's poor performance.

Keywords: voting behavior; frustration shock; event study; soccer; World Cup; Germany 7x1 Brazil.

JEL Classification: C58; D72; G14.

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1 Introduction

In this paper, we use stock market data to measure the electoral impact of a huge frustration shock, clearly unrelated to government's actions. After Brazil's humiliating 7-1 defeat to Germany in the 2014 World Cup played at home, Brazilians were deeply frustrated and perplexed. Our main contribution is to show that this huge frustration shock was perceived by financial market participants to lead to substantial punishment at the polls months later. We propose an explanation whereby the defeat to Germany triggered a transfer of domains that led Brazilians to update their beliefs regarding government's poor performance, reinforcing their genuine dissatisfaction with the government.

Right after the World Cup, the whole country was immersed in the closest and most unpredictable presidential election in recent Brazilian democratic history. In fact, each of three major candidates was leading the voting intention polls at some point. Since each candidate represented a different prospect for the economy, financial markets were highly volatile due to weekly – and perhaps daily – political shocks. Moreover, due to political connections, credit subsidies and government intervention in different firms during President Rousseff's first mandate, political shocks against her during the 2014 electoral run affected stock returns asymmetrically.¹

We show that the cross-sectional pattern of excess stock returns after the 7-1 defeat was similar to the cross-sectional pattern observed after a clearly discernible political shock against the incumbent. In particular, the first-round vote revealed that the difference between Dilma Rousseff (the incumbent and front-runner) and Aécio Neves (the runner-up) was far smaller than predicted by the polls. This shock serves as a metric to measure the political news content reflected in the cross-section of excess stock returns on a given day. Among the many events that characterized the convoluted 2014 presidential election, the humiliating 7-1 defeat to Germany and the final weekend of the World Cup were among those perceived to have high political impact. During the final weekend, Brazil was defeated by Netherlands in the dispute for third place, again by a wide score of 3-0, which might have amplified and prolonged the frustration shock triggered by the

¹Carvalho and Guimaraes [2016], for instance, use stock options and stock prices data to show that President Rousseff's reelection had a negative and asymmetric impact on the value of several companies.

defeat to Germany. In addition, the end of the World Cup might have led to a deeper evaluation of the national team performance, and reinforced the view that the 7-1 defeat had a political impact.

Our implicit assumption is that financial traders somehow grasp, at least partially, how a frustration shock relates to voting behavior, and factor them into their daily investment decisions. Of course, such relation may not have been operative in practice and, thus, traders might have simply misinterpreted the 7-1 match as a political shock. In this case, stock returns would be affected, but voting intention polls would not. Hence, one may argue that we should use these polls to measure the political impact of the 7-1 defeat. In fact, the gap between Rousseff and Neves diminished after the 7-1 match, although the long period in between the two adjacent polls makes any causal interpretation impossible. Albeit imperfectly, the use of daily stock returns circumvents this problem. Importantly, even if accurate daily polls were available, the use of stock market data might still be preferable. Indeed, as we argue below, linkages from soccer to politics may take time to unfold. In this case, daily polls around the 7-1 match would underestimate the magnitude of the political impact, whereas, due to their forward-looking nature, stock prices might reflect this process to a larger extent.

Our results add to the growing body of evidence showing that voters react to events unrelated to the politicians' actions. Incumbents, for instance, are punished at the polls for natural disasters (Achen and Bartels [2004]), external economic shocks (Wolfers [2007], Leigh [2009], Campello and Zucco [2016]), sports outcomes (Healy et al. [2010]) and lotteries outcomes (Bagues and Esteve-Volart [2016]). Altogether, these findings can be interpreted as evidence that voters' mood leads them to make mistakes, although for most cases other possible explanations cannot be ruled out.²

The closest paper to ours is Healy et al. [2010], who document in the US an electoral impact favoring the incumbent of wins in local college football games within 10 days before the election day. The authors offer a mood interpretation for their results. The

²Bagues and Esteve-Volart [2016], for example, argue that rich people may have stronger preferences for the status quo and, thus, lottery prizes or positive external economic shocks may simply shift preferences in favor of incumbents. In addition, Ashworth et al. [2017] argue that exogenous shocks, such as natural disasters, give an opportunity for voters to learn new information about the quality of the government, e.g. emergency preparedness.

psychological literature documents that sport results have a significant effect on mood and, thus, sense of well-being.³ Since people transfer emotions from one domain to another, one may argue that the negative emotions fostered by the 7-1 match may have fueled the sense of dissatisfaction with the incumbent government.

We find this explanation unlikely to be the sole driving force of our results for three reasons. First, we find that the 7-1 match was perceived to be a sizeable shock against the incumbent. Hence, voters' errors due to their sense of well-being must be large. In reviewing the evidence, however, Healy and Malhotra [2013] conclude that "[...] effect sizes are often small, suggesting that these errors may make a difference only in close elections."

Second, the second-round vote took place more than three months after the 7-1 match. Hence, changes in voters' moods due to sports results must have been perceived to be implausibly persistent. Indeed, if they had been perceived to be that persistent, prior Brazil matches in the World Cup should have had political impact, something that we fail to find. In addition, Healy et al. [2010] did not find an effect of sports outcome outside the 10 days window before the election day.

Finally, given the salience of the 7-1 event, it is unlikely that its mood effects operated mainly at a subconscious level. However, Healy et al. [2010] provide suggestive evidence that once conscious of the reasons for their bad or good mood, people do not transfer emotions from sports to politics.

Given that the size, persistence and salience of the political shock associated with the 7-1 event weaken the mood interpretation of the results, in what follows we propose an alternative explanation. We argue that the huge frustration shock, triggered by the humiliating defeat, was perceived to somehow set in motion more complex social processes that would lead to substantial punishment at the polls in the 2014 election months later.

As Achen and Bartels [2016] argue, "[...] substantial punishment at the polls is likely to be grounded in a belief, however farfetched, that the government is somehow responsible for the voters' pain." Indeed, two pieces of evidence suggest that, at the time of the World

³The arguments, which are discussed in details in Section 6, can be found in Edman et al. [2007] and Healy et al. [2010] (see the references therein).

Cup, government could be arguably accountable, at least partially, for “voters’ pain”. One year before, for instance, there were large public demonstrations in several Brazilian cities, known as the June Journeys. These unexpected and decentralized protests, as well as the highly diffuse motives of the protesters, were an indication of a latent dissatisfaction with the state of affairs in politics.⁴ In addition, Brazil showed dismal economic performance. Mostly due to the economic policies adopted during Rousseff’s first mandate, 2014 GDP grew by only 0.1% whereas inflation reached 6.4%. We argue that the frustration shock associated with the huge failure in soccer, Brazil’s national sport, was perceived by financial traders to trigger a transfer of domains that would lead people to somehow update their beliefs regarding the government’s responsibility for failures in other dimensions, reinforcing their genuine (that goes beyond mood) dissatisfaction.

The precise mechanism behind such transfer of domains is hard, if not impossible, to test empirically in the context of this paper. Hence, we conjecture a few, perhaps complementary, possibilities.⁵ First, the failure in the World Cup may have affected negatively the degree of pride in the nation, which itself may have affected negatively the prospects of Rousseff’s victory. Indeed, stronger feelings of attachment to the nation lead to more conformity to its political status quo and political norms. Second, the humiliating aspect of the defeat may have triggered a general reflexive process (some sort of *soul-searching*), in which Brazilians hoped not only to understand the huge failure in the soccer field, but also beyond it. Third, the 7-1 match was perceived to be a disaster, which may have triggered a social search for culprits. As people are ready to listen and willing to blame, such search may facilitate the task of political opponents in communicating, explaining and, perhaps, forging perceptions of government failures in other domains. Fourth, the 7-1 match has a narrative potential, which could be strategically targeted against the government by political opponents, or by citizens unsatisfied with the government.

This transfer of domains from soccer to politics, through the linkages described above, might be particularly operative in a country like Brazil, where soccer is a major source

⁴See Passarelli and Tabellini [forthcoming] for a theory on how emotions, protests and public policy interact.

⁵Again, the arguments are discussed in details in Section 6. They can be found in political and sociological pieces such as Duke and Crolley [1996], Crolley and Hand [2002], DaMatta [2006], Achen and Bartels [2016], among others. See also Shiller [2017].

of pride and glory, especially in a World Cup at home promoted at the expenses of taxpayers. In fact, we provide below some anecdotal evidence suggesting how this transfer of domains operated in practice after the 7-1 match, helping people reassess their views of the government. In addition, we compile below some of the many episodes, over countries and time, in which politicians turned to soccer as an attempt to obtain political gains. In that sense, this paper provides empirical evidence supporting the use of soccer as a political instrument in those many episodes.

The paper is organized as follows. Section 2 presents the related literature. Section 3 describes the main events in the 2014 presidential election in Brazil. Section 4 develops the empirical strategy and reports the results. Section 5 performs sensitivity analyses. Section 6 provides a discussion of the results.

2 Related Literature

As mentioned above, our results add to the growing body of evidence showing that voters react to events arguably unrelated to the politicians' actions (Achen and Bartels [2004], Wolfers [2007], Leigh [2009], Healy et al. [2010], Bagues and Esteve-Volart [2016], Campello and Zucco [2016], among others). See Healy and Malhotra [2013] for a review. We argue that the frustration shock associated with the 7-1 match led people to update their beliefs regarding the government's responsibility for bad political and economic outcomes, reinforcing their genuine (that goes beyond mood) dissatisfaction with the government. In that sense, our paper is also related to an emerging literature that has been studying how biased beliefs shape political behavior and outcomes (Bischoff and Siemers [2013], Ortoleva and Snowberg [2015] and Levy and Razin [2015]).⁶

Closely related to our paper is Depetris-Chauvin and Durante [2017]. By using individual survey data, they argue that victories (in high-stake games) of national teams from Sub-Saharan Africa make people identify more with their nation and less with their ethnic

⁶Bisin et al. [2015], Lockwood and Rockey [2016] and Alesina and Passarelli [2017] also apply findings from behavioral economics to understand political behavior. Bisin et al. [2015] consider the role of self-control, whereas Lockwood and Rockey [2016] and Alesina and Passarelli [2017] consider loss aversion. In addition, Matejka and Tabellini [2016] study how voters' rational inattention shape political incentives.

group. Moreover, this effect is sizeable and does not appear to be short-lived. This evidence is in congruence with part of the explanation advanced for our results. In contrast, they fail to find an effect of victories on incumbent approval. Importantly, they also document empirically a transfer of domains, in which victories in soccer translate to less mistrust among ethnic groups and, thus, less violent conflict. Huddy and Khatib [2007] is also related. By using individual survey data, they show that national identity promotes political involvement.

In order to justify the use of stock market data to claim that the 7-1 match had a political impact, we rely on two well-established empirical facts. First, the ups and downs of close elections affect current economic outcomes and, thus, trades in the stock exchange. Indeed, Snowberg et al. [2007] show that on the 2004 election day in the US, financial markets anticipated higher equity prices, interest rates and oil prices as well as an appreciated exchange rate under George Bush presidency than John Kerry. Julio and Yook [2012], for instance, use a panel of countries to argue that close elections are associated with less corporate investment during the election year due to uncertainty regarding the possible prospects for the economy.⁷

Second, political developments affect the pattern of stock returns in the cross section. Indeed, Fisman [2001] documents smaller returns for politically connected Indonesian firms after an adverse rumor about president Suharto's health. After this seminal paper, similar results associating political connection and stock returns were documented in other contexts.⁸ The cross-sectional pattern of stock returns after a political shock may also be explained by other reasons than political connections. Belo et al. [2013], for instance, show that US firms with high exposure to government spending have higher (lower) stock returns during Democratic (Republican) presidencies. Similarly, Akey and Lewellen [2016] emphasize that firms' different degrees of policy sensitivity could be a confounding factor for political connectedness.⁹

⁷More generally, a growing literature has studied the effects of political uncertainty on economic outcomes. See, for example, Boutchkova et al. [2012], Brogaard and Detzel [2015], Gulen and Ion [2015] and Kelly et al. [2016].

⁸An incomplete list includes Johnson and Mitton [2003], Faccio [2006], Ferguson and Voth [2008] and Akey [2015].

⁹Other papers that study the impact of political factors on stock returns include Kim et al. [2012] and Cohen et al. [2013].

This paper is also related to a small literature showing that, through sentiment and attention, sports impact stock prices and volumes, respectively. Edman et al. [2007] find that, due to the link between soccer outcomes and mood, stock prices in a given country decline after a loss in the World Cup.¹⁰ Similarly, Ehrmann and Jansen [2016] find that this underpricing effect materializes as the game unfold. In contrast, after the 7-1 match, the stock market index increased by 1.8 percent, which reinforces the political interpretation of the event. Finally, Ehrmann and Jansen [2012] document that during a soccer match in the World Cup, the lack of attention lead to lower trades and volumes as well as changes in the price formation process.

3 2014 Presidential Election

Presidential elections in Brazil are held every four-year, with the president being elected by absolute majority in a two-round system with mandatory voting. The dynamics of the 2014 electoral run were unpredictable. For each of the three major candidates, the odds of winning the election as well as reaching the second round were changing every week, perhaps every day. Indeed, each of them led the voting intention polls at some point during the run.¹¹

In what follows, we introduce the major candidates and, then, summarize the presidential electoral dynamics.

- Dilma Rousseff. The incumbent president, from *Partido dos Trabalhadores* (PT),¹² who was running for reelection.
- Aécio Neves. Former Governor of Minas Gerais¹³ and Senator from the main opposition party, *Partido da Social Democracia Brasileira* (PSDB).¹⁴ He was running in a presidential election for the first time.

¹⁰See also Dohmen et al. [2006], who conduct telephone surveys in German during the 2006 World Cup. They find that unexpectedly good performance of the German national team is associated with better economic perceptions and expectations.

¹¹Villa [2014] documents in details the daily developments during the 2014 electoral presidential run.

¹²Workers' Party.

¹³Out of twenty and six states, Minas Gerais is the second most populous, the third (ninth) richest in terms of GDP (GDP per capita), and the fourth largest state in the country.

¹⁴Brazilian Social Democracy Party.

- Eduardo Campos. Former Governor of Pernambuco¹⁵ from *Partido Socialista Brasileiro* (PSB).¹⁶ Part of his strategy was to establish a third-way to break the polarization between PT and PSDB.¹⁷ Campos was also running for the first time.
- Marina Silva. Former Senator and vice-president of Campos' candidacy, who replaced him after his tragic death in a plane crash. She had already ran in the 2010 election, when she finished third, with 19.33% of the valid votes.

Also, there were nine other (minor) candidates in the 2014 presidential run. Together they obtained 3.55% of the valid votes.

To simplify exposition, we divide the 2014 election dynamics into three phases. The switch from one phase to another was marked by arguably unexpected political shocks.

1. From the beginning of 2014 up to August 13th, when Campos unexpectedly died in a plane crash in the morning.
2. From mid-August up to October 5th, when the first-round vote revealed that the gap between Rousseff and Neves was far smaller than predicted by the polls.
3. From October 6th to October 26th, when Rousseff won the election with 51.64% of the valid votes, the smallest share in Brazilian recent democratic history.

The first phase encompasses the period up to August 13th, when Campos unexpectedly died in a plane crash in the morning. Figure 1 reports the results from twelve polls conducted by Datafolha and Ibope, the main pooling institutes in Brazil, during this phase.¹⁸ We report results from polls concerning second-round voting intentions.¹⁹ Left (right) plots consider Datafolha (Ibope) polls, whereas top (bottom) plots consider simulations with Neves (Campos) in the second round against Rousseff. Shares do not sum

¹⁵Pernambuco is the seventh most populous, the ninth (sixteenth) richest in terms of GDP (GDP per capita), and the nineteenth largest state in the country.

¹⁶Brazilian Socialist Party.

¹⁷Since 1994, the dispute has been polarized between the two main candidates, affiliated with PT and PSDB. Fernando Henrique Cardoso, from PSDB, defeated Lula, from PT, in 1994 and 1998; Lula defeated José Serra and Geraldo Alekmin, both from PSDB, in 2002 and 2006, respectively; and Dilma Rousseff defeated José Serra in 2010.

¹⁸Data were downloaded from <http://noticias.uol.com.br/politica/pesquisas/>.

¹⁹In this section, we choose to report results concerning second-round voting intentions, which are easier to follow and compare across polls. Results concerning first-round voting intentions yield similar trends.

to 100% as we consider percentages of all possible votes, including null and undecided. Also, there is a discrepancy between Datafolha and Ibope numbers even for close polling dates, which we attribute to methodological differences in the way polls are conducted by each institute.²⁰

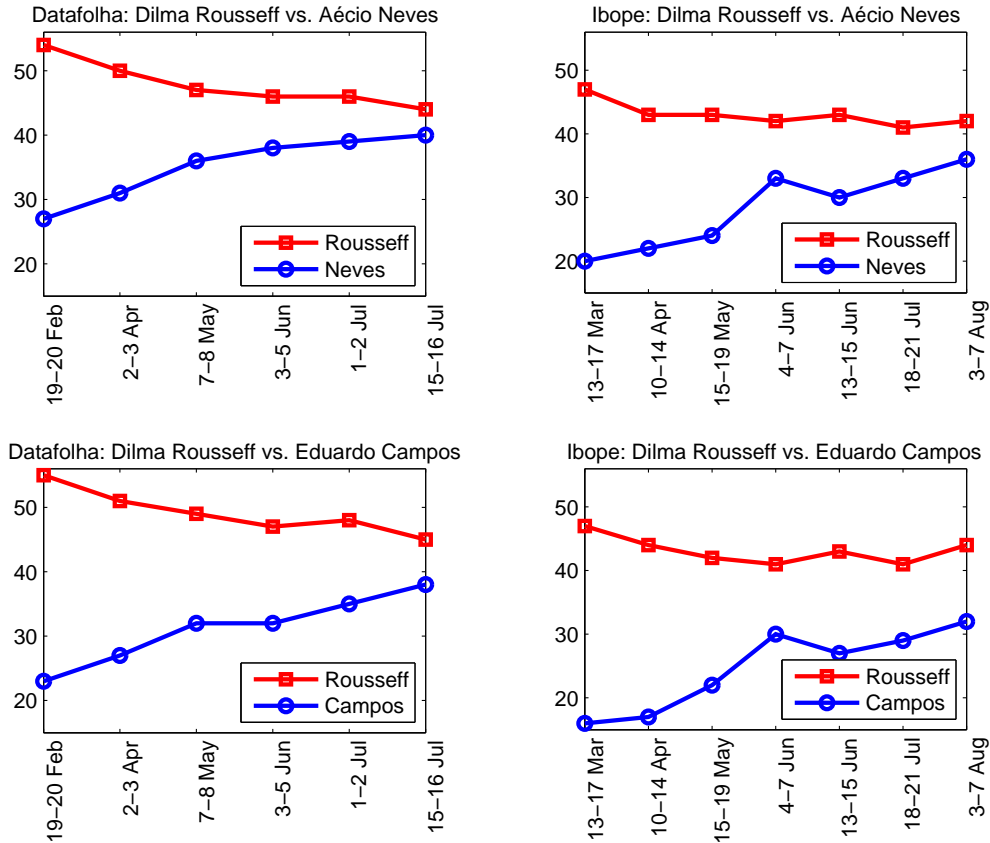


Figure 1: Phase 1. Polls up to Campos' death. Percentage of the votes (including null and undecided). Left (right) plots consider Datafolha (Ibope) polls. Top (bottom) plots consider simulations with Neves (Campos) in the second round against Rousseff. Source: <http://noticias.uol.com.br/politica/pesquisas/>.

In the beginning of 2014, many analysts claimed that Rousseff would easily win the elections, perhaps in the first round. Figure 1 shows that this view did not survive a few months. Indeed, the gap between Rousseff and her opponents fell gradually up to Campos' tragic death.

Economic policies adopted during Rousseff's first mandate, which included earmarked

²⁰Those differences regard the ordering (and content of some) of the questions, location of the interviews and sampling strategy.

credit, fiscal lenience and a high degree of government intervention, led Brazil to an economic fiasco. The main economic risk involving Rousseff's reelection was even more lenience and government intervention, which would deepen the crisis. Hence, from February 20th (when Rousseff was the clear favorite according to Datafolha) to August 12th (right before Campos' death, when the latest polls indicated a gap between Rousseff and Neves of only 4-6p.p.), the Bovespa Index – comprised of the most liquid stocks traded at the São Paulo Stock Exchange – rose 19.4%, whereas the exchange rate – R\$/U\$ – appreciated 4.3%. As a ground for comparison, during this same period, the S&P 500 Index increased 5.1% whereas the trade-weighted Dollar Index remained roughly stable.²¹

Finally, notice that in between the humiliating defeat to Germany, on July 8th, both Datafolha and Ibope polls indicated a further reduction in the gap between Rousseff and her opponents, although the long period in between the adjacent polls makes any causal interpretation impossible. Even if accurate daily poll were available, the political effects of the 7-1 match could be underestimated as linkages from soccer to politics may not be immediate. As stock market data allow us to overcome these two issues, we use them to substantiate our claim that the 7-1 defeat was, at least perceived as, a political shock.

The second phase goes from August 13th to October 5th, the first-round vote. Figure 2 reports the results from seventeen polls conducted in this period concerning the second round possibilities, with Marina Silva substituting Eduardo Campos as the candidate from PSB.

²¹Both series were obtained at <https://fred.stlouisfed.org/>. The Dollar Index measures the value of the US dollar against the (trade-weighted) currencies of a broad group of US trading partners.

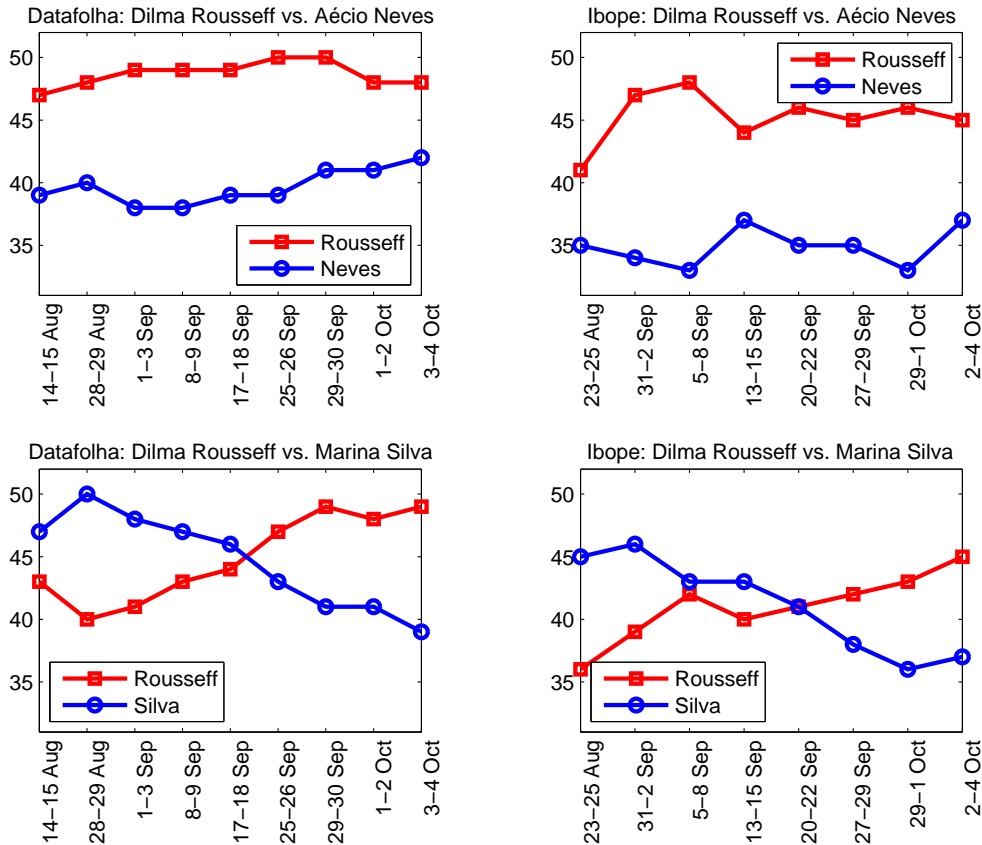


Figure 2: Phase 2. Polls from mid-August to the first-round vote. Percentage of the votes (including null and undecided). Left (right) plots consider Datafolha (Ibope) polls. Top (bottom) plots consider simulations with Neves (Silva) in the second round against Rousseff. Source: <http://noticias.uol.com.br/politica/pesquisas/>.

The commotion after Campos' death, which gave an enormous visibility to Silva, as well as the recall from the previous presidential election, made her, according to many analysts, the clear favorite to win the elections. The peak of her favoritism was reached by the end of August, when the Datafolha poll indicated that Silva would beat Rousseff by a 10p.p. margin in a second-round vote. However, lacking the powerful structure behind Rousseff's and Neves' candidacy, Silva's candidacy lost steam. As in 2010, she ended up in the third place, with 21,32% of the valid votes.

From August 12th to September 1st, when Silva's odds of winning reached its peak, the Bovespa Index increased 8.3% whereas the exchange rate appreciated 1.8%.²² From September 1st to October 3rd (on the eve of the election day), when Silva's candidacy

²²During the same period, the S&P 500 Index rose 3.6% whereas the Dollar Index appreciated 0.4%.

had already faltered while Neves' had not yet taken off, the Bovespa Index fell 10.8% while the exchange rate depreciated 11.5%.²³

The first round results were known by night in the election day, held on Sunday, October 5th. We interpret them as an unexpected political shock that led to an update of the odds of winning in favor of Neves. On Thursday, October 2nd, Datafolha (Ibope) polls were released showing Rousseff with 40% (40%), Neves with 21% (19%) and Silva with 24% (24%) of the votes in first round. During the weekend, after a debate broadcasted live at Friday night, the new polls indicated Rousseff with 40% (40%), Neves with 24% (24%) and Silva with 22% (21%) of the votes. On the election day, Rousseff, Neves and Silva had 37.58%, 30.31% and 19.26%, respectively, of the votes (including null votes). In other words, the polls underestimated the strength of Neves. In the next day, the Bovespa Index increased 4.7% and the exchange rate appreciated 3.3%, whereas the S&P 500 Index fell 0.2% and the Dollar Index depreciated only 0.4%. This large discrepancy substantiates our assumption that the bulk of the cross-sectional variation of returns in this date was mainly due to the first-round results, which were a clearly discernible political shock against the incumbent.

Finally, Figure 3 reports the results from ten polls conducted after the first-round vote. Left (right) plot considers Datafolha (Ibope) polls. After the election day, Neves' probability of winning reached its peak. Indeed, according to the polls, Neves remained 2p.p. ahead Rousseff up to mid-October. After this period, the structure of Rousseff's candidacy was able to guarantee her recovery. During the second round campaign, the Bovespa Index fell 9.1%. Right after the election day, held on Sunday, October 26th, it fell 2.8% more. Similarly, the exchange rate depreciated 2.9% during the second round campaign, depreciating 2.2% more right after the election day. During this period, both the S&P 500 Index and the Dollar Index remained roughly stable, reinforcing the interpretation that political developments were the main driving force behind changes in the Bovespa Index and the exchange rate during this period.

²³During the same period, the S&P 500 Index declined 1.7% whereas the Dollar Index appreciated 3.0%.

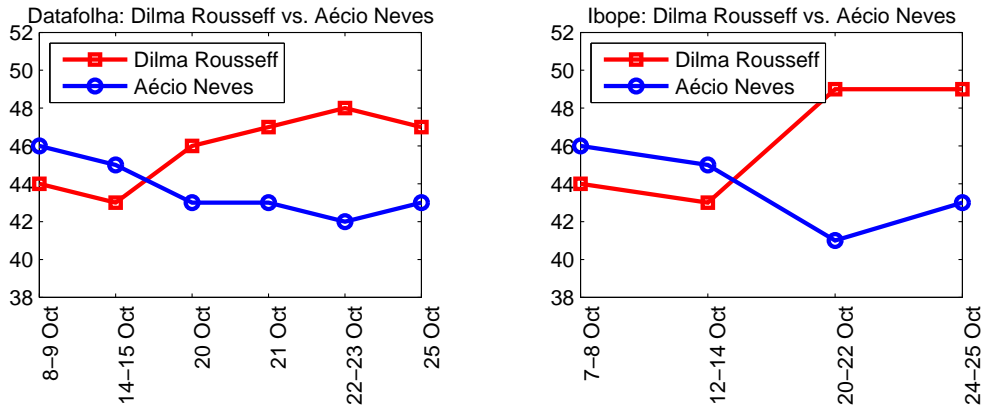


Figure 3: Phase 3. Polls during the second round. Percentage of the votes (including null and undecided). Left (right) plot considers Datafolha (Ibope) simulations. Source: <http://noticias.uol.com.br/politica/pesquisas/>.

Figure 4 summarizes this discussion through the evolution of the Bovespa Index (right-axis) and the exchange rate R\$/U\$ (left-axis) during 2014. Notice that an increase (decrease) in the exchange rate means depreciation (appreciation). We mark in the graph the events highlighted above. The Bovespa Index reached its lowest value in March 13th. After this date, we observe stocks rally as well as exchange rate appreciation, which corroborates our view that financial markets reflected a reassessment of Rousseff's odds of winning the election around this period.

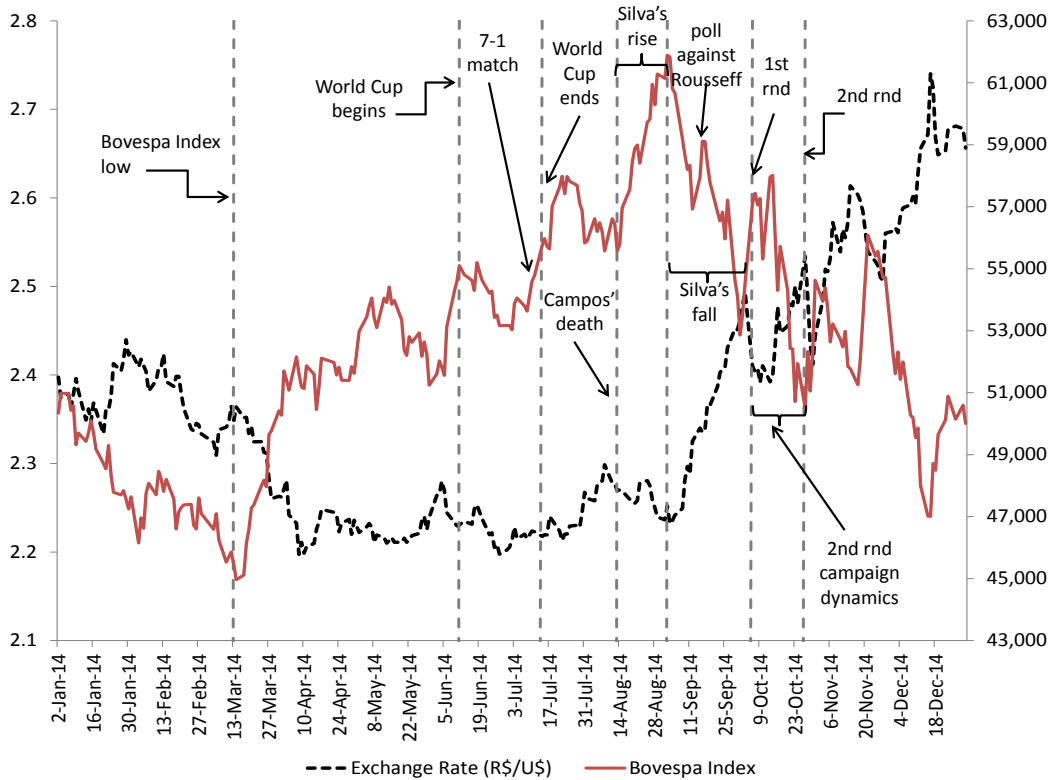


Figure 4: Bovespa Index (right-axis) and exchange rate R\$/U\$ (left-axis) behavior along the 2014 presidential run. Source: Brazilian Central Bank, <http://www.bcb.gov.br>; authors' elaboration.

The narrative of the events above suggest that the 2014 presidential election, with its ups and downs, was one of the the main driving force behind the high volatility in financial markets we observed in Brazil. Figure 5, by comparing the CBOE Volatility Index (VIX Index) for emerging markets and Brazil, reinforces this interpretation. Both indexes evolved closely enough until February 2014, when the Brazilian index started to indicate more volatility in Brazilian asset prices. The gap between both measures increased a bit until July. After August, the index for Brazil soared reflecting the convoluted electoral scenario after Campos' death.²⁴

²⁴The difference between volatilities in Brazil and other emerging markets should be even larger as the VIX Index for emerging markets factors in some Brazilian assets.

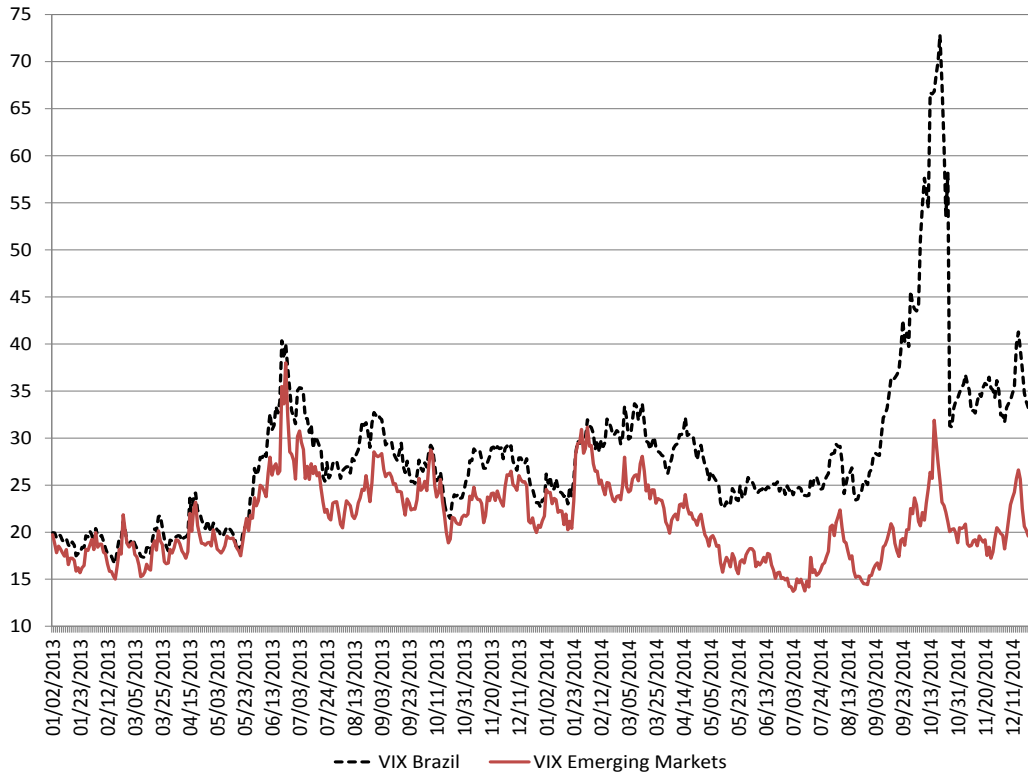


Figure 5: VIX Index: Brazil vs. Emerging Markets. Source: Chicago Board Options Exchange, <http://www.cboe.com/micro/vix/>.

Altogether, the evidence presented in this section suggest that the 2014 electoral run was characterized by large political shocks, and that daily data on stock returns might be useful to infer the relative magnitude of these shocks.

4 Empirical Strategy, Data and Results

In order to provide evidence that Brazil’s 7-1 defeat to Germany was perceived as a political shock against the incumbent in power, we would like to compare the cross-sectional variation of excess returns in the stock market right after the 7-1 match to those originated by unanticipated political shocks. Stock prices during the 2014 presidential run reacted to political shocks for two main reasons. First, in a close election, as each candidate represents a different perspective for the economy, the ups and downs during the campaign impact asset prices (e.g., Snowberg et al. [2007]). Second, political developments affect the cross-sectional variation of stock returns (e.g., Fisman [2001] or Belo

et al. [2013]).

In her first mandate, Rousseff carried out policies that included large amount of credit subsidies (and other favors) to some firms as well as high degree of government intervention in specific firms. Mainly through subsidized credit directed by the BNDES (Portuguese acronym for *National Development Bank*), the government fostered the so-called national champions in allegedly strategic sectors. These politically connected firms included the oil and gas company *OGX* (ticker OGXP3 at Bovespa), the telecommunication company *Oi* (OIBR3, OIBR4), the meat processing company *JBS* (JBSS3), among others. A political shock against the incumbent could affect these firms negatively. Also, many companies under control of the Brazilian government, such as the oil and gas company *Petrobras* (PETR3, PETR4), *Banco do Brasil* (BBAS3) bank, electric utilities company *Eletrobras* (ELET3, ELET5, ELET6), among others, suffered from government intervention. These firms are expected to perform positively after a political shock that reduces the odds of Rousseff's victory. More generally, as each candidate represents different prospects for different firms, political shocks may affect them asymmetrically. Altogether, these arguments suggest that, after a political shock, the cross-sectional variation of stock daily returns might vary in a specific way, which would allow us to identify it in the data.²⁵ Such an empirical strategy is formalized by Fulford and Schwartzman [2016], who argue that the U.S. presidential election in 1896 represented a positive shock to commitment to the gold standard. To that end, they exploit the cross-sectional impact of this shock on bank leverage across U.S. states to recover a latent factor driving commitment around this period.

One may attempt to measure the political content in the cross section of stock returns by treating the polls described above, at the time they were released, as unanticipated political shocks. However, given the high sensitivity of asset prices to the 2014 electoral outcome, the information content in polls was likely to be anticipated by financial firms

²⁵Carvalho and Guimaraes [2016] claim that, among twenty stocks traded at the São Paulo Stock Exchange, PETR3, PETR4 and BBAS3 were the most negatively affected by Rousseff's reelection. Interestingly, JBSS3 was also negatively affected, but not as much as state-controlled companies and the banking industry as whole. During Rousseff's first mandate, the banking industry was pressured by the government to reduce interest rates to borrowers.

before they were released.²⁶ There is anecdotal evidence suggesting that these firms had daily access to different electoral polls.²⁷

Hence, in order to proceed, we need to isolate arguably unanticipated political shocks, and then study their impact on stock returns in the cross-sectional. There are two clear candidates during the electoral dynamics. First, the tragic death of Eduardo Campos, who was in the third place according to the polls, in a plane crash. Although clearly unanticipated, the impact of this shock on electoral outcomes was uncertain. Many doubts were raised immediately after Campos' death. Would Marina Silva substitute Eduardo Campos? Would PSB choose another candidate? Or, perhaps, support Aécio Neves or Dilma Rousseff? Though the natural alternative was to launch Silva, the confirmation of her candidacy came only on Saturday, three days after the accident. Hence, although the political shock associated with Campos' death was clearly unanticipated, its sign was uncertain. At the day of the accident, both the Bovespa Index and the exchange rate did not change much.

Second, the first-round vote revealed that the difference between Rousseff and Neves was far smaller than predicted by the polls. These results were known by night on the election day. We interpret them as an unexpected political shock that led to an update of the odds of winning in favor of Neves. As argued above, the polls underestimated the strength of Neves. In the next day, the Bovespa Index increased 4.7% and the exchange rate appreciated 3.3%. Hence, we use this shock as a metric to measure the political content in the cross-sectional variation of stock returns in a given day. In a similar fashion, as a robustness check, we also consider the political shock that confirmed Rousseff's victory in the second round. Although this outcome was both qualitatively and quantitatively in line with the polls, in the next day, the Bovespa Index fell 2.8% and the exchange rate depreciated 2.2%.

In order to compute the cross-sectional variation of stock returns, let the return of a

²⁶The online appendix of Fernandes and Novaes [2017], for instance, investigates how these polls affected stock prices during the second round of the presidential election. Effects, though, are not very statistically significant.

²⁷In September 26th, the Valor Econômico newspaper published online at 4pm an article mentioning that private polls were conducted aiming to anticipate the results of a Datafolha poll that would be released at night. See: <http://www.valor.com.br/financas/3712464/bovespa-avanca-25-com-disparada-do-kit-eleicao-antes-do-datafolha>.

stock i in a given day t be $\log p_{i,t} - \log p_{i,t-1}$, where p is the adjusted closing price.²⁸ Let the excess return $r_{i,t}$ be the difference between the stock return and the SELIC overnight interest rate.²⁹ For each stock i , we estimate the following equation,

$$r_{i,t} = \alpha_i + \rho_i r_{i,t-1} + \beta_i \bar{r}_t + \gamma_i e_t + \delta_i D_t + \epsilon_{i,t}, \quad (1)$$

where \bar{r}_t is the excess returns associated with the Bovespa Index and e_t is the excess returns associated with the exchange rate. The idea is to factor out the variation of individual returns that is associated with the variation of those aggregate factors that were highly sensitive to political outcomes. In the next section, we check robustness by also factoring out the variation of returns associated with external factors, such as the S&P 500 Index and the Dollar Index. Due to weekends and holidays, the lag between two adjacent dates ranges from one to five days. Hence, we also control for a set of dummy variables D_t indicating whether the lag was two, three, four or five days. In our benchmark analysis, we consider the set of the 60th most liquid stocks traded at the São Paulo Stock Exchange (Bovespa) between March 2013 and February 2014.³⁰ As after March 2014, according to Figure 4, we start to observe stocks rally due to political shocks, which could bias the estimation of β_i and γ_i , we estimate the set of regressions in (1) using daily data from March 2013 to February 2014. In what follows we perform sensitivity analysis by varying both the set of stocks and the period range. Notice that after estimating this set of regressions by OLS, we can compute the estimated cross-section variation of residual returns, $\hat{\epsilon}_{i,t}$ for all i , after March 2014, the period of interest. Finally, during Brazil's games and some special holidays, the Bovespa closed earlier than usual. Since Ehrmann and Jansen [2012] argue that, during World Cup matches, lack of attention leads to lower trades and volumes as well as changes in the price formation

²⁸All data on stock prices are from Economatica.

²⁹SELIC is the policy rate targeted by the Central Bank of Brazil. It is an average of the inter-bank interest rates on overnight loans that require governments securities as guarantee. The series was downloaded from <http://www.bcb.gov.br/>.

³⁰The tickers, in order of liquidity, are: VALE5, PETR4, ITUB4, BBDC4, BBAS3, PETR3, BVMF3, VALE3, ITSA4, OGXP3, GGBR4, CIEL3, BRFS3, USIM5, CCRO3, CSNA3, PDGR3, BRML3, CMIG4, KROT3, TIMP3, ABEV3, OIBR4, HYPE3, CYRE3, AEDU3, NATU3, PCAR4, VIVT4, SANB11, BRPR3, EMBR3, MRVE3, LREN3, SUZB5, UGPA3, CTIP3, HGTX3, BBDC3, ESTC3, CSAN3, GFSA3, JBSS3, SBSP3, RENT3, FIBR3, ALLL3, BRAP4, LAME4, KLBN4, BRKM5, CRUZ3, RSID3, ENBR3, QUAL3, MRFG3, DTEX3, ECOR3, GOAU4 and DASA3.

process, we treat these days as if the Bovespa were closed. As a robustness check, we reintroduce these days in the sample.

Once we fix the date of the unanticipated political shock, say date s , we assume that the bulk of the cross-sectional variation of returns in this date was mainly due to the political shock (we subject this assumption to sensitivity analysis below). Hence, by computing the squared correlation coefficient of $\hat{\epsilon}_{i,s}$ and $\hat{\epsilon}_{i,t}$ across i , we have a measure of the political content in the cross-sectional variation of returns in a given date t . Notice that this measure is equal to the coefficient of determination, R^2 , of a regression of $\hat{\epsilon}_{i,t}$ on $\hat{\epsilon}_{i,s}$. In words, it captures by how much the variation of $\hat{\epsilon}_{i,t}$ can be explained by the variation of $\hat{\epsilon}_{i,s}$, or vice-versa. Finally, to the extent that OLS estimation of equation (1) leads to consistent estimators, then $\hat{\epsilon}_{i,t}$ is a consistent estimator of $\epsilon_{i,t}$ and, thus, R^2 is a consistent estimator of the squared correlation coefficient of $\epsilon_{i,s}$ and $\epsilon_{i,t}$.

Figure 6 shows four scatter plots in which each point represents the excess returns for each of those 60 stocks. The y-axis considers the variation around the aforementioned unanticipated political shock, i.e. the first-round vote results, which were known on Sunday, October 5th. Hence, we compute excess returns between October 3rd (Friday) and October 6th (Monday). Recall that our implicit assumption is that the bulk of the cross-sectional variation of returns in this period was mainly due to this political shock. The x-axis in the top graphs considers the variation around the 7-1 match, which happened on July 8th (Tuesday) at 5pm. On this day, the Bovespa closed at 2:30pm rather than 5pm as usual. Moreover, July 9th was a holiday in São Paulo and the Bovespa did not open. Hence, we compute excess returns between July 7th (Monday) and July 10th (Thursday). Left panels show raw excess returns, whereas the right panels plot the residuals obtained through the estimated set of equations in (1). In Figure 6 we identify some of the aforementioned firms that could be particularly sensitive to a political shock.

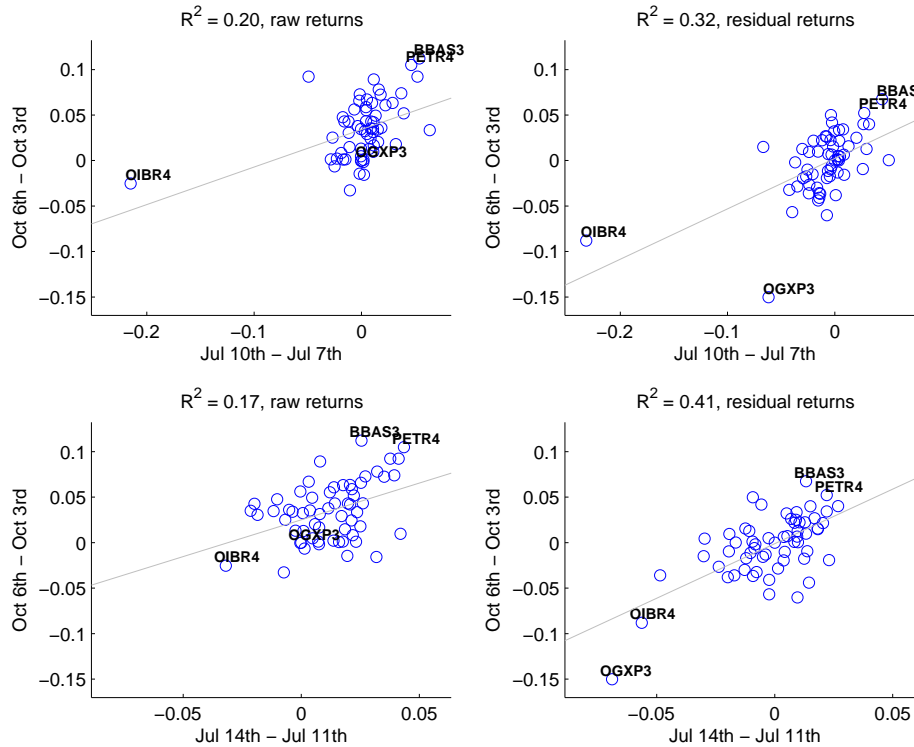


Figure 6: Cross-sectional variation of returns. 7-1 events vs. political shock.

The bottom graphs consider the variation between July 11th (Friday) and July 14th (Monday), right after the end of the World Cup. This date should also be associated with the frustration shock triggered by the 7-1 match for two reasons. First, on July 12th Brazil was defeated by Netherlands in the dispute for third place, again by a wide score of 3-0, which might have amplified the processes set in motion by the defeat to Germany. Second, the process of analyzing the possible implications of the 7-1 match for the presidential run might not be immediate. The end of the World Cup – a major event for Brazil – might have led to a deeper evaluation of the national team performance, and reinforced the view that the 7-1 defeat had indeed a political impact.

The cross-sectional correlations between stock returns on the days after both World Cup events and stock returns on the day after the first-round vote are positive. These results suggest that financial markets reacted to the 7-1 match as if it were a political shock against the incumbent in power. The fact that the coefficient of determination, R^2 , increases once we use residual rather than raw returns highlights the importance of controlling for aggregate factors.

Importantly, we carefully inspect print and online news in four large newspapers between July 7th and July 15th looking for possible political shocks. We run queries in Estadão, Folha de São Paulo and O Globo, the largest daily newspapers in Brazil, as well as in the Valor Econômico, the largest newspaper specializing in business, financial and economic news. Of course, there were some political news, but we did not find any news that might have triggered a large political shock. Moreover, many analysts attributed the movements in the stock prices during this period to political spillovers from the 7-1 match.³¹

In order to gauge the political content of the events associated with the 7-1 match, we fix the political shock to be the one associated with the first-round vote and, then, run cross-sectional regressions analogous to those in Figure 6 for each of the 156 days from March 6th,³² before the stocks rally, to October 24th, before the second-round vote. We consider the specification with residual excess returns. Then, we rank these dates according to the R^2 of these regressions. In particular, the higher the R^2 , the stronger the similarities between the cross-sectional pattern of stock returns on the day at hand and on the day after the first-round vote. We take this to be evidence that this day involved relevant political news. Out of 156 dates or possible political shocks, Table 1 reports the 25th highest ones according to this metric. Notice that both the 7-1 match and the end of the World Cup, ranked 18th and 9th respectively, were perceived to have high political impact.

³¹See, for example, <http://www1.folha.uol.com.br/mercado/2014/07/1483629-papeis-de-empresas-brasileiras-sobem-no-exterior-apos-derrota-na-copa.shtml>.

³²March 1st to March 5th encompasses the weekend and carnival, a three-day holiday in Brazil.

Rank	Date	Exchange		Bovespa		Event
		R2	R	Rate*	Index	
	6-Oct-14	1.00	1.00	-3.3%	4.7%	Day after first-round vote
1	12-Sep-14	0.60	-0.77	1.6%	-2.4%	Silva's fall
2	25-Aug-14	0.57	0.75	0.1%	2.3%	Silva's rise
3	19-Aug-14	0.54	0.73	0.0%	1.5%	Silva's rise
4	21-Oct-14	0.53	-0.73	1.0%	-3.4%	2nd round dynamics
5	27-Mar-14	0.48	0.70	-1.3%	3.5%	Rousseff's popularity fall (Ibope)
6	6-Jun-14	0.47	0.69	-1.1%	3.0%	Rousseff's fall / Neves' rise (Datafolha)
7	23-Oct-14	0.46	-0.68	0.9%	-3.2%	2nd round dynamics
8	13-Oct-14	0.45	0.67	-0.7%	4.8%	2nd round dynamics
9	14-Jul-14	0.41	0.64	-0.2%	1.7%	end of the World Cup
10	7-Apr-14	0.39	0.63	-0.4%	2.1%	Rousseff's fall / Neves' rise (Datafolha)
11	15-Oct-14	0.39	-0.62	1.4%	-3.2%	2nd round dynamics
12	18-Sep-14	0.38	-0.62	1.2%	-1.2%	Silva's fall
13	5-May-14	0.37	0.61	0.3%	0.9%	Neves' rise (Sensus poll)
14	4-Sep-14	0.36	-0.60	0.2%	-1.7%	Silva's fall
15	11-Jun-14	0.35	0.60	0.0%	0.9%	Rousseff's fall / Neves' rise (Ibope)
16	8-Sep-14	0.33	-0.58	0.3%	-2.5%	Silva's fall
17	18-Jul-14	0.32	0.57	-0.2%	2.5%	Rousseff's fall / Neves' rise (Datafolha)
18	10-Jul-14	0.32	0.57	0.2%	1.5%	Brazil 1-7 Germany
19	31-Jul-14	0.32	-0.57	1.0%	-1.8%	State polls favoring Rousseff
20	6-May-14	0.31	0.56	0.2%	0.6%	Rousseff's fall (Ibope Ceará)
21	8-May-14	0.31	-0.56	-0.8%	-1.2%	unrelated
22	30-Sep-14	0.31	-0.55	0.0%	-0.9%	Silva's fall
23	24-Mar-14	0.30	0.55	0.0%	1.3%	unrelated
24	11-Aug-14	0.29	0.54	-0.9%	1.9%	unrelated
25	16-Oct-14	0.28	-0.53	1.9%	-3.3%	2nd round dynamics

Table 1: Top 25 “political shocks” during the 2014 presidential elections. *Obs: Negative numbers indicate exchange rate appreciation.

We also report the correlation coefficient, R . A positive (negative) correlation should be interpreted as a shock against (in favor of) the incumbent. Notice that the sign of the correlation coefficient is, at most of the dates, in line with the percentage variation of the

exchange rate (a positive sign means depreciation) and the Bovespa Index, also reported in Table 1.

Every day, after the Bovespa closes, the Valor Econômico newspaper publishes online possible explanations it attributes for the behavior of some stocks in the Bovespa. We use these articles, for which the links are listed in the Appendix A, as an attempt to support each of these twenty five dates with a political event. Interestingly, for both July 10th and 14th, ranked 9th and 18th (out of 156 dates), respectively, the newspaper attributes movements in the stock market to the spillovers from the failure of the national team in the World Cup to the presidential run. For the twelve better ranked days after August 13th, the explanations fit within the events described in Figure 4. For the other eleven better ranked days before August 13th, four days are explained by the polls described in Figure 1, five days can be associated to other political events than Ibope or Datafolha national electoral polls,³³ and three days are associated with news unrelated to the presidential run.³⁴ Importantly, except for the three unrelated dates, the sign of the correlation coefficient is in line with the qualitative nature of the political event. Finally, it is reassuring that our approach to measuring the political content in stock prices is backed by subjective evaluations of the events that drove them.

5 Sensitivity Analysis

Our empirical strategy relies on the implicit assumption that the bulk of the cross-sectional variation of stock returns around the first-round vote is due to the aforementioned political shock. However, some spurious firm-specific developments not related to the electoral dynamics may have biased our results towards finding that the events associated with the 7-1 match are politically relevant. In order to address this issue, we

³³On March 27th, ranked 5th, financial markets reacted to a fall in Rousseff's popularity in a poll conducted by Ibope. On May 5th, the 13th highest shock, Neves rose in a poll conducted by another institute called Sensus. On May 6th, ranked 20th, Rousseff fell in a Ibope poll restricted to Ceará, a Brazilian northeastern state. Finally, on July 31st, ranked 19th, the Valor Econômico mentioned some state polls, although it also emphasizes the role of international markets.

³⁴On May 8th, ranked 21th, the Valor Econômico attributed the movements in stock prices to a technical correction. The movements on March 24th, the 23th highest shock, were attributed to foreign's appetite for Brazilian stocks. Finally, August 11th, ranked 24th, is associated to international developments as well as expectations that the gasoline price will go up after the elections.

reproduce the analysis above several times, each of them excluding one of the sixty firms from the sample.

Results are reported in Figure 7. The top (bottom) panel plots the R^2 (rank position) after excluding one of the stocks from the sample. The x-axis reports the excluded stock, which is ordered in terms of liquidity. Circles (asterisks) relate to the 7-1 match (end of the World Cup). Finally, dotted lines mark two positions above and below the rank position of these events once the full sample is considered.

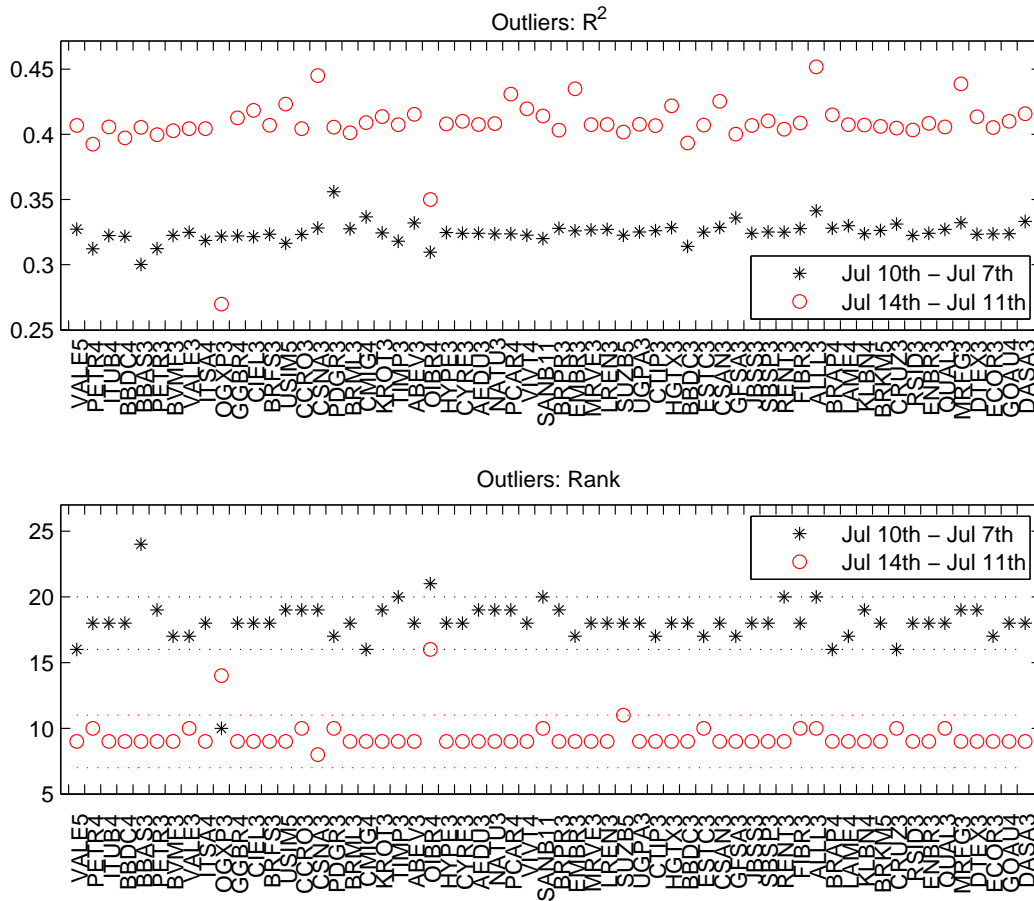


Figure 7: Potential outliers.

Two firms have a meaningful effect on both the R^2 and the ranking of the event associated with the end of the World Cup. Namely, the aforementioned telecommunication company *Oi* and oil and gas company *OGX*, both “chosen” by the government to be national champions. Similarly, one firm has a meaningful effect on the ranking of the 7-1 match, the state-controlled *Banco do Brasil* bank.

In principle, this need not be a problem, as these firms are expected to be highly sensitive to political shocks. However, firm-specific news released between the close of the stock market on October 3rd (Friday) and October 6th (Monday) may hinder the interpretation that the cross-sectional pattern of stock returns on the first trading day after the first-round vote was shaped primarily by the political news associated with the surprising first-round vote. To guard against this possibility, we run queries from March 1st 2014 to October 31st 2014 in the dataset of news articles of Brazil's main business newspaper, *Valor Econômico*. We search for news on *Banco do Brasil*, *OGX* and *Oi*, the three potential outliers identified above, that might justify movements in the residual returns around the first-round vote that are unrelated to politics. Our conclusions for each of these firms are the following.

- *Banco do Brasil* (BBAS3). We did not find any relevant firm-specific news around the first-round vote. Moreover, this firm only affects the ranking of the 7-1 event. Furthermore, when this stock is excluded from the sample, the R^2 falls by a small amount, from 0.32 to 0.30. Hence, we choose to keep it in the sample.³⁵
- *OGX* (OGXP3). On October 30th 2013, *OGX* filed for bankruptcy protection in Brazil. Since then, several judicial disputes have followed. The news flow was particularly intense during the campaign as a restructuring plan was being implemented. Moreover, former executives of *OGX* were facing criminal charges at this time.
- *Oi* (OIBR4). On October 2nd 2013, when the company was already facing financial problems, a merger between *Oi* and the Portuguese company *Portugal Telecom* was announced. This merger had been in process throughout 2014. The news flow for this firm was particularly intense during the campaign. In particular, an unexpected exposure of *Portugal Telecom* to the financially troubled *Espírito Santo* bank raised many concerns regarding the merger. Moreover, during October 2014, *Oi*'s CEO resigned, *Portugal Telecom*'s assets were sold abroad, and possible offers to buy *Portugal Telecom* were reported.

³⁵Carvalho and Guimaraes [2016] claim that BBAS3 was severely affected by Rousseff's reelection.

In what follows, we present several sensitivity analyses, keeping in mind that we might be discarding useful information. Given the considerations above regarding OGXP3 and OIBR4, we consider specifications that drop each of them in turn from the sample, and a specification that drops both. Tables 2 and 3 summarize the results.

Specifications (1)-(4) in Table 2 correspond to the benchmark described above. Notice that once we exclude both OGXP3 and OIBR4, the rank position of the 7-1 match barely changes, although the event associated with the end of the World Cup falls from the 9th to the 27th position. Specifications (5)-(8) also add global factors to the set of regressions described above. In particular, we consider changes in the S&P 500 Index and the Dollar Index (trade weighted). Similarly, given that many firms in Brazil are sensitive to changes in oil prices, specifications (9)-(12) add them as an aggregate factor to the benchmark specifications.³⁶ Once we control for the cross-sectional variation associated with the S&P 500 Index and the Dollar Index, the R^2 increases in all specifications, but the ranking positions do not change much, except when we exclude both outliers. In this latter case, the 7-1 match becomes the 13th, rather than the 19th, most relevant political shock. Once we control for oil prices, but not for the other external factors, results barely change once compared with the benchmark specifications.³⁷

³⁶To be precise, we add the “excess returns” associated with these aggregate factors. All series were obtained at <https://fred.stlouisfed.org/>. The codes for the S&P 500 Index and Dollar Index, defined above, are SP500 and DTWEXB, respectively. Oil prices, for which the code is DCOILBRENTTEU, are the US dollars per barrel of Brent crude oil.

³⁷Similarly, if the three external factors are considered altogether, results (not reported) barely change once compared with those in specifications (5)-(8).

		7-1 match	7-1 match	end of Cup	end of Cup
	Specification	R2	Rank	R2	Rank
(1)	Benchmark	0.32	18	0.41	9
(2)	(1) without OIBR4	0.31	21	0.35	16
(3)	(1) without OGXP3	0.32	10	0.27	14
(4)	(1) without both	0.23	19	0.18	27
(5)	External factors	0.35	19	0.43	11
(6)	(5) without OIBR4	0.36	20	0.38	18
(7)	(5) without OGXP3	0.37	9	0.29	15
(8)	(5) without both	0.30	13	0.20	27
(9)	Oil prices as a factor	0.32	18	0.40	9
(10)	(9) without OIBR4	0.30	21	0.34	17
(11)	(9) without OGXP3	0.33	8	0.29	13
(12)	(9) without both	0.23	17	0.20	25
(13)	50 most liquid stocks	0.35	18	0.45	13
(14)	(13) without OIBR4	0.35	23	0.39	19
(15)	(13) without OGXP3	0.36	10	0.29	14
(16)	(13) without both	0.27	17	0.19	27
(17)	70 most liquid stocks	0.27	27	0.43	7
(18)	(17) without OIBR4	0.22	33	0.39	12
(19)	(17) without OGXP3	0.26	17	0.32	9
(20)	(17) without both	0.16	33	0.25	17
(21)	(17) without GOLL4	0.32	19	0.43	8
(22)	(20) without GOLL4	0.23	20	0.24	18

Table 2: Sensitivity analysis

Specifications (13)-(16) and (17)-(22) consider the fifty and seventy rather than the sixty most liquid firms, respectively. Rank positions do not change much if we consider the

fifty most liquid firms. Once we consider the seventy most liquid firms, the end of the World Cup becomes even more relevant politically, although the 7-1 match becomes less. By inspecting specifications in which we exclude one of the seventy firms at a time (see Appendix B), we also find that the airline company *Gol* (ticker GOLL4), the 61st most liquid stock, was an outlier with respect to the 7-1 match but not the end of the World Cup event. Indeed, on July 10th, right after the 7-1 match, its price increased roughly 11%, which was the top gain in the Bovespa. The Valor Econômico newspaper attributed this increase to a correction in prices after an accumulated decrease of 23%, due to increasing and volatile oil prices, since May 2nd. In addition, on July 10th, the slots in the second most important airport in the country were redistributed in a way that was favorable to *Gol*.³⁸ Once we exclude GOLL4 from the sample but keep the other outliers, reported in specification (17), the 7-1 match becomes the 19th rather than the 27th most relevant political shock. Once we exclude GOLL4 and the other outliers, in specification (22), the 7-1 match becomes the 20th rather than the 33rd highest shock.

Recall that we treat days in which the Bovespa closed earlier than usual as if they were holidays. In particular, this happened at the day of the 7-1 match. Specifications (23)-(26) in Table 3 reintroduce these days in the sample as if they were normal trading days. In this case, the end of the World Cup remains politically relevant, although the 7-1 match becomes much less. During the week of the match, the oil price fell 2.7%, so it could be a confounding variable. Once we use add changes in oil prices as an aggregate factor in specifications (27)-(30), the 7-1 match becomes much more relevant.

³⁸See <http://www.valor.com.br/empresas/3610166/gol-fecha-em-alta-de-1096-maior-valorizacao-do-ibovespa>.

		7-1 match	7-1 match	end of Cup	end of Cup
	Specification	R2	Rank	R2	Rank
(23)	including all days	0.33	17	0.41	9
(24)	(23) without OIBR4	0.27	27	0.35	16
(25)	(23) without OGXP3	0.27	13	0.22	16
(26)	(23) without both	0.09	54	0.18	26
(27)	including all days + oil price	0.42	9	0.40	10
(28)	(27) without OIBR4	0.37	15	0.34	18
(29)	(27) without OGXP3	0.28	13	0.29	12
(30)	(27) without both	0.16	30	0.20	24
(31)	jan/13-dez/13	0.31	20	0.40	11
(32)	(31) without OIBR4	0.29	26	0.34	18
(33)	(31) without OGXP3	0.31	11	0.28	15
(34)	(31) without both	0.22	21	0.19	25
(35)	jun/13-may/14	0.31	16	0.34	11
(36)	(35) without OIBR4	0.24	25	0.26	19
(37)	(35) without OGXP3	0.32	8	0.24	13
(38)	(35) without both	0.19	23	0.14	33
(39)	2nd rnd election day	0.07	28	0.11	10
(40)	(39) without OIBR4	0.14	4	0.12	11
(41)	(39) without OGXP3	0.05	29	0.06	22
(42)	(39) without both	0.11	3	0.07	22

Table 3: Sensitivity analysis (cont.)

We also consider two different one-year period windows to estimate the set of regressions described above, from January 2013 to December 2013 and from June 2013 to May 2014, in specifications (31)-(34) and (35)-(38), respectively. Results barely change within the former specifications, but the events seem a bit less relevant politically once we exclude OIBR4 within the later specifications.

Finally, we consider in specifications (39)-(42) the second round, rather than the first

round, election day as the political shock that serves as a metric to measure the political content in the cross-sectional variation of stock returns in a given day. In this case, both events associated with the 7-1 match are still well ranked out of 156 dates. Once both OIBR4 and OGXP3 are excluded from the sample, the 7-1 match and the end of the World Cup are ranked 3rd and 22nd, respectively. Notice that, once compared with the benchmark, the R^2 is much smaller in these specifications, suggesting that the bulk of variation after the second-round vote is less likely to be generated by the political shock. Overall, both events associated with the humiliating defeat to Germany are almost always well ranked out of 156 dates across specifications. We conclude that the huge frustration shock associated with the 7-1 match was perceived as a substantial negative political shock against the incumbent in power.

6 Discussion

The closest paper to ours is Healy et al. [2010], who document in the US an electoral impact favoring the incumbent of wins in local college football games. The authors claim that these games, by affecting voters' sense of well-being, also affect their decisions at the polls. As documented in Edman et al. [2007] and Healy et al. [2010] (see the references therein), sports results have a significant effect on mood and, thus, sense of well-being. Whenever a team, whether local or national, wins or loses, the sense of well-being among its supporters is affected in a similar way. Importantly, positive emotions may cause people to favor the status quo. Analogously, negative emotions may call for a change. Since people transfer emotions from one domain to another, the emotions triggered by sports outcomes may have fueled the sense of dissatisfaction or satisfaction with the incumbent government. In addition, when people are in a bad mood, they are more likely to recollect negative events. Similarly, voters in a bad mood would tend to remember those negative events associated with the incumbent's past actions.

Aside using stock market data to recover a political outcome, our results differ from Healy et al. [2010] in at least two dimensions. First, we document a sizeable political shock stemming from the 7-1 match. Indeed, among the many events that happened along

the convoluted 2014 presidential election, both events associated with the 7-1 match were perceived to have a high political impact. In contrast, they find that a win within 10 days before the election day increases locally the incumbent's vote share in Senate, gubernatorial and presidential elections, on average, by only 1.6p.p. More generally, in reviewing the evidence, Healy and Malhotra [2013] argue that voters commit errors by punishing incumbents for actions beyond their control, but the aggregate effects of such errors are often small.

Second, our results suggest that a political shock associated with a sports outcome can be very persistent. In fact, the second-round vote took place more than three months after the 7-1 match. In contrast, Healy et al. [2010] did not find an effect of sports outcome outside the 10 days window before the election day. Hence, mood effects must be implausibly persistent (or perceived to be implausibly persistent) so that stock prices reflect political spillovers that would last for such a long time. If very persistent effects of mood were driving our results, other Brazilian games in the World Cup should have a political impact. However, as Table 4 highlights, the patterns of stock returns on trading days after other Brazilian matches in the World Cup do not reflect any relevant political content. These matches are ranked very low among the 156 dates, with R^2 less than 0.02. In other words, it is not only about changes in mood after winning or losing a game as in Healy et al. [2010]. There is something other than mood associated with the 7-1 match that, somehow, was perceived to be long-lasting enough so as to trigger substantial punishment at the polls.

Rank	Date	Exchange		Bovespa		Event
		R2	R	Rate	Index	
9	14-Jul-14	0.41	0.64	-0.2%	1.7%	end of the World Cup
18	10-Jul-14	0.32	0.57	0.2%	1.5%	Brazil 1-7 Germany
118	24-Jun-14	0.02	-0.13	-0.7%	-0.7%	Brazil 4-1 Cameroon
134	13-Jun-14	0.01	-0.09	0.2%	-0.5%	Brazil 3-1 Croatia
137	18-Jun-14	0.01	-0.07	1.0%	1.0%	Brazil 0-0 Mexico
149	7-Jul-14	0.00	-0.03	-0.4%	-0.1%	Brazil 2-1 Colombia
151	30-Jun-14	0.00	0.02	0.2%	0.0%	Brazil 1-1 (3-2) Chile

Table 4: Political content in Brazilian matches during the World Cup.

In addition, Healy et al. [2010] also show with a survey conducted during a college basketball tournament that surprising wins and losses affect presidential approval. Importantly, once people are made aware of the reason for their mood, effects on presidential approval are eliminated. The authors interpret it as suggestive evidence that the mood effects operated in the subconscious, but by moving them to the conscious, people rejected information unrelated to the incumbent's performance. In the context of this paper, given the salience of the 7-1 defeat, it is hard to argue that its mood effects operated subconsciously.

Given that the size, persistence and salience of the political shock associated with the 7-1 event weaken the mood interpretation of the results, we propose another explanation. Substantial punishment at the polls should be rooted in genuine dissatisfaction (that goes beyond mood) with the government. At the time of the World Cup, two pieces of evidence suggest that Brazilians had enough motives to be deeply frustrated with the incumbent government. First, one year before the World Cup, there were large public demonstrations in several Brazilian cities, known as the June Journeys. These protests were unexpected and decentralized. Hence, the motives of the protesters were highly diffuse, including high bus ticket prices, bad public services, corruption, police brutality, large public expenses with the World Cup, among others. They were indicative of a

latent dissatisfaction with the current state of affairs in politics. Second, Brazil was also facing huge economic failure in 2014. Due mostly to the economic policies adopted during Rousseff’s first mandate, GDP grew only 0.1% whereas inflation was 6.4%. We argue that the huge frustration shock associated with the failure in the World Cup was perceived by financial traders to trigger a transfer of domains that would lead people to somehow update their beliefs regarding the government’s responsibility for failures in other domains. This would lead them to tell apart government propaganda – which insisted on denying Rousseff’s responsibility in generating such failures – from reality, and reinforce their genuine dissatisfaction with the government.

The precise mechanism behind such transfer of domains is hard, if not impossible, to test empirically in the context of this paper. Hence, we conjecture below a few, perhaps complementary, possibilities borrowed from political and sociological pieces cited below. As a by-product, we also claim that traders not only intuit or understand, at least partially, the mechanisms described below, but also consider them in their daily trades.³⁹ Of course, one can always argue that these mechanisms are not operative in practice and traders simply misinterpreted the frustration shock associated with the 7-1 match as a political shock.

First, the huge failure at home may have affected negatively the degree of pride in (or identity with) the nation, something we call “national pride” in a broad sense,⁴⁰ which itself may have affected negatively the prospects of Rousseff’s victory. Many authors, such as Duke and Crolley [1996] or DaMatta [2006], claim that national teams are symbols and extensions of the nation-state that go beyond soccer. Successes in the soccer arena become a source of national pride and identity.⁴¹ Depetris-Chauvin and Durante [2017], for instance, show that victories (in high-stake games) of national teams from Sub-Saharan Africa make people identify more with their country and less with their ethnic group. Moreover, this effect is sizeable and does not appear to be short-lived.⁴² One may argue

³⁹Op-eds in Brazilian newspapers, such as DaMatta [2014] and Werneck [2014], advanced and discussed some of these possible links between the 7-1 match and electoral outcomes.

⁴⁰There are many nuances in defining patriotism, national identity, national pride and nationalism (see Huddy and Khatib [2007]), something from which we abstract in this paper.

⁴¹According to the BBC Global Poll, in a study conducted in 21 countries, 40% of the surveyed people said that their country performance at the Olympics affects a lot their national pride, whereas only 14% said it does not affect their national pride at all. See <http://www.bbc.com/news/world-16245075>.

⁴²In addition, the authors also claim that victories make people more likely to trust members of other

that stronger feelings of attachment to the nation lead to more conformity to its political status quo and political norms. Huddy and Khatib [2007], for example, find that national identity promotes political involvement.

Second, the humiliating aspect of the defeat at home may have triggered a general reflexive process, in which Brazilians hoped not only to understand and reconcile with the huge failure in the soccer field, but also beyond it. Indeed, several episodes have been documented in which failures in the soccer arena prompted some sort of soul-searching. See, for example, Crolley and Hand [2002], who argue that “England’s frequent failures on the pitch often become a source of much soul-searching and national mourning”.⁴³

Third, the 7-1 match was perceived to be a disaster, which may have triggered a social search for culprits. As people are ready to listen and willing to blame, such search may facilitate the task of political opponents in communicating, explaining and, perhaps, forging government’s failures in other domains. In addition, as Achen and Bartels [2016] argue after analyzing the electoral impact of natural disasters, government’s blame could be socially constructed even if not responsible for the disasters.

Fourth, the 7-1 match has a narrative potential. Shiller [2017] defines narrative to be “a simple story or easily expressed explanation of events that many people want to bring up in conversation or on news or social media because it can be used to stimulate the concerns or emotions of others, and/or because it appears to advance self-interest.” In that sense, the narrative potential behind the 7-1 match could be strategically fine-tuned and channelled against the government by political opponents, or by citizens unsatisfied with the government.

This transfer of domains from soccer to politics, through the linkages described above, might be particularly operative in a country like Brazil, where soccer is a, if not the, major source of pride and glory. Brazil is the most successful national team in the World Cup with five championships, and best overall performance with 70 wins, 17 ties and 17 losses. Moreover, Brazil is the only national team that has played in all editions. This

ethnic groups. They also show that countries that barely qualified to Africa Cup of Nations, relative to countries that barely did not, experienced significant less conflict in the following six-months.

⁴³Similarly, in 2010, after France lost one game and tied another in the World Cup, BBC affirmed that “France’s World Cup ‘disaster’ prompts soul-searching”. See: <http://www.bbc.com/news/10370449>.

is an impressive performance as soccer is highly subject to unpredictable factors that frequently undermine favoritism. Perhaps, the national soccer team is one of the most successful national institutions in Brazil. The fact that such excellence in soccer was challenged at home in a World Cup promoted at the expenses of taxpayers represents a huge frustration shock, which could set in motion any of the aforementioned social processes.

In what follows, we provide some anecdotal evidence suggesting how this transfer of domains operated in practice, helping people reassess their evaluation of the government. First, given that Fifa, the international soccer federation, requested facilities for the World Cup to be built according to demanding specifications at the expenses of taxpayers, demonstrators before and during the World Cup called for “Fifa-standard” schools and hospitals.⁴⁴ The huge failure in the World Cup may have amplified the salience of the underlying motives behind these demonstrations. Second, during some games, especially the opening match (in which President Rousseff was present) and the 7-1 match, Brazilians yelled obscene chants against President Rousseff.⁴⁵ Such aggressiveness was not restricted to the soccer arena. Tweets with the hashtag *#foradilma* (i.e. *#dilmagetout*) reached 3.2 and 3.7 thousands on June 12th and July 8th, when Brazil played the opening and the 7-1 matches, respectively. The average of tweets per day with this hashtag during the World Cup was 1.3 thousands, a much smaller figure.⁴⁶ Hence, these matches served as stage for people to demonstrate and communicate openly their frustrations with the government. Finally, at some point during the electoral run,

⁴⁴On June 19th 2013, an article in the New York Times reports that “[...] tens of thousands protested outside the newly built stadium [...], as the police tried to disperse them with tear gas, rubber bullets and pepper spray. In what would normally be a moment of unbridled national pride, demonstrators held up placards demanding schools and hospitals at the “FIFA standard,” challenging the money Brazil is spending on the World Cup instead of on health care or the poorly financed public schools.” One year later, on June 28th 2014, the same New York Times reports that “[...] some residents are expressing their displeasure through graffiti. The side of one building reads: ‘We want FIFA-standard jobs. We want FIFA-standard education and health care.’” See <http://www.nytimes.com/2013/06/20/world/americas/brazil-protests.html> and <https://www.nytimes.com/2014/06/29/sports/worldcup/world-cup-2014-residents-wonder-how-new-stadiums-will-benefit-region-after-cup.html>, respectively.

⁴⁵These events were widely covered by the international press. See, for instance, <http://www.bbc.com/news/world-latin-america-27841356> and <http://washington.cbslocal.com/2014/07/09/brazil-fans-start-obscene-chant-toward-female-president-during-world-cup-loss/>.

⁴⁶The data we obtained consider the sum of tweets during the 24 hours before 9pm of a given date. Since both games started at 5pm, we conjecture that the bulk of tweets happened in a 4 hours window. As a ground for comparison, the maximum number of tweets per day in 2014 was 18.3 thousands, on the eve of the second round election day.

expectations were pointing toward a 7% inflation and 1% growth, yielding an easy analogy with the 7-1 match widely used to link the fiasco in the soccer field with the collapse of the economy. Eduardo Campos, for instance, used such analogy in an interview to *Jornal Nacional*, a primetime news program aired by the largest television network in the country, one day before his death.⁴⁷

Finally, Duke and Crolley [1996] and Kuper [2003], among many others, report several anecdotal evidence over time and countries suggesting that soccer was often used by politicians to obtain political gains. General Franco, for instance, used soccer widely to promote Spanish nationalism and his fascist regime. For example, before each soccer game, the players were obliged to line up, salute General Franco and sing the fascist anthem. In Italy, Silvio Berlusconi used excessively soccer terminology and metaphor to push his political career. The party founded by him in 1993, for example, was named after a soccer chant, *Forza Italia* (meaning something like *Go, Italy!*). In Croatia, after independence from Yugoslavia, President Tudjman changed the name of Dinamo Zagreb, a local soccer club, in order to distance the club from its communist past. The new name, Croatia Zagreb, was never accepted by its supporters. During local elections one month after the name change, political opponents had promised to help the club get its old name back.⁴⁸ In Nigeria during the 1993 presidential run, the candidate Moshood Abiola promised that the national team would reach the World Cup if elected. During the 1970s, Latin America was plagued with military dictatorships that also used soccer aiming to obtain political gains. In Brazil, the marching theme during the successful campaign in the 1970 World Cup, *Pra Frente Brasil* (i.e. *Forward Brazil*), had also been used in propaganda promoting the military regime. In Argentina, after the 1976 military coup, the generals were suspected of using improper methods to guarantee Argentina's triumph in the 1978 World Cup, in line with their view that such triumph would reunite the country. More recently, after the transition to democracy, Argentina provided another powerful example. Right before the 2009 presidential election, the incumbent Cristina Kirchner pushed the Argentina's soccer association to renege on a long-term contract

⁴⁷See <http://g1.globo.com/jornal-nacional/noticia/2014/08/eduardo-campos-e-entrevistado-no-jornal-nacional.html>. Even the international press relied on such analogy to describe Brazil's economic fiasco (see <https://www.ft.com/content/b8d3dd00-2842-3d7e-9dd2-7b6fb3d478d5>).

⁴⁸Eventually, the name was changed back to Dinamo Zagreb.

with a media group, so that the federal government could produce a television program called *Fútbol para Todos* (i.e. *Soccer for All*) for the broadcasting of games in a state-run station.⁴⁹ In Iran, whenever the national team succeeded in qualifying matches to the 1998 and 2002 World Cup, celebrations were usually accompanied by demonstrations against the regime. So when the national team lost a game against Bahrain and, thus, did not qualify to the 2002 World Cup, rumours spread that players were pressured to lose. As Kuper [2003] emphasizes, this “may be a unique case of a regime wanting its national team to fail.” Of course, other examples abound.

In that sense, this paper provides empirical evidence in line with the practices of many incumbents, who use soccer in an attempt to enhance their political power.

⁴⁹This program also featured institutional advertising from the Argentine presidency. Before, most of the matches were broadcasted on cable TV or as pay-per-view events. See Vázquez and Cayón [2014].

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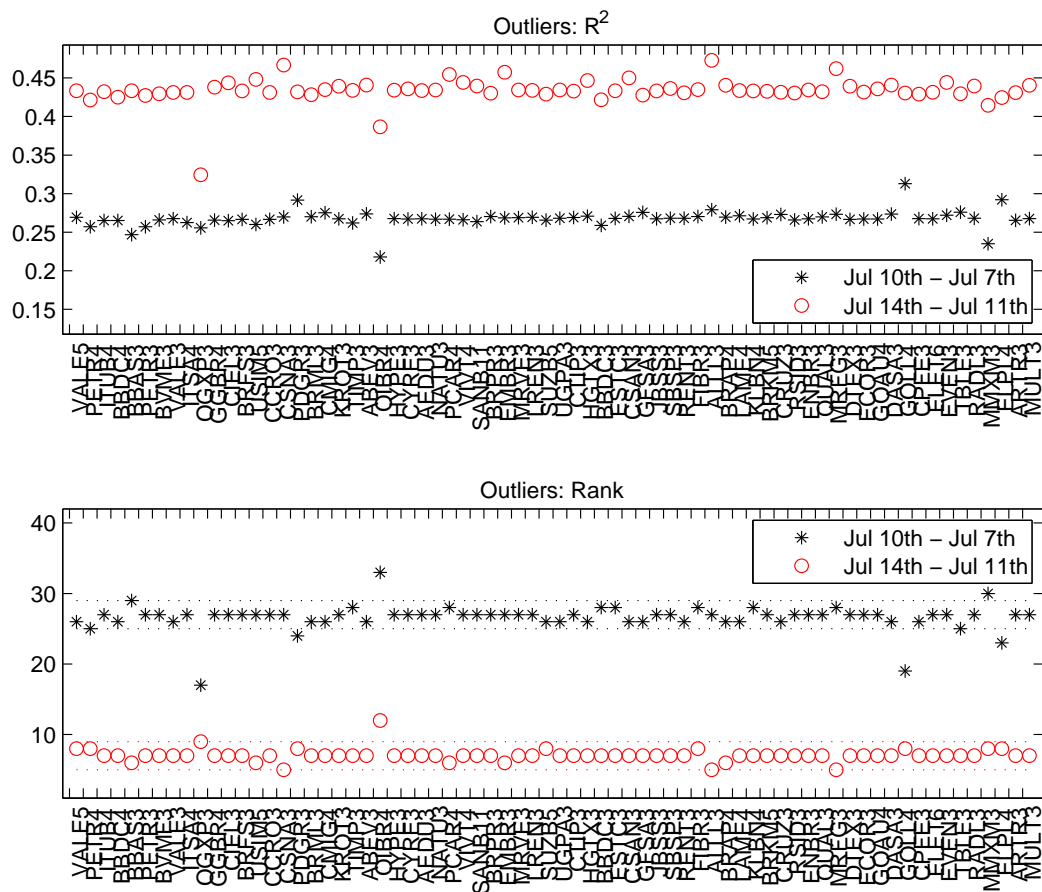
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Appendix A - Links to Articles Used in Table 1

Links to Articles Used to Support Results in Table 1. Source: Valor Econômico.

Rank	Date	Event	Valor Econômico link
1	12-Sep-14	Silva's fall	http://www.valor.com.br/financas/3693696/bovespa-perde-62-na-pior-semana-desde-cri-se-da-grecia-em-2012
2	25-Aug-14	Silva's rise	http://www.valor.com.br/financas/3666986/bovespa-tem-rali-eleitoral-e-petrobras-atinge-preco-de-marco-de-2012
3	19-Aug-14	Silva's rise	http://www.valor.com.br/financas/3659984/bovespa-fecha-no-maior-nivel-desde-marco-de-2013-com-euforia-eleitoral
4	21-Oct-14	2nd round dynamics	http://www.valor.com.br/financas/3743078/bovespa-perde-6-em-dois-dias-com-reviravolta-na-corrida-presidencial
5	27-Mar-14	Rousseff's popularity fall (Ibope)	http://www.valor.com.br/financas/3497448/bovespa-dispara-35-apos-piora-de-dilma-em-pesquisa
6	6-Jun-14	Rousseff's fall / Neves' rise (Datafolha)	http://www.valor.com.br/financas/3577180/pesquisa-eleitoral-turbina-ganho-de-estatais-e-bovespa-sobe-mais-de-3
7	23-Oct-14	2nd round dynamics	http://www.valor.com.br/financas/3746730/dilma-avanca-nas-pesquisas-e-ibovespa-passa-cair-15-no-ano
8	13-Oct-14	2nd round dynamics	http://www.valor.com.br/financas/3733370/bovespa-registra-maior-alta-em-tres-anos-com-rali-eleitoral
9	14-Jul-14	end of the World Cup	http://www.valor.com.br/financas/3613228/especulacao-eleitoral-apos-copa-leva-bovespa-ao-maior-nivel-em-9-meses
10	7-Apr-14	Rousseff's fall / Neves' rise (Datafolha)	http://www.valor.com.br/financas/3508582/estatais-tem-nova-alta-e-impulsionam-bovespa
11	15-Oct-14	2nd round dynamics	http://www.valor.com.br/financas/3736668/bovespa-sente-piora-externa-e-incerteza-eleitoral-e-fecha-em-queda
12	18-Sep-14	Silva's fall	http://www.valor.com.br/financas/3702106/investidor-adota-cautela-com-pesquisas-eleitorais-e-bovespa-cai
13	5-May-14	Neves' rise (Sensus poll)	http://www.valor.com.br/financas/3536988/novo-ibovespa-estreia-em-alta-ajudado-por-ambev-e-bancos
14	4-Sep-14	Silva's fall	http://www.valor.com.br/financas/3683562/bovespa-fecha-em-queda-apos-pesquisas-indicarem-reacao-de-dilma
15	11-Jun-14	Rousseff's fall / Neves' rise (Ibope)	http://www.valor.com.br/financas/3581830/bovespa-comemora-resultado-de-pesquisas-e-atinge-55-mil-pontos
16	8-Sep-14	Silva's fall	http://www.valor.com.br/financas/3687558/bovespa-tem-maior-tombo-desde-fevereiro-com-eleicao-e-tenso-externa
17	18-Jul-14	Rousseff's fall / Neves' rise (Datafolha)	http://www.valor.com.br/financas/3619070/euforia-com-datafolha-leva-bovespa-retomar-patamar-de-marco-de-2013
18	10-Jul-14	Brazil 1-7 Germany	http://www.valor.com.br/financas/3610232/puxada-pela-petrobras-gol-e-bancos-bovespa-fecha-em-alta
19	31-Jul-14	State polls favoring Rousseff	http://www.valor.com.br/financas/3634670/bovespa-sofre-quinta-baixa-com-cenario-externo-mas-ganha-5-em-julho
20	6-May-14	Rousseff's fall (Ibope Ceará)	http://www.valor.com.br/financas/3538504/bovespa-avanca-com-nova-onda-de-rumores-sobre-pesquisas-eleitorais
21	8-May-14	unrelated	http://www.valor.com.br/financas/3541512/bovespa-devolve-parte-dos-ganhos-de-maio-e-cai-com-petrobras-e-bb
22	30-Sep-14	Silva's fall	http://www.valor.com.br/financas/3717270/bovespa-perde-117-em-setembro-e-tem-pior-mes-em-mais-de-dois-anos
23	24-Mar-14	unrelated	http://www.valor.com.br/financas/3492216/bovespa-sobe-pela-sexto-pregao-seguido-com-ajuda-dos-estrangeiros
24	11-Aug-14	unrelated	http://www.valor.com.br/financas/3648212/bovespa-sobe-no-embalo-de-petrobras-e-expectativa-de-alta-da-gasolina
25	16-Oct-14	2nd round dynamics	http://www.valor.com.br/financas/3738226/bovespa-tem-forte-queda-com-indefinito-eleitoral-e-tenso-externa

Appendix B - Potential Outliers (70th Most Liquid Stocks)



Potential outliers. 70th most liquid stocks.