EDITED DEMOCRACY:
Media Manipulation and the News Coverage of Presidential Debates*

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Abstract

Political debates provide voters with a unique opportunity to learn about which candidates best represent their interests. They are complex campaign events that are followed by intensive media analysis and commentary. Despite growing evidence about their impact on voter behavior, little is known about their interrelated role with subsequent news coverage. This paper investigates the impact of an episode of manipulated TV coverage of a major presidential debate on the 1989 Brazilian presidential election. First, we present evidence from an online experiment that the coverage affects the audience's evaluation of candidates differently then the actual debate. We then take advantage of a unique natural experiment regarding the geographical distribution of broadcaster-specific TV signal and the timing of election events in order to disentangle the effect of the coverage from the debate itself. By exploring both survey and actual election data, we find that the left-wing candidate lost $1.9 - 8.6$ p.p. in vote share due to unfavorable coverage by the dominant TV network in Brazil. We also provide direct evidence that the mechanism works through a change in voters' perception of who won the debate. Together, our set of results show how dominant media groups can distort the information generated by presidential debates through its subsequent news coverage, thus hindering the role of debates in informing voters.

Keywords: political debates, media bias, elections

JEL codes: D72, L82, O12

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1 Introduction

In a democracy, voters need information to effectively select candidates that best represent their interests (Przeworski, Stokes, and Manin, 1999). Debates play a crucial role in this process by providing voters with an opportunity to learn about candidates' quality and policy positions. They are significant campaign events in most modern democracies and have been consequential to electoral outcomes in historical contests such as the presidential races of Kennedy *vs* Nixon and Dukakis *vs* Reagan in the US, and Mitterand *vs* Giscard in France.

However, the role of political debates cannot be fully understood separately from the study of mass media. Recent experimental evidence corroborates that debates affect voter behavior.[1] While useful in unveiling how information improves the electoral process, these experiments, which take place in countries where the media market is still incipient (Bowles and Larreguy, 2018), do not account for the intense stream of media commentary that follows televised debates. On the one hand, this subsequent news coverage has the potential to amplify debates' informational effects by giving citizens further opportunities to evaluate and understand candidates' proposals. On the other hand, partial media groups may manipulate the information stemming from the debate in order to influence the election.

In this paper we study the electoral consequences of an unexpected prominent episode of supply-driven news manipulation following a major political debate in the 1989 Brazilian presidential election. In particular, we provide experimental and quasi-experimental evidence regarding the ability of powerful media groups to alter the relative perception of the audience towards a favored candidate.

We build our argument in three steps. We first show that the news coverage after the debate was manipulated towards one candidate by Brazil's dominant media outlet, Rede Globo. When opinion polls indicated a tie three days before the final vote, the two runoff candidates participated in a debate that was broadcast by all major TV networks. In the following day, Rede Globo showed highlights of the debate in its main evening newscast, *Jornal Nacional*. Despite their public commitment to provide equal air time and balanced coverage of both candidates during the

[1] Bidwell, Casey, and Glennerster (2018); Brierley, Kramon, and Ofosu (2019) and Bowles and Larreguy (2018) randomize political debates implementation (or participation) across electoral districts in Sierra Leone, Liberia and Ghana, respectively.

campaign, independent historical accounts and Globo's own subsequent admission show that such direction was abruptly reversed in time for its newscast. In order to establish that the highlights could in fact persuade the audience, we conduct an online experiment. By randomizing participants to watch a segment of the actual full debate or the highlights, we find that watching Globo's edited coverage makes people over 20 percentage points more likely to hypothetically vote for Collor today.[2]

Second, we provide evidence that the exposure to Globo's signal during the period between first and second rounds of the election decreases Lula's vote share. The empirical challenge is to measure the impact of news coverage net of the direct effect of the debate. In order to circumvent this issue, we exploit the fact that the debate was jointly broadcast by all main Brazilian TV stations while only Globo showed the highlights. Using the full sample of municipalities, we combine actual election data with the geographical availability of all major broadcasters stations to measure the effect of receiving Globo's signal on changes in vote share of the two runoff candidates between rounds.[3] Our differences-in-differences estimates show that Globo's edited coverage cost candidate Lula at least 1.9 percentage points in vote share, equivalent to more than 1.25 million votes. Such effect is more pronounced in municipalities with higher TV ownership rates.

Third, we address the concern that our full sample estimates capture the effect of all content broadcast by Globo, including other developments, that took place in the 32 days between rounds and were relatively more (or less) emphasized by the network. We complement our previous analysis by restricting the sample to municipalities in state-capital metropolitan areas, for which we have opinion poll data regarding second round voting intentions during a 5-day period around the day of the debate. This eases the concern discussed above by dramatically decreasing the time interval between before and after treatment and offers a direct test of the mechanism behind the result as we have data on the individuals' opinions regarding who won the debate.[4] We find that voters were 8.6 percentage points less likely to vote for Lula in areas where Globo was present and similarly less likely to report that Lula won the debate. This pattern is consistent with individuals being

[2]Due to the different historical context and the nature of the online experiments, we cannot directly compare these effects to actual voting decisions in 1989. However, these results unambiguously show that Globo's highlights was unbalanced.

[3]We condition our analysis on the distribution of vote shares received by other candidates in the first round, which varies considerably across regions. This accounts for the possibility that the vote share of other candidates in the 1^{st} round are transferred to Lula and Collor in the 2^{nd} round in a way that correlates with the determinants of TV signal availability.

[4]In addition, this approach eliminates the need to control for the distribution of first round votes across other candidates in our identification strategy as second round vote intentions are fully comparable across polling days.

persuaded by Globo's manipulation.

To better understand what drives voters' response, we turn to the impact of the edited coverage on invalid votes and turnout.[5] We find that 60% of Lula's voters persuaded by the debate coverage switch their votes to Collor and 40% invalidate their votes, while the effect on voter turnout is indistinguishable from zero. Unlike most of the media persuasion literature, our estimated effect is likely explained by a switch in voters' preferences towards the candidate favored by the slanted coverage among the voting population instead by changes in the composition of voters. Potential explanations for this contrasting result include the difference in temporal nature of the treatments (one-time manipulation in our case *vs* long-run slanted coverage in most of other works), the fact that voters following the media coverage of important campaign events may be more likely to vote a priori, or simply the fact that voting is mandatory in Brazil.[6]

Our paper contributes to the literature on the larger question of voter responsiveness to political debates. Most of the recent work on debates has focused on producing field experimental evidence in African countries (Bidwell et al., 2018; Bowles and Larreguy, 2018; Brierley et al., 2019; Fujiwara and Wantchekon, 2013). While internally valid, the findings in these works do not automatically extend to places where mass media groups have the capacity to influence wide swathes of the electorate. Our approach examines the interrelated role of political debates and its media coverage. Indeed, debates in middle-income and rich countries are complex campaign events that are followed by intensive media discussion, including the analysis of instant polls and the replaying of highlights (Fridkin et al., 2007). Together, our set of results bridge the debates and the media bias literature by showing how dominant media groups can distort the information generated by presidential debates through its subsequent news coverage, hindering the role of debates in informing voters.

Most papers in the literature on media bias and vote shares have focused on the effects of continuous exposure to slanted coverage by longstanding partisan or state-controlled media over long time horizons, from three months to four years (DellaVigna and Kaplan, 2007; Enikolopov, Petrova, and Zhuravskaya, 2011).[7] We add to this body of work by analysing the electoral consequences of an information signal with minimal exposure - six minutes of edited debate highlights two days

[5] Invalid votes in Brazil are comprised of blank votes (no candidate is chosen and the ballot remains unfilled) or null votes (ballot is physically nullified by the voter). Invalid votes do not affect the result of an election.

[6] Although mandatory, punishment for not voting is small. Turnout in the 1989 presidential election was 85.6%.

[7] More recent contributions investigate even longer time horizons (Barone et al., 2015; Martin and Yurukoglu, 2017). See DellaVigna and Gentzkow (2010) for a review.

before an election - in a context where the media does not have an infrastructure dedicated to nurture partisanship.

Finally, our historical set-up also speaks to the question of how receivers respond to persuasive messages. In belief-based models, Bayesian receivers are most effectively persuaded when the sender is the primary source of information (DellaVigna and Gentzkow, 2010). Not only Globo's dominant position in the news market fits that scenario, but the Brazilian party system was then unable to provide credible information regarding candidates' platforms as many were outsiders who did not have solid political track records and parties lacked strong brands. These two features are not uncommon in other democracies, and illustrate how other elections can be vulnerable to media manipulation. Preference-based models argue that the content of messages may affect behavior even when it does not convey any obvious information (Mullainathan and Shleifer, 2005). The edited highlights may affect belief formation through channels such as framing, salience, and attention by selecting segments that convey specific imagery, vocabulary use, and displays of confidence and personal charisma (Shleifer, Schwartzstein, and Mullainathan, 2008).

The paper proceeds as follows. Section 2 characterizes the 1989 Brazilian political and media contexts. Section 3 describes how Globo manipulated the highlights of the presidential debate and provides experimental evidence regarding its ability to persuade individuals to hypothetically vote for Collor today. Section 4 describes the electoral and survey data as well as our differences-in-differences identification that explores the geographical distribution of broadcast-specific antenna infrastructure. Section 5 presents the results of the full and restricted samples, run sensitivity checks and discuss why competing interpretations do not hold. We end this section by offering a direct test of the mechanism behind the results and provide an estimate of the persuasion rate in our setup. Finally, we conclude.

2 Media Power and Brazilian Politics in 1989

Television dominated the Brazilian media market in 1989. Around 72 percent of Brazilian households had televisions sets, and 94 percent of the population regularly watched television (de Lima, 1990; Porto, 1985). Television was also the primary source of political information in the country. Over 86 percent of the population considered television as their most important source of political

information. The country also had one of the lowest rates of newspaper penetration in the world: 42 newspaper copies per 1000 inhabitants (de Lima, 1990; Porto, 1985).

At the time, Globo unambiguously dominated the Brazilian media market and was positioned to influence elections. According to Kennedy and Prat (2017), media power is the *"ability to induce voters to make electoral decisions they would not make if reporting were unbiased"*. They rank GloboNews, Globo's cable news station, as one the three most powerful private media organizations in the world in 2015. It is likely that during the 1989 elections, Globo's media power was even higher.[8] Globo's signal reached 92% of all Brazilian municipalities, and the network was the sole TV broadcaster in nearly one-fourth of the country. Its national audience was consistently above 59% of all turned-on TVs, reaching up to 84% during prime time programming (de Lima, 1990). Globo's large viewership allowed its entertainment content to influence the Brazilian social landscape, including women's fertility (La Ferrara et al., 2012), divorce decisions ((Chong and Ferrara, 2009), and political preferences (Chong, Ferraz, Finan, La Ferrara, and Meloni, 2017). With its flagship (and national audience leader) newscast –*Jornal Nacional*– the network also had the potential to directly influence elections through its news content. The two strongest left-wing candidates in 1989 gave Globo a motive to interfere with the process. Leonel Brizola from the Democratic Labour Party (PDT) and Lula from the Workers' Party (PT), repeatedly promised to regulate the media sector during the campaign, often making direct attacks to Globo.[9]

The political context in 1989 amplified Globo's media power. The 1989 elections gave Brazilian voters their first opportunity to democratically choose a president since 1960. All individuals who turned 18 after 1960, as well as twenty million illiterate citizens enfranchised by the 1988 Constitution, were voting for president for the first time. The recently established democratic regime, however, presented several challenges to for any citizens willing to make their vote counts towards political representation. The party system was unable to discipline political interests into a handful of ballot options. As a result, 22 parties fronted presidential candidates, many of whom were virtually unknown to the national electorate. In addition, most parties lacked any programmatic

[8] In between 1989 and 2015, Globo has lost part of its audience to other TV stations, cable, and other medias.

[9] In its 1989 campaign manifesto, the PT declared that new telecommunications regulations were "urgent" and that "with political will, mobilization and civil society organization it is possible to request the repeal of [broadcasting] concessions of those that insist to violate the fundamental democratic principle: the right of the public to be informed in the most objective manner and without distortions." This attack was clearly aimed at Globo, whose coverage of the democratization process years before was deemed "fraudulent" in the same party document (available at http://csbh.fpabramo.org.br/uploads/democracia.pdf, accessed in 2-28-2018).

identity from which voters could extract policy intentions or infer candidates' types. Indeed, almost a half of voters had no particular preference over any party and most had no party affiliation.[10] In a context of democratic inexperience, uninformative party labels, and limited partisanship, debates and press coverage became the most important source of political information. However, voters had imprecise priors about candidates' quality. As a result, voters possibly overweighted the relevance of new information when computing posteriors, magnifying the persuasive effect of news reports on electoral choices (Enikolopov, Petrova, and Zhuravskaya, 2011; Garcia-Arenas, 2015; Lawson and McCann, 2005).

Despite the many candidates, the elections presented a left–right divide. Collor, running under the banner of the recently–created National Reconstruction Party (PRN), and whose campaign confronted the incumbent's inability to rein in inflation and overall public mismanagement, represented the center-right portion of the political spectrum. The left was divided between the Lula and Brizola. Lula and Collor came as first and second at the first-round vote on November 15^{th} and proceeded to the second round.

Collor and Lula debated twice during the runoff campaign.[11] All major TV networks in the country broadcast the events live. The first was held on December 3^{rd} and the second on December 14^{th}, when the opinion polls indicated a technical tie and an increasing trend for Lula. Opinion polls and commentators declared Collor's performance superior in the second debate.[12] On December 15^{th}, Globo aired a news segment from the final debate in its main newcast *Jornal Nacional*. The runoff took place on December 17^{th}, just two days after the edited coverage aired by Globo, and Collor was elected president with 53% of valid votes *vs* 47% for Lula.

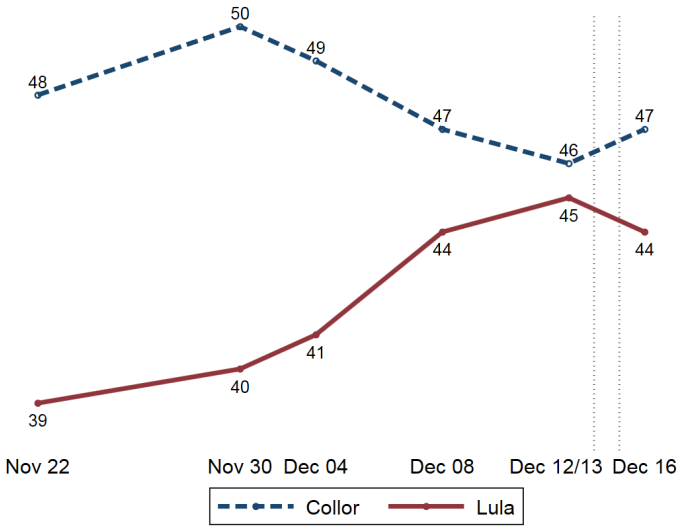
Figure 1 shows voting intention trends during the second round. The dotted lines represent the timing of the debate and Globo's coverage. While there was a clear positive trend for Lula up to the day before the debate, the trend reverses in the following couple of days. Could this trend reversal that took place in the last moments of the campaign by the result of Globo's manipulation? Answering this question is the main purpose of this paper.

[10] See IBOPE National Vote XIII Survey, October 1989. Available at https://www.cesop.unicamp.br.

[11] An opinion poll conducted some days before the election indicates that debates were among the top three sources of political information according to voters (Source: *Jornal do Brasil*, "Determinantes", October 16, 1989).

[12] A survey conducted by phone just after the end of the debate found that Collor won the debate according to 45% of the viewers as opposed to 34% for Lula (*Jornal O Globo*, December 16^{th} 1989, available on-line at https://acervo.oglobo.globo.com, accessed on 2019-03-20). Even Lula's press secretary recognized Collor's superior performance (Conti, 1999).

Figure 1: Voting Intention Trends in the 2^{nd} round.



3 Experimental Evidence and the Manipulated Coverage

Globo's coverage of the last debate immediately erupted in controversy. According to observers at the time and journalistic accounts, the editors of *Jornal Nacional* favored Collor. Some of Globo's soup opera stars protested at the TV station's headquarters the next day, and the PT petitioned the Electoral Court for additional air time on Globo's programming.[13]

The partial nature of Globo's coverage becomes clear when analyzing the footage. While the structure of the actual debate provided identical air time for both candidates, Globo's highlights shows Collor for 72 seconds longer: 3 minutes and 34 seconds versus 2 minutes and 22 seconds (Porto, 1985). The highlight's content is detrimental to Lula as both independent historical accounts and Globo's own subsequent admission attest (Conti, 1999).[14] It accentuates his gaffes, and insinuates that he is tolerant with corruption, and that he considers some Northeastern Brazilians a sub-race. It shows him stammering and confused, while Collor appears confident and in the offensive.

Despite its intention, it is an open question if Globo's manipulation affected voters. In order to establish that the coverage had an impact on viewers' perception on the candidates, we conducted

[13] *Folha de São Paulo*, Dec 17 1989, page B8.

[14] According to Globo's official account, during that afternoon Ronald Carvalho, Globo's editor of politics, ordered Octavio Tostes, Jornal Nacional's text editor, to produce an edition with "the best of Collor and the worse of Lula". Source: http://memoriaglobo.globo.com/erros/debate-collor-x-lula.htm, accessed on 2019-03-20.

an online experiment on Amazon's Mechanical Turk (MTurk).[15] By randomizing participants to watch different segments of the debate, we are able to test if the video content from Globo's coverage change subjects' opinions about candidates.

We randomly assign to subjects comparable video clips from the actual debate and Globo's coverage. We split the two-hour long debate video into 21 different clips of approximately 6 minutes each, where the two candidates debate over one question from journalists or from each other as well their concluding remarks.[16] Globo's edited highlights clip contains snippets from the full debate and also lasts 6 minutes.[17]

We recruited workers on MTurk by posting a Human Intelligence Task and offering US$0.50 upon completion. The task was restricted to respondents located in Brazil, and was posted on April 04, 2019 and removed on April 18, 2019.[18] Instructions stated that the participant would watch a 6 minute-long video of two presidential candidates debating issues concerning the election and that they would answer a few short questions after the video. After the video, respondents would answer which candidate performed better, and who they would you vote for if elections were today. We also asked their age, country region, schooling, interest in politics, and left-right ideology.[19]

Table 1 presents summary statistics for experiment respondents. Panel A shows that 33% of the participants in the treatment group, who watched Globo's highlights, report voting for Lula if elections were today, while 22% answered that Lula won the debate. For participants who watched unedited footage of the debate (control group), these figures are significantly higher – 56% and

[15] MTurk is an online labor market platform where businesses and individuals can post tasks and workers can work on tasks to receive payment. The MTurk environment is an online experimental platform widely used in economics (Horton et al., 2011; Levay et al., 2016), and valid for eliciting responses in politics-related contexts (Berinsky et al., 2012; Clifford et al., 2015)

[16] According to the debate's structure, each journalist had 30 seconds for a question, the previously randomly chosen first candidate to comment had 2 minutes, the second candidate 1 minute. Next, the first candidate had a one-minute reply.

[17] The actual debate and the edited coverage videos are both available online from Globo. By taking all clips from the same source, we ensured that image and sound quality were identical for all participants. Videos available at http://memoriaglobo.globo.com/erros/debate-collor-x-lula.htm, accessed on 04-10-2019.

[18] We restrict to respondents in Brazil as the videos are in Portuguese and the precise language used in debates are probably relevant to viewers' perception. Subtitles would not capture speech nuances. This is consequential in two ways. First, the majority (more than 75%) of MTurkers live in the United States and India (Paolacci and Chandler, 2014), thus limiting the potential pool of participants. Second, as both candidates are former presidents and involved in major corruption scandals, virtually all Brazilians have priors about them. Although these priors matter to effect sizes, that is not the goal of the experimental exercise. Our goal is to check if Globo's highlights affect respondents impressions regarding the two candidates.

[19] In addition, we check workers' attention to their tasks by measuring individual task completion time, and by asking simple content-specific questions about the video, as well as basic arithmetic such as "what is twelve minus nine?". These checks lead us to drop 22 observations in total.

53%, respectively. Panel B describes participants characteristics. As expected from the random nature of the experiment, participants in the treatment and control groups are similar across age, schooling, location of residence and self-reported political ideology.

Table 2 shows that treated subjects are more likely to choose Collor if elections were held today. Column (1) reports a simple regression of "vote for Lula today" on an indicator of whether the participant watches the edited highlights. Columns (2) and (3) add demographics controls and a measure of self-reported left-right ideology in a 10-point scale. The effect of watching Globo's highlights is detrimental to Lula and of magnitude in the range of 0.20-0.25. The stability of these estimates across specifications (1)-(3) is consistent with the random assignment of videos. The negative estimate on left/right ideology unsurprisingly indicates that more right-wing voters chose Collor, given the likely prior of respondents related to each candidate political views. Columns (4) adds the question "which candidate performed better" as an additional control. The effect of highlights becomes small and insignificant, consistent with the view that video content affects vote intentions through the perceived performance of candidates.

These results indicate that Globo included specific segments from the debate in its highlights that successfully affected the audience beliefs towards candidates in an experimental set-up today. Due to the different historical context and the nature of the online experiments, we cannot directly compare these effects to actual voting decisions in 1989. However, these results unambiguously show that Globo's highlights was unbalanced. We now move to examine the central question of this paper regarding whether this manipulation episode of debate news coverage was effective in skewing voters against Lula using actual election and survey data from 1989.

4 Data and Identification

In this section, we first describe the main sources of data and the two different geographical sample in our empirical analysis. Then, we present our differences-in-differences design.

4.1 Election, Voting Intention and TV Signal Data

The Brazilian electoral authority, *Tribunal Superior Eleitoral* (TSE), provides data for the 1^{st} and 2^{nd} rounds of the 1989 presidential election disaggregated at the municipality level.[20] Municipal characteristics come from the 1991 Brazilian Population Census of the Brazilian Statistical Bureau (*IBGE*). Election survey data from *Instituto Datafolha* are available at the Center for Studies on Public Opinion (CESOP/UNICAMP) website.[21]

Information on the location, setup year, and radial reach in kilometers of each broadcasting and retransmitting station of the main TV broadcasters in Brazil at that time - namely Globo, Bandeirantes and SBT - is also available.[22] By geo-referencing the location of each antenna, we are able to determine which municipalities received signal from a particular broadcaster during the 1989 election.[23]

Our analysis explores two different geographical samples: (i) a full national sample with all $4,052$ Brazilian municipalities that received TV signal from at least one broadcaster in 1989 (97% of total), and (ii) a restricted sample that includes only the 350 municipalities in the metropolitan areas of the 27 state capitals that account for nearly 40% of the national population at that time. The full sample pairs with actual 1^{st} and 2^{nd} round election data and the restricted sample matches with individual-level 2^{nd} round voting intention interviews from the days just before and after the debate.

Table 3 reports descriptive statistics from our full sample in Panel A. We define the treatment group as all $3,922$ municipalities that received signal from Globo during the 1989 election. Our control group are the 130 municipalities that received signal only from *SBT* or *Bandeirantes*. Panel A shows that $1,054$ out of $3,922$ (27%) received TV signal exclusively from Globo while $2,868$ (73%) municipalities received signal from at least one other major TV broadcaster as well. Figure 2 illustrates the geographical variation of the distribution of TV signal per broadcaster across Brazil in 1989. Areas in red correspond to municipalities with Globo signal only, whereas areas in orange

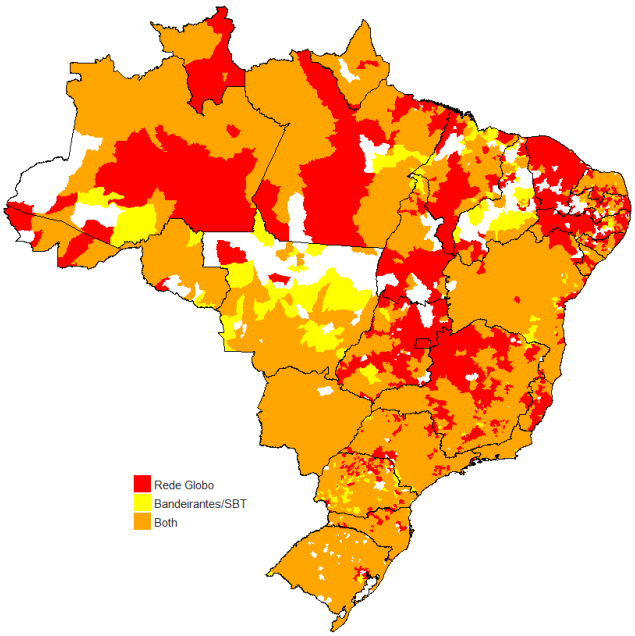
[20] The data are available at http://www.ipeadata.gov.br.

[21] These surveys are registered at CESOP/UNICAMP as BRASIL89.DEZ-00210 - BRASIL89.DEZ-00212.

[22] We thank Alberto Chong and Eliana La Ferrara for kindly providing us with this dataset. It was originally obtained from Rede Globo and from Anatel's website (*Agencia Nacional de Telecomunicações*). The major broadcasters are responsible for over 97% of all TV audience in Brazil at that time.

[23] More specifically, in our definition a municipality receives TV signal from a given broadcaster if its centroid is inside the coverage radius of an antenna.

Figure 2: Geographical Distribution of TV Signal per Broadcaster in 1989.

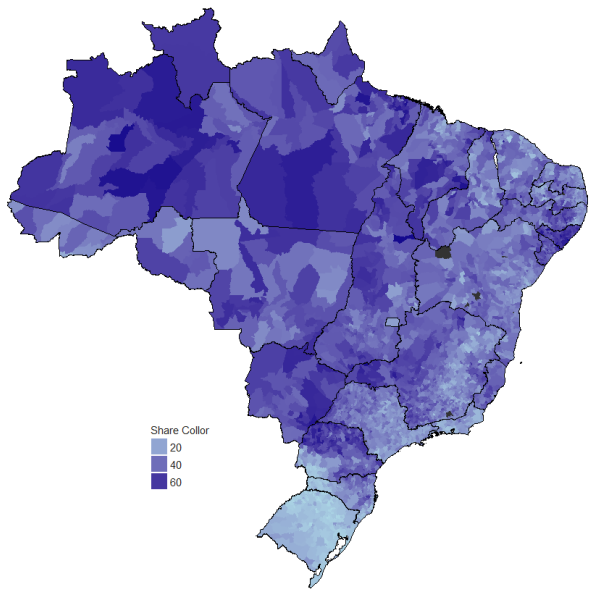


receive signal from other broadcaster as well. Areas in yellow represent our control group and areas in white receive no signal and are excluded from our sample. It is important to point out that treated units exist in all states and municipalities in the control group are scattered across 17 out of 27 states, which comprise approximately 85% of the overall population.

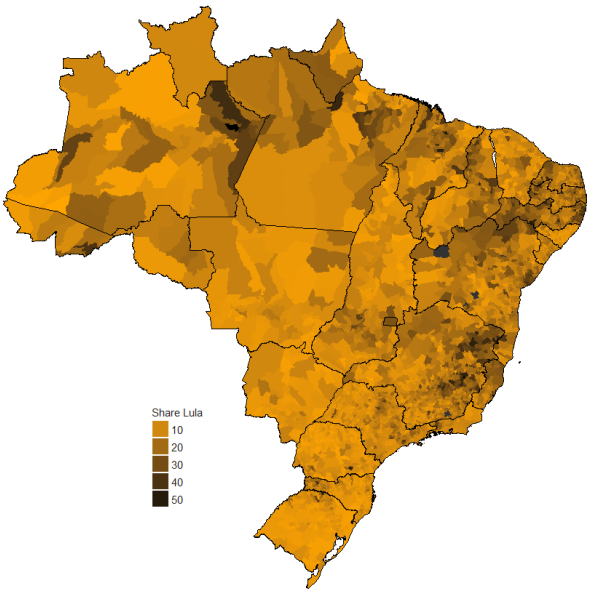
Voting patterns are strikingly similar across control and treatment. Lula's vote share increases 20 p.p. in the control group –from 0.13 in the 1^{st} round to 0.33 in the 2^{nd}– and 21 p.p. in the treatment group. Collor's vote share increases 0.22 p.p. in the control group, from 0.39 in the 1^{st} round to 0.61 in the 2^{nd}, and 0.24 p.p. in the treatment group. Invalid ballots are higher for treated municipalities in the 1^{st} round, and the same for both groups in the 2^{nd}. Turnout is higher in treated municipalities across both rounds.[24] Figure 2 shows the distribution of votes by candidate and round. At a first glance two patterns stand out. First, Lula received a higher share of votes in larger cities and more populated areas along the coast in the Northeast and Southeast regions. Second, neither Lula nor Collor receive a relatively high share of votes in the populous

[24]Invalid votes in Brazil are comprised of blank votes (no candidate is chosen and the ballot remains unfilled) or null votes (ballot is physically nullified by the voter). Invalid votes do not affect the result of an election. We proxy turnout by the number of votes *per capita* in a given municipality as the total number of registered voters is not available.

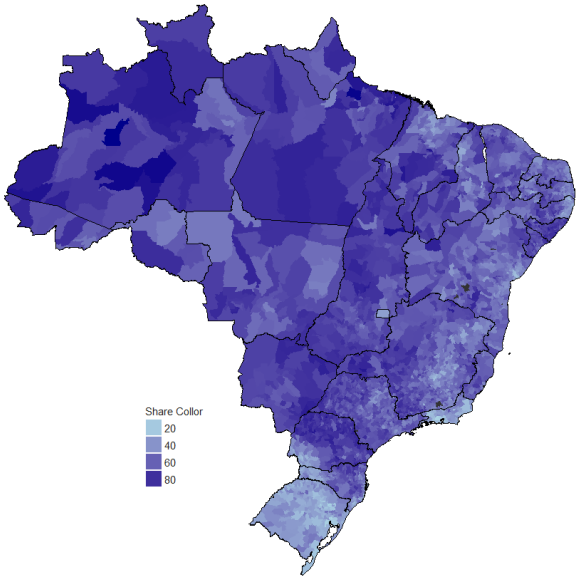
Figure 3: Geographical Distribution of 1^{st} and 2^{nd} round vote share



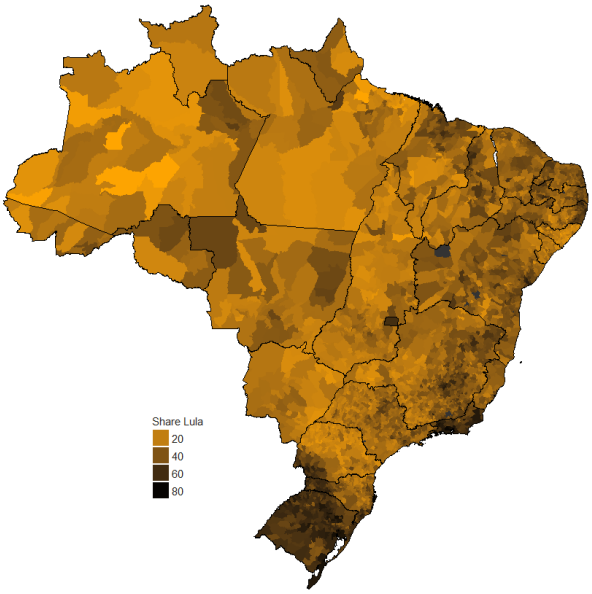
(a) Collor - 1^{st} round



(b) Lula - 1^{st} round



(c) Collor - 2^{nd} round



(d) Lula - 2^{nd} round

states of *Rio Grande do Sul*, *Rio de Janeiro* and *São Paulo*. This is because a former governor of both of the first two states, Leonel Brizola, was also a 1989 presidential candidate and ranked top in both states in the 1^{st} round. A similar situation took place in *São Paulo* with a former senator Mario Covas. Interestingly, in *Rio Grande do Sul* and *Rio de Janeiro* most of the votes of Leonel Brizola were transfered to Lula in the 2^{nd} round whereas in *São Paulo* Collor increased by a larger margin. The heterogeneity according to political preferences and the mechanics of how votes are transferred from one candidate to another across rounds highlights the importance to accounting for the vote share of the remaining candidates in our analysis, as discussed in more detail in the next section.

Summary statistics for municipal characteristics according to the 1991 Brazilian Census are reported in the bottom of Panel A. Treated municipalities are larger and more urban. Its inhabitants are more educated and have higher income, as reflected by a higher TV and radio ownership.

Our restricted sample includes data from all 27 state-capital metropolitan areas in the country. In 1989, *São Luís do Maranhão* was the only state-capital that did not receive Globo's signal.[25] As other TV broadcasters were present, local citizens were still able to watch the debate, just not Globo's coverage. Panel B reports the main descriptive statistics for the restricted sample. Our election survey dataset contains $8,395$ interviews of individual who are on average younger, report more years of schooling, and display higher support for Lula when compared to the full sample as reported in Panel A. This is consistent with Lula's support base being concentrated in more urban and larger cities.[26] We also have self-reported data regarding the the presidential debate. More than 0.70 of our sample report to have watched the debate and less than a quarter believe that Lula won the debate, in both treatment and control municipalities.

4.2 Empirical Strategy

We now describe our differences-in-differences strategy that allows us to assess the impact that Globo's edited news coverage of the 1989 presidential debate had on election outcomes. The performance of each candidate during the debate is likely to play an important role on voting behavior in and by itself, but by exploring detailed municipality-level broadcaster-specific signal coverage

[25] *São Luís* eventually received Globo's signal in 1991.

[26] Once we geographically restrict our full sample ballot/census dataset to state-capital metropolitan regions, these descriptive statistics become more similar across individual-level and municipal-level data sources. Results not shown.

data, we are able to disentangle the effect of the edited coverage from the effect of the debate itself.[27]

We build our argument in two complementary steps. First, we use data from the full sample that includes all municipalities that received TV signal from at least one broadcaster in 1989. The aim is to identify the causal effect of the edited coverage net of the debate itself on the election outcome by combining changes in the vote share of the two main candidates from the 1^{st} to the 2^{nd} round with the broadcaster-specific geographical distribution of TV signal availability across municipalities. In particular, we exploit the fact that the debate was jointly broadcast by all main Brazilian TV stations while only Globo showed the edited highlights. It is important to note that while there were only two candidates in the 2^{nd} round of the election, there were 20 other candidates, of which five received more than 9% of valid votes. As the distribution of votes for each candidate varies considerably across regions, it is possible that the vote share of other candidates in the 1^{st} round are transferred to Lula and Collor in the 2^{nd} round in a way that correlates with the determinants of TV signal availability.[28] Such pattern would violate the standard parallel trend assumption of our differences-in-differences strategy. In order to account for that, we condition our analysis on the vote share that each of the 20 remaining candidates received in the 1^{st} round.

Formally, we set the municipality level as unit of analysis and specify the following regression model for the impact of Globo's edited news coverage on vote share:

$$\nu_{jt} = \beta^{cov}\, \delta_t\, globo_j + \gamma\, sh^c_{j,t=1} \cdot t + \rho X_{j,1991} \cdot t + \delta_j + \delta_t + \epsilon_{jt} \tag{1}$$

where ν_{jt} is Lula's vote share in municipality j at election round $t = 1, 2$ and $globo_j$ is an indicator that equals 1 if Globo is present at municipality. The coefficient of interest β^{cov} captures the average change in vote share associated with being exposed to Globo. $sh^c_{j,t=1}$ are the vote shares of all 20 remaining candidates in the 1^{st} round and $X_{j,1991}$ represent municipal socioeconomic characteristics such as population size, average levels of schooling and income, access to water and electricity and

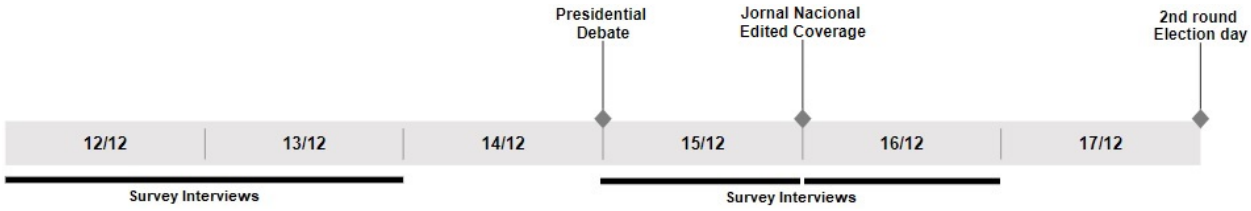
[27] It should be noted that our empirical strategy examines if Globo's coverage was less favorable towards *Lula* relative to the coverage of other broadcasters. In other words, we investigate whether Lula's vote share in municipalities exposed to Globo's coverage increased *less* than in municipalities exposed to the coverage of the other broadcasters. In this sense, it is a relative estimate of the potential manipulation by Globo net of the effect of other major TV channels. Conti (1999) argues that other broadcasters presented a balanced view of the performance of each candidate and did not show segments of the debate on their major news.

[28] The geographical allocation of TV antennas followed commercial and possibly political criteria (Chong and Ferrara (2009)).

TV ownership from the 1991 population census. δ_j are municipality fixed effects and δ_t is a dummy variable that equals 1 if $t = 2$. By controlling for $sh^c_{j,t=1}$ and $X_{j,1991}$, we allow for differential trends for municipalities according to 1^{st} round voting patterns and different preexisting levels of development as these factors are likely to play a significant role in determining changes in vote shares.[29] We report heteroskedasticity-robust standard errors clustered at the municipal level j in order to account for residual auto-correlation.

The full sample approach takes advantage of all available cross-sectional variation in the data, allowing us to perform robustness checks and heterogeneity analysis that support the identification strategy. However, a potential concern is the fact that the 1^{st} and 2^{nd} rounds of the 1989 presidential election took place 32 days apart. Thus, full sample estimates capture the effect of all content broadcast by Globo in this period relative to the other networks, including other developments that took place in between rounds and were relatively more (or less) emphasized by Globo. In order to circumvent these concerns, we complement our analysis with a second step. Figure 4 illustrates the timing of the survey interviews with respect to the debate and its edited coverage. Survey interviews are carried out during $12^{th} - 16^{th}$ December 1989. The debate is broadcast live by all TV stations on the night of 14^{th} and the edited debate is shown during *Jornal Nacional* on the night of the 15^{th}.

Figure 4: Timeline of Survey Interviews and Presidential Debate



The second step in our empirical strategy focuses on our restricted sample that includes only municipalities in state-capital metropolitan areas. In 1989, *São Luís do Maranhão* was the only state capital that did not receive Globo's signal. As signal from other broadcasters were available, local inhabitants were still able to watch the actual debate, but not Globo's coverage of the debate. Hence we combine the timing of the debate coverage and the availability of Globo's TV signal

[29] Table 3 shows how different treatment and control units are across these dimensions.

across metropolitan areas by comparing changes in 2^{nd} round voting intention using *São Luís* as control for all other state capitals.[30]

Given the features of the set-up described above, we modify our baseline regression to accommodate the individual nature of the voting intention data:

$$\nu_{ijt} = \beta^{cov}\, \delta_t\, globo_j + \omega W_{ijt} + \delta_j + \delta_t + \xi_{ijt} \tag{2}$$

where ν_{ijt} equals one if individual i reports intention to vote for Lula in the 2^{nd} round at time $t = 1$ (before) or 2 (after the coverage). W_{ijt} controls for individual characteristics such as gender, education and age. All other variables are defined as before.

Although it restricts the amount of variation available for estimation, the approach complements the full sample analysis in three important ways. First, it dramatically decreases the time interval between before and after in our analysis, limiting the effect of potential confounders. Second, it provides complementary evidence based on individual self-reported data, as opposed to aggregate municipal data. The individual data allow us to further explore heterogeneity in the estimated effect and hence identify who is most vulnerable to the media's persuasion. Third, the survey questions allow us to directly test the mechanism behind the result as we have data on individuals' opinion regarding who won the debate.

5 Results

In this section, we first explore the full sample to examine the response of actual election data to being exposed to Globo's signal between the 1^{st} and 2^{nd} rounds of the 1989 presidential election. We use the richness of our full sample approach to explore the heterogeneity on the impact of media manipulation according to local media competition as well as radio and TV household ownership. We also perform robustness checks. Second, we measure the impact of the debate coverage on voting intentions in the restricted sample and provide a direct test of whether the manipulated coverage changed voters' perceptions regarding the quality of candidates. Third, we outline competing interpretations and discuss why it is unlikely that they explain our results. Finally, we present

[30] See Pischke (2007) for a similar identification strategy with one control and many treated units applied to a different setting.

persuasion rates for our set-up.

5.1 Evidence from the Full Sample

We begin by reporting the average effect of Globo's edited coverage on Lula's vote share in columns (1)-(4) of Table 4. The specification in column (1) includes municipality and time fixed effects. Column (2) adds first-round vote shares of remaining candidates as additional political controls. Column (3) includes municipal socioeconomic characteristics (population size, average levels of schooling and income, access to water and electricity, and TV ownership) interacted with time. Column (4) splits treatment status according to coverage of other TV broadcasters. Columns (5) and (6) reestimate specifications (3) and (4) for Collor's vote share.

The estimate associated with Globo's coverage in column (1) is positive and insignificant and becomes negative and significant once we control for the first-round vote shares of the other candidates in column (2). We interpret this as direct evidence that conditioning on the distribution of first-round votes is necessary for our identification strategy, as discussed in section 4.2. By not conditioning our analysis, it is likely that the vote share of other candidates in the first round are transferred to Lula and Collor in the second round in such a pattern that correlates with determinants of TV signal availability.[31] In column (3) we include as additional controls municipal socioeconomic characteristics interacted with time in order to account for municipality-specific trends across cities with different pre-existing levels of development. Our estimates reported in column (3) show that Globo's coverage is associated with a decrease of 1.9 percentage points in Lula's vote share. Column (4) allows treatment effects to vary according to local media competition, more specifically, to whether there is coverage by other TV broadcasters. Voters in municipalities with Globo as the only TV broadcaster are more likely to have watched Globo's coverage in the day following the debate and hence more likely to be affected by it. Our estimates indicate that the effect of Globo's coverage is significantly stronger when it is the only signal provider (2.3 p.p.) relative to when other broadcasters are present (1.7 p.p.). We also re-estimate these specifications for Collor's vote share. Columns (5) indicates that Globo's edited coverage had a positive and significant

[31] As discussed in Section 4.1, the most relevant candidates in this case are *Leonel Brizola* and *Mario Covas*. Both candidates have large vote shares in the first-round and likely high vote transfer rates to Lula and Collor, respectively. If we control for the first-round vote share of all candidates but one of these two, the results become small and insignificant.

effect on Lula's opponent, albeit in smaller magnitude (1.9 p.p.). Similarly to the pattern found in column (4), the estimates in column (6) show that the effect is stronger in municipalities covered only by Globo. The difference in estimates are statistically significant in both cases. This is akin to Enikolopov, Petrova, and Zhuravskaya (2009) who find that the effect of access to independent television news in Russia on voting is largest for those who use alternative information sources less often. Moreover, persuasion effects of media are mitigated by consumers' ability to self-select to their most preferred media outlet (Durante and Knight, 2012).

Sensitivity Analysis. In order to test the robustness of our main findings, we restrict our treated sample to municipalities neighboring the control group and re-estimate our baseline specifications in Table 5. Such approach excludes municipalities that are most likely different in terms of characteristics that depend on distance (e.g. level of development, political preferences) and is particularly informative in a large and diverse country such as Brazil. Moreover, it represents a lower bound estimate in case there are any positive spillover effects from treated municipalities into neighboring towns. All columns are defined as in Table 4. Interestingly, the estimate in column (1) shows that by restricting to neighboring municipalities, the effect of Globo's coverage on Lula's vote share is negative even without controlling for differential trends according to the vote share distribution in the first-round ($\mathbf{sh}^{c}_{j,t=1} \cdot t$). The remaining columns show a similar pattern to Table 2, with slightly lower overall point estimates. Lower precision is the consequence of exploring variation across only 350 municipalities instead of $4,052$ in the full sample.

Invalid Votes and Turnout. Table 6 reports regression estimates of Globo's coverage on invalid votes and turnout.[32] Columns (1) and (2) report estimates of the treatment effect on the share of invalid votes using our benchmark specification. The point estimate in column (1) indicates that being exposed to Globo increases the share of invalid votes by 0.08 p.p. This is precisely the difference between the estimated baseline coefficients on Lula's and Collor's vote share reported on Table 4. The estimated effect on voter turnout is small and insignificant as reported in columns

[32]Invalid votes in Brazil are comprised of blank votes (no candidate is chosen and the ballot remains unfilled) or null votes (ballot is physically nullified by the voter). Invalid votes do not affect the result of an election. Turnout is proxied by the number of votes *per capita* in a given municipality as the total number of registered voters is not available.

(3) and (4). Putting the findings from Tables 4 and 5 together, we take away two lessons. First, approximately 60% of Lula's voters persuaded by the debate coverage switch their votes to Collor (0.011 out of 0.019), and 40% invalidate their votes (0.008 out of 0.019). Second, our estimated effect is mainly explained by a switch in voters' preferences towards the candidate favored by the slanted coverage among the voting population instead by changes in the composition of the voting population. This is in contrast with most of the media persuasion literature (DellaVigna and Kaplan, 2007; Gerber *et al.*, 2009; Barone *et al.*, 2015). Potential explanations for this contrasting result include (i) the difference in temporal nature of the treatments (one-time manipulation in our case *vs* long-run slanted coverage in DellaVigna and Kaplan, 2007), (ii) voters following the media coverage of important campaign events are more likely to vote a priori, or (iii) simply the fact that voting is mandatory in Brazil.[33]

Heterogeneity Regarding TV and Radio Ownership. We reevaluate our baseline estimates according to TV and radio penetration across municipalities. Since the 1980s, local radio has played an important role in politics as a source of information for voters (Ferraz and Finan, 2008, 2011). In Table 7, columns (1) and (2) report the effect of Globo on Lula's vote share in municipalities above/bellow the sample median of TV and radio ownership, respectively. The estimates for municipalities in high TV ownership are significantly higher when compared to estimates in low TV ownership cities. The coefficients are statistically different. Estimates according to radio ownership are similar in magnitude and not statistically significant. These patterns hold despite the fact that TV and radio ownership are highly correlated. In addition, column (3) reports effects according to radio ownership within high and low TV ownership municipalities, respectively. The estimates are never significantly different in magnitude nor statistically speaking. This is consistent with our effect coming from TV viewership. Indeed, the debate was also broadcast via radio while the edited coverage was only shown on TV. Columns (4)-(6) replicate the results for Collor's vote share and find a similar pattern.

[33] Although mandatory, punishments for not voting are small. Turnout in the presidential election of 1989 was 85.6%.

5.2 Evidence from the Restricted Sample

We complement our analysis by employing a similar empirical strategy to our restricted sample in order to take advantage of the individual-level election survey data. This is important for four reasons. First, it dramatically decreases the time interval between before and after treatment, limiting the probability that potentially confounding developments affect our estimates. Second, it allows us to further explore heterogeneity and hence identify who is most likely to be persuaded by the media. Third, we can also directly test the mechanism behind the result as we have data on the individuals' opinion regarding who won the debate. Fourth, using 2^{nd} round vote intentions –fully comparable across polling days– eliminates the need to control for the distribution of 1^{st} round votes across other candidates in our identification strategy.

Our restricted sample estimates based on specification (2) are reported in Table 8. Columns (1) and (2) report the effect of Globo's coverage using individual-level survey data. Our coefficients point to a large and highly significant effect of Globo's coverage on both Lula's and Collor's vote share, -0.086 and 0.126 respectively. For comparability, columns (3) and (4) report restricted sample estimates using electoral data. Consistent with the survey results, we find larger effects associated with Globo's coverage than the full sample approach estimates reported in Table 4. The estimated effect of Globo's coverage is twice as large in the specification with survey data.

Indeed, we should not expect *a priori* these two estimates to be the same. First, the electoral data analysis compares vote shares between the 1^{st} and 2^{nd} rounds, 32 days apart, while our survey data specification compares 2^{nd} round voting intentions interviews taken 4 days apart. While Lula was at a distant second place in the 1^{st} round, he had a larger share of voting intentions and was in a statistical tie with Collor around the time of the debate and thus having more room to suffer from an episode of manipulated coverage. Second, the treatment in each case is different. Being exposed to Globo during the whole time interval between rounds probably mixes a more balanced coverage during most of the period –as suggested by Conti (1999)– with the manipulated episode in the last couple of days, in the case of the electoral data analysis.[34] On the other hand, our survey data specification isolates the effect of the coverage in a cleaner manner. Given all that, the restricted sample electoral data estimates can be viewed as a lower bound.

[34] On page 205, he claims that Globo's management had took an executive decision to provide equal air time to both candidates in the period between rounds. Such decision was abruptly changed for the edited coverage.

Inspecting the Mechanism: Who Won the Debate? All reduced-form evidence presented so far is based on the assumption that watching the manipulated coverage affects voters' relative perception of the candidates, persuading them to change their vote. As discussed in Section 3, Globo included segments of the debate during its main newcast *Jornal Nacional* that do not fairly represent the actual debate across some dimensions and potentially sends a positive signal about the relative quality of Collor with respect to Lula.

We now provide a direct test of the assumption that the manipulated coverage changed voters' perceptions. For individuals interviewed after the debate in our election survey data, we have information regarding whether they watched the debate and about who won the debate in their opinion. By exploring the variation between regions with and without Globo, before and after the news coverage, we are able to measure the manipulation effect on the perception of who won the debate, conditional on having watched the actual debate. Table 9 reports the estimates. Column (1) shows that individuals exposed to Globo's coverage are less likely to report that Lula won the debate. Column (2) replicates the baseline survey data specification from Table 8 only for individuals who watched the debate. The estimate is slightly larger and remains negative and significant. Column (3) includes an indicator whether Lula won the debate as an extra control. The coefficient of Lula winning the debate is large and significant, making the estimated effect of Globo smaller and insignificant. This pattern is consistent with individuals being persuaded by Globo's manipulation, changing their reported opinion regarding the debate performance of candidates and consequently their vote intentions away from Lula.

5.3 Excluding Competing Interpretations

We now outline mechanisms other than the persuasive effects of the manipulated coverage that may explain the negative and significant $\widehat{\beta}^{cov}$ and discuss why it is unlikely that they explain our results. The discussion that follows lends arguments from the framework of DellaVigna and Kaplan (2006), which models the impact of media bias on voting.

Differences in Debate Audience Rates. $\widehat{\beta}^{cov}$ may be estimating the effect of the final debate on Lula's vote share instead of the effect of Globo's edited coverage if municipalities with

Globo have higher audience rates of the final debate.[35] In this case, $\widehat{\beta}^{cov}$ would be negative even if Globo's coverage did not affect Lula's vote share. Such a mechanism is unlikely to explain our estimates for three reasons. First, audience rates are very similar across treatment and control municipalities in our restricted sample as reported in Panel B of Table 3. Second, as shown in full sample specification in Column (4) of Table 4, we estimate significantly stronger effects on Lula's vote shares in municipalities where Globo is the only broadcaster, where audience rates of the final debate should be mechanically lower.[36] Third, even if the final debate have higher audience rates in municipalities with Globo, the inclusion of $\mathbf{X}_{j,1991} \cdot t$ in our baseline specification allows for differences in vote shares' trends across municipalities that are potentially related to audience rates such as average income, schooling and TV ownership levels.

Differences in Priors about Relative Quality. $\widehat{\beta}^{cov}$ may be explained by differences in the mean of priors about the relative quality of candidates instead of the effect of the manipulated coverage. All else equal, if priors about Lula's relative quality have a higher mean in municipalities with Globo, there will be a larger mass of Lula's supporters to switch votes to Collor for any given realization of the information shock produced by the coverage of the final debate, which magnifies the effect of the information shock caused by the final debate. It is unlikely that such a mechanism explains our results for three reasons. First, Lula's vote share in the 1^{st} round is the same across treatment and control groups in our full sample, as shown in Table 3. Second, if anything, priors about Collor's relative quality should have higher means in treatment municipalities because Globo's slanted 1^{st} round coverage favored Collor and harmed its main competitors.[37] Finally, the inclusion of $\mathbf{sh}^{c}_{j,t=1} \cdot t$ and $\mathbf{X}_{j,1991} \cdot t$ in our full sample baseline specification controls for differences in vote shares' trends across municipalities that can be predicted by the 1^{st} round vote shares and socioeconomic characteristics.

[35] The qualitative evidence suggests that Collor performed better than Lula in the last presidential debate but that Globo's manipulated coverage of the debate shows an overperformance of Collor and underperformance of Lula. Hence, it is likely that both the debate and its manipulated coverage generated a positive signal in favour of Collor's relative quality, but the manipulated coverage inflated the content of the signal generated by the debate.

[36] Audience-rates should be mechanically higher in municipalities with more TV broadcasters because all TV broadcasters aired the final debate. Data on audience rates per towns are not available.

[37] The share of news time Globo dedicated to each candidate in first months of the campaign was: in July, Collor, 63 percent; Brizola, 6 percent; Lula, 31 percent, and, in September-October, Collor, 49 percent; Brizola, 31 percent; Lula, 20 percent (de Lima, 1990; Rubim, 1989). Several academics and journalists interviewed in the summer of 1989 concluded that Globo news coverage was slanted against Brizola, Lula and Maluf, as evidenced by taking remarks out of context, editing, and looking for damaging statements (Shidlo, 1990).

Another competing argument would be if priors about Collor's relative quality had lower precision in municipalities with Globo. In this case, the signal generated by the final debate is more heavily weighted when computing the posterior mean and, consequently, a higher mass of voters believe that Collor has higher relative quality after the manipulated coverage, which magnifies the effect of the information shock caused by the final debate. This mechanism is unlikely to explain our results for two reasons. First, the share of individuals who self-report to be undecided before the edited coverage in our election survey is lower in municipalities with Globo. Second, if anything, Globo's slanted 1^{st} round coverage should increase the precision of Collor's perceived relative quality.[38]

5.4 Persuasion Rates

The next step of our analysis is comparing the magnitude of the effect of Globo's manipulated coverage of the last debate of the 1989 election with the magnitudes of other information treatments studied by the media bias literature. Unfortunately, treatment effects are usually not comparable across studies because each analysis uses different left- and right-hand side variables and has a distinct fraction of the population exposed to the treatment. To solve this issue, we compute persuasion rates, as defined by DellaVigna and Kaplan (2007). Formally, we define persuasion rate as

$$f = (v_T - v_C) \cdot \frac{1}{(e_T - e_C)(1-c)} \cdot \frac{(1-c)t_C t_T}{l}$$

where v_j is the vote share of Lula in a two-candidate race against Collor in municipality $j \in \{C, T\}$ and C (T) represents control (treatment), e_j is the share of the voting-age population who is exposed to Globo's coverage of the final debate, and voting-aged population consists of all residents older than 16 in 1989. We denote the share of the voting-age population who would vote in Collor by c and the share which would vote in Lula by l, before treatment. Hence $1 - c - l$ is the share of the voting-age population who does not turn out to vote or vote invalid. $t_j = c + l + (1 - c - l)e_j f$ is the share of valid votes in the voting-aged population.[39] Based on this formula, we interpret persuasion

[38] For fixed levels of mean bias, a sender can benefit one candidate by endogenously increasing (decreasing) the precision of the positive (negative) signals about her quality and by increasing (decreasing) the precision of the negative (positive) signals about the quality of her competitors.

[39] We define t as the share of valid voters in the voting-aged population instead of turnout rates, as usually done by the persuasion literature, as data on the number of registered voters per municipality is not available for the 1989 election.

rates as the percentage of non-persuaded receivers before the treatment that changes the behaviour among those that receive a message, net of the effect of the message in the composition of valid voters.

We estimate $y_T - y_C$ as $\beta^{cov} = -.019$, the coefficient of Lula's vote-share in our favorite specification in column (3) of Table 4. We assume that no voter in the control group watched the manipulated coverage of the final debate, i.e. $e_C = 0$.We set $e_T = 0.32$, the share of households with TV in the treatment group in Panel A of Table 3 (0.53) times the national audience of Globo's coverage of the final debate according to official sources (0.61).[40] We set $t_C = 0.38$ and $t_T = 0.47$, the 2^{nd} round turnout rate in the voting-aged population in Panel A of Table 3 minus the 2^{nd} round share of blank-null votes in the voting-aged population. Finally, we set $c = .3$ as $[= \frac{0.6}{0.6+0.34} \cdot 0.47]$, the 2^{nd} round vote share of Collor in Panel A of Table 3 in terms of valid votes times the share of valid votes in the eligible population, and similarly $l = .17$ $[= \frac{0.34}{0.6+0.34} \cdot 0.47]$.

We compute persuasion rate of $f = 6.2\%$ that sits in the mid-lower range of the across studies distribution of persuasion rates of information treatments studied by the media bias literature calculated by DellaVigna and Gentzkow (2010). Not surprisingly, our persuasion rates are lower than the ones of studies capturing the effects long run slanted coverage.[41]

Our persuasion rates are also economic meaningful in absolute terms. A persuasion rate of around 6 percent implies that a media organization that reach 50% of the audience could change the result of any two-candidate run-off decided by less than 6% of the valid votes with a single intervention like the manipulated coverage of the last debate of the 1989 election.

6 Conclusion

Political debates offer candidates a platform to communicate their policy positions and to display competence to voters. However, the entire role of debates cannot be understood separately from the study of media. Mass media not only broadcast debates but also condense and analyze candidates'

[40] The audience number is from Globo's memory web-page (available at http://memoriaglobo.globo.com/erros/debate-collor-x-lula.htm, accessed in 19-04-2019). One point of audience is equivalent to 1-percent of the households having at least one TV set turned on Globo. This definition is taken from Globo's audience guide (available at http://negocios8.redeglobo.com.br/, accessed in 19-04-2019).

[41] Barone et al. (2015) with $f = 20.3\%$ and time horizon of 15 years, Martin and Yurukoglu (2017) with $f \in [27\%, 58\%]$ and time horizon of 4 years, DellaVigna and Kaplan (2007) with $f = 11.65\%$ and a time horizon of 4 years, and Enikolopov et al. (2011) with $f = 7.7\%$ and a time horizon of 3 months.

performance in their subsequent news coverage. When accurate, this coverage give voters another chance to find a candidate that better suits their preferences. Yet, the media's private interests on the election may encourage them to misrepresent the debate in order to influence voters.

In this paper, we provide evidence of media manipulation through the news coverage of debates. We take advantage of a natural experiment in Brazil regarding the geographical distribution of broadcaster-specific TV signal and the timing of election events in order to disentangle the coverage effect from the debate itself. Our three-step empirical framework first shows that the news coverage of the event by a dominant, but not openly partisan media can change viewers' dispositions about candidates. Second, our differences-in-differences approach shows that this single manipulated news segment was enough to change electoral outcomes. Finally, by exploring both municipality and individual level data, we give direct evidence that the mechanism works through a change in voters' perception of who won the debate.

These results caution that debates alone are not sufficient to improve electoral competition. Party systems in which party labels are uninformative, and the emergence of outsiders whose political track-records are unknown to the public are both abundant. In such cases, while debates will be instrumental to inform voters, influential media outlets will have an opportunity to manipulate the public. Our results shed light on the importance of designing press coverage rules that prevent the possibility of media manipulation of elections.

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Table 1: Online Experiment Descriptive Statistics

	Treatment group		Control group		
	Mean	Std. Dev.	Mean	Std. Dev.	p-value
Panel A: Perception about Candidates					
Vote for Lula Today	0.33	0.48	0.56	0.50	0.02
Lula won Debate	0.22	0.42	0.53	0.50	0.00
Panel B: Participant Characteristics					
Survey time (min.)	10.94	14.13	14.76	25.84	0.71
Age	28.48	6.48	27.51	8.96	0.52
Left/Right Scale	5.80	2.20	6.26	2.03	0.25
Schooling					
High-school	0.22	0.42	0.35	0.48	0.14
Undergraduate	0.63	0.49	0.56	0.50	0.47
Graduate	0.15	0.36	0.09	0.29	0.33
Region					
South	0.15	0.36	0.19	0.40	0.54
Southeast	0.61	0.49	0.51	0.50	0.28
Center	0.00	0.00	0.05	0.23	0.09
Northeast	0.19	0.39	0.23	0.42	0.58
North	0.06	0.23	0.02	0.13	0.29
Observations	54		57		111

The table reports individual level statistics for subjects that participated the online experiment conducted on Amazon's Mechanical Turk. Panel A reports answer to questions relative to participants perceptions/opinions about candidates after the experiment. Panel B reports individual characteristics of survey participants.

Table 2: Edited Debate Highlights and Participants Perception
Experimental Evidence

	Vote for Lula today			
	(1)	(2)	(3)	(4)
Edited Highlights	-0.228	-0.206	-0.258	-0.100
	[0.093]**	[0.100]**	[0.087]***	[0.077]
Left/Right Scale			-0.109	-0.083
			[0.018]***	[0.017]***
Lula won				0.546
				[0.081]***
Observations	111	111	111	111
R-squared	0.05	0.14	0.34	0.56
Demograpich Controls	No	Yes	Yes	Yes

The table reports regression estimates of the effect of watching Globo's edited highlights on the probability of reporting vote for Lula if elections were today. Column 1 reports the estimates of a simple regression of "vote for Lula today" on an indicator of whether the participant watched the edited highlights. Columns 2 and 3 add demographics controls and a self-reported measure of left-right ideology. Columns 4 adds in indicator that takes the value one if participant answered "Lula" to the question "which candidate performed better in the video you watched". Robust standard errors are reported below the coefficients. Significantly different from zero at 99% (***), 95% (**)and 90% (*) confidence level.

Table 3: Descriptive Statistics

	Treatment group		Control group		
	Mean	Std. Dev.	Mean	Std. Dev.	p-value
Panel A: Full Sample					
TV Broadcaster signal availability					
Globo only	0.27	0.01	0.00	0.00	0.00
Globo and other broadcasters	0.73	0.01	0.00	0.00	0.00
Other broadcasters	0.73	0.01	1.00	0.00	0.00
Electoral outcomes					
1st round					
Lula's vote share	0.13	0.09	0.13	0.09	0.77
Collor's vote share	0.37	0.15	0.39	0.14	0.21
Non-valid Votes	0.09	0.04	0.11	0.06	0.00
Turnout	0.52	0.73	0.42	0.12	0.10
2nd round					
Lula's vote share	0.34	0.14	0.33	0.13	0.54
Collor's vote share	0.60	0.15	0.61	0.14	0.69
Non-valid Votes	0.06	0.02	0.06	0.02	0.13
Turnout	0.50	0.72	0.40	0.12	0.09
Demographic Characteristics					
Population (× 1,000)	35.42	200.20	23.98	65.81	0.51
Years of schooling	4.98	0.85	4.53	0.89	0.00
Income per capita (in min. wage)	0.74	0.44	0.58	0.40	0.00
Share of households with TV	0.53	0.26	0.36	0.22	0.00
Share of households with radio	0.75	0.15	0.66	0.13	0.00
Share of pop. in rural areas	0.44	0.23	0.57	0.21	0.00
Number of municipalities	3922		130		
Panel B: Restricted Sample					
Electoral outcomes					
Vote for Lula	0.53	0.50	0.46	0.50	0.11
Vote for Collor	0.33	0.47	0.39	0.49	0.09
Lula won debate	0.21	0.41	0.23	0.42	0.84
Watched debate	0.74	0.44	0.72	0.45	0.73
Demographic Characteristics					
Age	20.06	12.16	19.97	12.35	0.97
Male	0.50	0.50	0.52	0.50	0.65
Years of schooling	8.54	4.23	8.17	3.71	0.35
Observations	8277		118		

The table reports summary statistics of the main variables included in the analysis. Panel A reports municipality level statistics for the full sample and includes variables such as as TV broadcaster signal availability, electoral outcomes and demographic characteristics from the 1991 Census. Income per capita indicates the average municipal income in terms of Brazilian minimum wage in 1991 (equivalent to USD 83,00 in 2019). Panel B reports individual level data statistics for the restricted sample and includes variables such as second-round electoral outcomes and demographic characteristics.

Table 4: Edited Debate Coverage and Vote shares

	Lula's vote-share				Collor's vote-share	
	(1)	(2)	(3)	(4)	(5)	(6)
Globo	0.010	-0.014	-0.019		0.011	
	[0.010]	[0.005]***	[0.005]***		[0.005]**	
Globo and Others				-0.017		0.009
				[0.005]***		[0.005]*
Globo Only				-0.023		0.015
				[0.005]***		[0.005]***
Observations	8104	8104	8104	8104	8104	8104
R-squared	0.70	0.96	0.96	0.96	0.96	0.96
Coeff. equality (*p-value*)	-	-	-	0.002	-	0.001
Political controls	No	Yes	Yes	Yes	Yes	Yes
Socieconomic controls	No	No	Yes	Yes	Yes	Yes

The table reports regression estimates of the effect of Globo's edited coverage on second round's vote shares in the 1989 presidential elections. Columns (1)-(4) reports OLS baseline estimates on Lula's vote share. The specification used in Column (1) includes municipality and time fixed effects. Column (2) includes first-round vote shares as additional controls. Column (3) includes municipal socioeconomic characteristics (population size, average levels of schooling and income, access to water and electricity, and TV ownership) interacted with time. Column (4) splits treatment status according to coverage of other TV broadcasters. Columns (5) and (6) repeat columns' (3) and (4) specification and estimate the effect of the edited coverage on Collor's vote share. Heteroskedasticity-adjusted standard errors clustered at the municipality level are reported in below the coefficients. Significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table 5: Edited Debate Coverage and Vote shares
Sample restricted to treated municipalities with neighbouring control municipalities

	Lula's vote-share				Collor's vote-share	
	(1)	(2)	(3)	(4)	(5)	(6)
Globo	-0.025	-0.012	-0.014		0.008	
	[0.012]**	[0.006]**	[0.006]**		[0.005]	
Globo and Others				-0.011		0.006
				[0.006]*		[0.006]
Globo Only				-0.024		0.013
				[0.008]***		[0.007]*
Observations	700	700	700	700	700	700
R-squared	0.74	0.95	0.95	0.95	0.96	0.96
Coeff. equality (*p-value*)	-	-	-	0.11	-	0.41
Political controls	No	Yes	Yes	Yes	Yes	Yes
Socieconomic controls	No	No	Yes	Yes	Yes	Yes

The table reports regression estimates of the effect of Globo's edited coverage on second round's vote shares in the 1989 presidential elections. We restrict the sample to contain only treated municipalities that share a border with at least one control municipality. Columns (1)-(4) reports OLS baseline estimates on Lula's vote share. The specification used in Column (1) includes municipality and time fixed effects. Column (2) includes first-round vote shares as additional controls. Column (3) includes municipal socioeconomic characteristics (population size, average levels of schooling and income, access to water and electricity, and tv ownership) interacted with time. Column (4) splits treatment status according to coverage of other TV broadcasters. Columns (5) and (6) repeat columns' (3) and (4) specification and estimate the effect of the edited coverage on Collor's vote share. Heteroskedasticity-adjusted standard errors clustered at the municipality level are reported in below the coefficients. Significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table 6: Edited Debate Coverage and Other Electoral Outcomes

	Non-valid votes		Turnout	
	(1)	(2)	(3)	(4)
Globo	0.008		-0.002	
	[0.003]***		[0.003]	
Globo and Others		0.008		-0.002
		[0.003]***		[0.003]
Globo Only		0.008		-0.004
		[0.003]***		[0.003]
Observations	8104	8104	8104	8104
R-squared	0.85	0.85	0.47	0.47
Coeff. equality (*p-value*)	-	0.716	-	0.091
Political controls	Yes	Yes	Yes	Yes
Socieconomic controls	Yes	Yes	Yes	Yes

The table reports regression estimates of the effect of Globo's edited coverage on the share of blank, null votes and turnout. Columns (1)-(2) and (3)-(4) report OLS baseline estimates on the effect on the share of blank and on the share of null votes. Column (5)-(6) report estimates of the effect on voter turnout, proxied by the number of votes per capita. All specifications include municipality and time fixed effects, first-round vote shares and municipal socioeconomic characteristics (population size, average levels of schooling and income, access to water and electricity, and tv ownership) interacted with time. Heteroskedasticity-adjusted standard errors clustered at the municipality level are reported in below the coefficients. Significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table 7: Edited Debate Coverage according to TV and Radio Ownership

	Lula			Collor		
	(1)	(2)	(3)	(4)	(5)	(6)
Globo × TV High	-0.025			0.014		
	[0.005]***			[0.005]***		
Globo × TV Low	-0.017			0.010		
	[0.005]***			[0.005]**		
Globo × Radio High		-0.020			0.010	
		[0.005]***			[0.005]**	
Globo × Radio Low		-0.018			0.011	
		[0.005]***			[0.005]**	
Globo × TV High, Radio High			-0.023			0.013
			[0.005]***			[0.005]**
Globo × TV High, Radio Low			-0.024			0.014
			[0.005]***			[0.005]***
Globo × TV Low, Radio High			-0.016			0.010
			[0.005]***			[0.005]**
Globo × TV Low, Radio Low			-0.019			0.010
			[0.006]***			[0.005]*
Observations	8104	8104	8104	8104	8104	8104
R-squared	0.98	0.98	0.98	0.97	0.97	0.97
Coeff. equality (*p-value*)	0.021	0.515	0.754	0.209	0.622	0.462
	-	-	0.343	-	-	0.996
Political controls	Yes	Yes	Yes	Yes	Yes	Yes
Socieconomic controls	Yes	Yes	Yes	Yes	Yes	Yes

The table reports regression estimates of the effect of Globo's edited coverage on Lula's and Collor's second-round vote shares according to TV and radio ownership. Columns (1) and (4) report the effects for municipalities above/bellow sample median TV ownership. Columns (2) and (5) report the effects for municipalities above/bellow sample median radio ownership. Columns (3) and (6) report the heterogeneous effect according to TV and radio ownership. All specifications include municipality and time fixed effects, first-round vote shares and municipal socioeconomic characteristics (population size, average levels of schooling and income, access to water and electricity, and tv ownership) interacted with time. Heteroskedasticity-adjusted standard errors clustered at the municipality level are reported in below the coefficients. Significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table 8: Edited Debate Coverage and Vote shares
Restricted Sample

	Survey data		Ballot data	
	(1)	(2)	(3)	(4)
	Lula	Collor	Lula	Collor
Globo	-0.086	0.126	-0.049	0.032
	[0.019]***	[0.019]***	[0.008]***	[0.006]***
Observations	8395	8395	740	740
R-squared	0.10	0.09	0.98	0.98
Political Controls	-	-	Yes	Yes

The table reports regression estimates of the effect of Globo's edited coverage on Lula's and Collor's vote shares. Columns (1) and (2) report estimates using survey data — Globo's edited coverage of the debate aired on the late evening of December 15th, 1989. Our survey data were collected in December 12th-15th and 16th, before and after coverage respectively. Survey voting variables indicate 2nd-round vote intention for Lula and Collor. Columns (3) and (4) report the estimates using actual electoral data. They include 1st-round vote shares of other candidates as controls. We restrict our election data sample to include only municipalities located in state-capital cities metropolitan areas to mimic the sampling of our survey data. All specifications include metropolitan areas and time fixed effects. Heteroskedasticity-adjusted standard errors clustered at the state level for the survey data estimates and at the municipality level for the electoral estimates are reported below the coefficients. Significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.

Table 9: Lula's Debate Performance and Edited Coverage

	Lula won debate	Lula vote-share	
	(1)	(2)	(3)
Globo	-0.174	-0.105	-0.016
	[0.021]***	[0.031]***	[0.027]
Lula won debate			0.512
			[0.033]***
Observations	3991	3991	3991
R-squared	0.08	0.11	0.33

The table reports regression estimates of the effect of Globo's edited coverage on survey data outcomes. Column (1) reports estimates on the probability the individual answers Lula as the debate winner. Column (2) reports estimates on the probability the individual reports intention to vote on Lula, as in the previous Table. Column (3) uses the same outcome as in the previous column controlling for whether the individual reports Lula won the debate. All specifications include metropolitan areas and time fixed effects. Heteroskedasticity-adjusted standard errors clustered at the municipality level are reported below the coefficients. Significantly different from zero at 99% (***), 95% (**) and 90% (*) confidence level.