Electoral Punishment in a Connected Brazil

Senior Honors Thesis in International Relations

Abstract

This paper replicates the methodology of Ferraz and Finan (2008) to study the effects of transparent audits and the internet on electoral punishment. As part of an anticorruption program, Brazilian municipalities are randomly selected for audit of federally transferred funds. The audit results are published online and disseminated to judiciaries and oversight bodies after procedures are complete. Using corruption indicators constructed for Ferraz, Finan and Avis (2017), I compare the electoral performance of mayoral incumbent candidates in municipalities whose audit reports were released before versus after the 2012 elections. My research finds that disclosures of corruption, even given internet availability, do not conclusively improve accountability in the 2012 elections as the literature would predict. Instead, my research finds a substantive selection effect—that corruption detection may cause incumbents to not run for reelection in the first place. These conclusions underline the value of having multiple forms of accountability in government and evaluates the success of the Brazilian anticorruption program.

Andrés Rabellino

New York University

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I. Introduction

Political accountability in well-functioning democracies is stipulated to be positively affected by improved access to media channels, as better-informed voters may impose electoral punishment. For example, researchers Claudio Ferraz and Frederico Finan found in their 2008 paper "Exposing Corrupt Politicians: The Effects of Brazil's Publicly Released Audits on Electoral Outcomes" that the disclosure of municipal corruption incidents had a negative impact on the electoral performance of incumbent mayors in Brazil's 2004 municipal elections, especially in municipalities with local radio stations. This study and others overcame traditional difficulties in detecting and measuring corruption by utilizing data from a Brazilian anticorruption program, which randomly audits municipalities in their use of federal transfers and publishes the results online.[1]

By replicating the Ferraz and Finan (2008) methodology, focusing on the 2012 Brazilian municipal elections, using audit data from the same anticorruption program, and integrating an array of internet access measures, my research finds that corruption detection and revelation, even with internet availability, does not conclusively improve mayoral accountability in the 2012 elections as the literature would predict. Instead, my research finds a substantive selection bias—the audit program causes incumbents to not run because of expected electoral and nonelectoral costs.

As with any government policy, the Brazilian anticorruption program needs regular study to evaluate its effectiveness in promoting accountability. My research provides this service by empirically showing how the expected electoral costs from being audited and having had corruption detected may have caused eligible incumbents to reconsider rerunning. Additionally, as media in the world has evolved with increases in internet access, there is an ever-present need

[1] See published audit reports: https://auditoria.cgu.gov.br/

to understand its role in shaping political events. The integration of media access indicators in this study's model produced insignificant effects on electoral punishment, highlighting the internet's shortcomings in promoting accountability. Finally, this study improves the existing understanding of how voters react to corruption allegations, underlining that elections should not be the only way to punish corruption.

II. Literature Review

This section provides a summary of the literature that informed the construction of my initial research theory.

A. Political Accountability, Media and Information

Accountability in politics is predicated on the existence of a participatory framework. Electoral punishment is not only impossible in autocracies, but also less effective where participatory institutions lack credibility (Manin et al. 1999). In a democracy, better political information can enable citizens to hold politicians accountable. These findings are corroborated by the political agency literature (Besley 2006, Ashworth 2012), which describes political accountability as a principal-agent problem. Voters are the principals who seek to control agents they elect. Politicians as agents can either implement policy that favors voters or benefit themselves by enacting policy not favored by voters. Better-informed voters can use elections to screen and discipline politicians for not executing preferred policies. [2]

Uses of political power for personal gain often motivate voters to punish politicians. Although corruption has traditionally been difficult to quantify, a recent body of studies in developing countries have exploited institutional particularities and experimentation to measure

[2] Models on information flows are also relevant in this line of research. For example, the rational learning model (as explained in Stromberg (2015) and applied in Prat and Stromberg (2013)) theorizes how volume of media coverage varies across issues. It assumes content to be informative and without partisan bias.

corruption and examine political accountability in different information environments. In Banerjee et. al (2011b), for example, researchers randomly treated a sample of urban neighborhoods by disseminating report cards on incumbent politicians. The contribution of information in these neighborhoods resulted in improved turnout, reduced vote buying, and a decrease in vote share for low-quality incumbents compared to the control group. Chong et al. (2015)'s experiment in Mexico, however, saw decreases in voter turnout in the treatment group – where charges of corruption in the incumbent party were disclosed. Via a similar mechanism, Ferraz and Finan (2008) tested the effect of random audits and the disclosure of their findings on reelection rates for incumbent mayors. The researchers detected a negative effect on electoral performance where corruption incidence was exposed. This effect was more pronounced in municipalities with local radio stations, indicating the role of media in making the disclosed information more accessible to the electorate. [3]

Similar to Ferraz and Finan (2008), other studies on the relationship between information and accountability track differences in media coverage, but use non-randomized designs to study the effects on elections. Stromberg and Snyder (2008), for example, use the degree of fit (*congruence*) between congressional districts and media markets as an exogenously varying measure of what information gets exposed to voters. They find that members of the U.S. Congress from more *congruent* districts are more responsive to their constituents' preferred policies and services. Greater *congruence* also elicited positive and significant effects in voter knowledge and electoral punishment. Similar studies without exogenous measures of information also observe that media access improves accountability. Chang et. al (2010) finds that the growth of the Italian media sector throughout the country's post-war period resulted in increased electoral punishment of corruption. In a cross-sectional study, Stromberg (2004)

[3] In some studies, researchers have measured corruption independently. For example, Olken (2007)'s investigation of Indonesian road projects compared official project costs with an engineer's estimate of costs to quantify the diversion of funds.

measured the effect of radio penetration on the distribution of funds from FERA, an early New Deal program, and found that US counties with higher penetration of the medium received more relief funds.

Thus, as supported by different designs implemented in multiple countries with elections, the literature holds that media is likely to facilitate participation, representation and accountability. Even while considering that politicians maximize votes by matching the policies they implement with their media exposures (Stromberg (2008)) and that corruption disclosures have resulted in less turnout per some placebo experiments (Chong et al. (2015)), there still exists strong support for the idea that electoral performance falls at the introduction of corruption allegations. This implies that corruption can be a strong motivator for punishment in the ballot box, if voters are informed.

B. Accountability and the Internet

Much has been said of the internet's effect on informing populations and perhaps improving engagement. However, the literature of importance to this paper -- that which studied the effect of media on the relationship between disclosures and accountability – has not considered the internet as a core intermediary in political information flows. This is surprising given findings on the correlates of internet, especially at cross-national and meta-analytical levels. Dalgaard et. al (2011), for instance, exogenized the technology's diffusion by using maps of lightning, as outages cause significant disruptions in internet's accessibility. The paper found that that the weather phenomenon correlated with corruption across time in U.S. states and other countries. Elbahnasawy (2014) suggests that the interaction of e-governance platforms and internet access is negatively correlated with national perceptions of corruption. [4] Boulianne

[4] The experimental literature on accountability does not commonly use data sources on perceptions. These measures are more reasonable and efficient in scale but judged to be non-objective by nature.

(2015) synthesizes studies on social media outlets and finds that an overwhelming majority of the research reports positive relationships between the medium and political engagement.

Studies at the country-level have often exploited broadband internet data and come to a diversity of findings on electoral participation. These are worth exploring given how participation is closely related to electoral punishment. For example, Gavazza et. al (2015) observed that, as internet displaced other media in news content in the United Kingdom, voter turnout decreased, especially among young and less-educated individuals. In contrast, Jaber (2013)'s research in the United States found that broadband access accompanied increases in voter turnout and campaign donation, as well as increased support for the Democratic Party in the 2000s. Miner (2011), in a model of the internet's effect on the 2008 Malaysian elections, found that areas with higher connectivity had lower vote shares for the incumbent party of the semi-authoritarian regime, as well as higher turnover to the opposition. [5]

Engagement is confounded by a complexity factors that prevent the variable from following strict theoretical models. One of these is political bias, as demonstrated by Campante, Durante and Sobbrio (2013)'s working paper on the interaction of internet and politics. While their analysis of Italian data sources found that broadband access negatively affected electoral turnout, especially among ideologically extreme voters, the expansion of the medium also fostered political involvement in web-based, fringe political organizations like the Five-Star Movement, which coalesced to a political party as turnout recovered. Thus, the internet likely motivates engagement, but this does not necessarily mean electoral participation nor mainstream involvement. The internet and its effect on participation as a factor in polarization has been studied in the context of specific elections, mobilizations and realignments, such as in the 2008 and 2016 U.S. Elections (Carlisle and Patton (2013), Allcot and Gentzkow (2017)) and the Arab

[5] This approach is akin to Ferraz and Finan (2008) in its focus on the outcome of a single election with respect to geographic penetration of a medium.

Spring (Breuer et al._2012).

III. Corruption Audits in Brazil – A Case Study

In early April 2003, the Brazilian government of President Luiz Inácio Lula da Silva initiated an anticorruption program known as *Programa de Fiscalização por Sorteios Públicos* (Monitoring Program with Public Lotteries) tasked with randomly auditing municipal governments on their expenditures of federal transfers. Implemented through the Controladoria Geral da União (CGU), or the Brazilian National Comptroller, the program was designed to promote transparency and increase the cost of engaging in corruption. The program started with 26 randomly selected municipalities across Brazilian states, but expanded to auditing 60 municipalities per lottery on a two to four-month basis. With municipalities with a population of up to 500,000 inhabitants eligible for selection, as of 2015 there have been 2,241 audits conducted across 40 lotteries in 1,949 municipalities, with inspected funds dating back to the early 2000s.

Although this study does not have proof of voter exposure to corruption information through the internet, there exists anecdotal evidence of this interaction having happened. First, the internet has become an important medium in Brazil. Currently, it is one of the most connected countries at its income level, with more than 59% of its population connected in 2015, compared to 19% of its population in 2004. [6] Growth in social media networks is also notable, from users being practically nonexistent in 2004 to comprising 71% and 89.2% of internet users in 2011 and 2017, respectively. [7] It is true that TV and radio use is still more generalized, but the penetration of these mediums has remained constant or declined in the same period. Television use, for example, has hovered at the 90% level, while radio use has dipped 10 percentage points

[6] http://data.un.org/Data.aspx?d=WDI&f=Indicator_Code%3AIT.NET.USER.P2
[7] eMarketer (subscription)

from 2009 to 2015.[8] Considered in conjunction with the internet's speed and ease of use [9], these developments show that information on or linked to the CGU audits is likely to have become more accessible because of the internet.

Second, national and local networks have covered the implications of the CGU audits on corrupt mayors. For example, before the 2012 elections in the municipality of Frecheirinha in Ceará, then-mayor Helton Luis was accused of fraud in the execution of social programs between May 2005 and February 2007. The regional tribunal's case was based on the findings of CGU audits of the municipal government in 2010 and 2013. Luis was reelected in October 2012 after online coverage of his exoneration in Globo, a Brazilian media network. Conversely, in Pedrinhas, Sergipe, the ex-mayor José Kleber de Santana Fonseca, was convicted by the federal courts for over-invoicing medical goods, diversion of funds, and fraud in the procurement of medical goods. Although this incident falls outside this study's treatment period, the charges were also detected by the CGU and publicized by Globo. [10] [11]

The consequences and coverage of the audits makes sense given how the process works. The random selection of municipalities is conducted in a public event by the CGU in the national capital Brasília. Both the periodic random selection and the declaration of the results are dramatized, in collaboration with national and local media outlets.

Upon a municipality being drawn, the CGU gathers information on all funds transferred to the municipal government over the previous three to four years and work orders are generated on areas of inspection. Each of these orders assigns an audit task for a government project in a specific sector. Within just a few days, 10 to 15 auditors are sent to the municipality for one to

[8] http://www.teleco.com.br/pnad.asp IBGE
[9] Ceron (2017), http://blog.iweb.com/en/2009/01/comparing-print-television-vs-the-internet/1711.html
[10] http://g1.globo.com/se/sergipe/noticia/2012/02/ex-prefeito-de-pedrinhas-se-e-condenado-apos-acao-do-mpf.html
[11] http://g1.globo.com/ceara/noticia/2012/05/prefeito-de-frecheirinha-no-ce-vai-responder-acao-penal-por-corrupcao.html

two weeks to examine accounts and documentation, to inspect the initiation and quality of public work construction, and to verify the delivery of public goods and services. [12]

The auditors also meet with members of the local community to get direct complaints about malfeasance. The auditors are hired based on a competitive public examination, earn competitive salaries, and receive extensive training prior to arrival to the municipality. After visiting the municipality, a report describing all detected irregularities is submitted to the CGU central office in Brasília. The office compiles the information and publishes a report on its website. The report is also emitted to the Federal Courts of Accounts (TCU), the Federal Prosecutors' Office (MPF), the local judiciary, the Federal Police, and to the municipal legislative branch.

The program has been positively reviewed by academics in terms of its effectiveness in holding politicians accountable. The estimation model from Ferraz, Finan and Avis (2017) finds, for example, that being audited in the past reduces corruption by 8%, while also increasing the probability of experiencing legal action by 20%. [13] Additionally, Nascimento (2015) conducts an actuary analysis that concludes that the audit reports released between 2008 and 2012 adhere to recent government auditing standards.

IV. Theory

The Literature Review section underlines the fact that the internet is not a panacea for citizen engagement nor is it easily comparable to other mediums. Rather, its role in elections is complex and globally uncertain. For example, there is no consensus among researchers as to how

[12] https://building-integrity.org/2017/11/24/how-auditing-can-be-directed-against-corruption-the-case-of-brazils-municipality-facing-auditing-programme/

[13] While this study did not intend to understand the effects of the audit program, it did seek to understand how the policy (and others like it) operates in a different media environment and whether any changes need to be made to its explained mechanisms.

the medium can serve as a distraction as well as a motivator for electoral participation in democracies.

Nonetheless, the experimental literature demonstrates a strong causal effect between corruption disclosures and electoral punishment, especially when citizens are informed. Most notably, Ferraz and Finan (2008) suggests that the presence of radio stations in municipalities renders electoral punishment more likely. Why would the internet have the same effect as radio if the relation between the medium and participation is complex and uncertain? The logical explanation is that *credible* information evokes electoral responses and that the internet does not change the nature of credible information. When new and credible information causes a high share of voters to see electoral punishment as necessary, the internet must act analogously to radio and make the disclosures more accessible and informative to voters, thus leading to a more pronounced drop in electoral performance. Globally, perceptions of bias cause corruption allegations to not to be treated as credible. An accusation from a partisan opponent, for example, may be viewed as politically motivated. Usually, alleging corruption without the correct messenger or explicit proof is not likely to withstand scrutiny from voters.

However, Ferraz and Finan (2008) provides evidence that the random, federal audit program was likely credible to voters. For example, the researchers found no evidence that auditors manipulated results or that the policy was nonrandom in municipality selection. [14] Additionally, Bersch et al. (2016), in a study of Brazil's federal entities, found the organization carrying out the audits (the CGU) to be one of the government's most autonomous and least

[14] Ferraz and Finan (2008) provide evidence of unbiasedness by measuring the effect of the audit policy on electoral outcomes and by checking the statistical differences between the treatment and control samples.

politicized agencies in the state.[15] [16]

Therefore, credible indicators such as these audits should still reward or punish politicians in a predictable way. With these assumptions and others contributed by the literature, my research should find evidence for the following predictions.

A. Hypotheses

H1: being audited has no effect on whether an incumbent mayor is voted out of office.

H2: corruption incidence varies negatively with the likelihood that incumbent mayors are re-elected.

H3: access to internet magnifies the second relationship between corruption incidence and the likelihood of re-election.

If it is true that the audit policy is statistically unbiased, then the first hypothesis is upheld. If it holds that the audit policy is statistically unbiased and credible, then this study should find evidence for the first and second hypothesis. Treating the previous predictions as premises, the third and final hypothesis holds true if the internet informs voters about incumbents' corruption histories. Each of these hypotheses can only hold true if no selection effect is detected—that is, the audit program has no effect on incumbents' decisions to run—and if the data from the sample has enough variation to capture the true effects in the population.

V. Research Design

When first constructing the hypotheses in the previous section, I believed testing them

[15] Two CGU employees were recently accused of providing mayors of selected municipalities information on their audits. They also gave advice on how to hide malfeasance and avoid incrimination during the CGU audit. Investigations are currently underway from the Federal Police in conjunction with the CGU to address the incident.
[16] In addition to the extent study, the experimental literature that I have been exposed to assumes the disclosed information to be credible.

would confirm previous research and paint a clearer picture of the internet's ability to inform voters. I believed that the changing media environment was an excellent reason to extend the Ferraz and Finan (2008) methodology. I also held the strong opinion that better-informed voters engender electoral punishment when the medium of information is credible. I thought that improved internet access would motivate electoral punishment to a higher degree. My study of the Brazilian audit program, however, revealed that better information is not always more effective and that when it is, it is not always in the ways one expects. This section provides the research design that made these results possible.

A. Methods

Claudio Ferraz and Frederico Finan's paper "Exposing Corrupt Politicians: The Effects of Brazil's Publicly Released Audits on Electoral Outcomes" exploits the anticorruption program's random auditing of municipalities to test the effect of corruption disclosures on the electoral performance of incumbent mayors. With a dataset constructed from the audit reports, which detailed the incidence of local government corruption, they compared the electoral outcomes of municipalities whose audit reports were released before versus after the 2004 elections, and which had the same levels of reported corruption. Because the municipalities were selected at random, the set of municipalities whose audit reports were made available after the 2004 elections represented a valid control group.

My study exploited the same research design using more recent election data and it tested the effect of mediums other than radio - specifically the internet. My research also checked for selection bias by testing the audit policy on the decision of eligible incumbents to run for reelection. To create a dataset that would allow me to carry out these tests, I restricted the sample to a set of municipalities with first-term mayors eligible to run for the 2012 elections (Brazilian mayors are allowed reelection for only one additional consecutive term). The dataset specifies

which candidates decided to rerun and the eventual electoral outcomes of those that do. The models that carried out these tests did so by running the effect of being audited, the audit information on detected corruption, and internet access on the eligible incumbents' electoral outcomes and decisions to rerun. Logit regressions were used when the dependent variables were binaries and OLS regressions with state and party fixed effects were used when they were continuous.[17]

If my initial theories were true, the effect of the audit program and its detection of municipal levels of corruption should have corresponded to a reduction in likelihood of incumbent reelection, compared to the baseline reelection rate for the control municipalities (per my second hypothesis). Internet access should have exacerbated the audit release effect (with detected corruption taken into account) but should also have favored noncorrupt incumbents in elections (per my third hypotheses). The same models should have proved inconclusive when the dependent variable is the eligible incumbents' decisions to rerun.

The corruption data spans from 2006 to 2013. This made the study of the 2012 election most optimal because it maximized the number of municipalities in the treatment group (pre-election audits released between 2008 and 2012). This was preferable to focusing on the 2008 elections because there were fewer municipalities in the treatment group (2006 to 2008) compared to the control group (2008 and 2012). In my study, municipalities audited after the 2012 elections constituted the control group (post-election audits).

To conduct the analysis, an initial variable was constructed to reflect if an incumbent was reelected or not in a municipality in the 2012 elections. The movements in this variable as a result of a change in the audit release binary—indicating whether an audit was conducted and

[17] Running a conditional fixed effects model with a logit regression is advantageous in some cases and disadvantageous in others. Citing the advice of Alastair Smith, I decided to run the logit regressions without fixed effects for party and state. For more information, refer to Beck (2015).

publicized for a municipality—theoretically demonstrates, for a given level of detected corruption, how much the audit policy and its results affected the reelection chances of Brazilian mayors in specific municipalities. Measures of electoral performance other than the reelection binary were also used, including vote shares, win margins and election-by-election changes in vote shares and win margins. To analyze the effect of internet access in the municipalities (measured in the year of the election), I simply added that variable to the multivariate regression in interactions with all the other main variables (refer to Estimation Strategy for more details).

B. Data

This study used corruption data from Ferraz, Finan and Avis (2017), a paper that analyzes the effect of the audit program on political corruption through electoral and judicial accountability. The researchers constructed the data from a CGU administered database that specifies all audit reports starting with the 20th lottery in 2006 until the 38th lottery in 2013. Their measure of corruption is the log of the number of corruption irregularities. Knowing that each corruption irregularity stems from the results of a specific service order in an audit, and that corruption incidence increases with the number of service orders, I measured this variable as the number of corruption irregularities divided by the number of service orders for an audit of a given municipality. This provided a distributed measure of corruption for a given municipality's mayoral administration.[18] Control characteristics from the IBGE 2000 Census were also used in Ferraz, Finan and Avis (2017) and integrated in my study. They include measures of income per capita, population, income inequality, illiteracy, and urbanization.

In addition to the municipal information provided by the Ferraz, Finan and Avis (2017)

[18] Corruption incidence in Ferraz and Finan (2008) were constructed by the authors while that of Ferraz, Finan and Avis (2017) were constructed by Brazil's CGU. Because of this, these two measures are not equivalent. The average number of corruption incidents in the former is 1.76, while in the latter it is over 60. To hold consistency with the data, this study uses a corruption variable more akin to that of Ferraz, Finan and Avis (2017).

dataset, IBGE's regular publication known as Perfil dos Municipios, available since 1999, introduced measures of media access as well as controlled for institutional features in each municipality. Collected via a survey format, the resource identifies municipalities that have a local internet service provider, offer public access to Wi-Fi and have local TV and radio stations. With data on the budgetary and structural features of local government, including whether a municipality has a judge, this study controlled for most of the effects also accounted for in the extant study.

Data on fixed broadband subscriptions per municipality from the Brazilian telecom authority ANATEL was used as another proxy for internet accessibility in this study. The data is available from 2007 to 2017 on a quarterly and monthly basis. For this study, I calculated the average number of fixed broadband subscriptions in a municipality in 2012 and divided this by population numbers from the IBGE to construct the internet access proxy variable.[19]

The elections data and mayor characteristics came from the Tribunal Superior Eleitoral (TSE), which published results for the 2008 and 2012 municipal elections. These datasets contain vote counts for each candidate by municipality, along with various other characteristics including candidate sex, education level, occupation, and party[20]. With this resource, I matched candidates across elections to construct a set of dependent variables, including whether the incumbent mayor was re-elected, vote shares, and change in electoral performance between the 2008 and 2012 elections.[21]

[19] ANATEL data:
[20] Klasnja (2017) and Klasnja and Tucker (2013) provide theoretical and empirical justification for the necessity of controls for income and education for studies on accountability.
[21] TSE Data: http://www.tse.jus.br/eleitor-e-eleicoes/estatisticas/repositorio-de-dados-eleitorais-1/repositorio-de-dados-eleitorais

C. Variables

	Description	Source
Y_1 –election results of rerunning incumbents. **N = 321** **2008 – 2012**	**Is the rerunning incumbent reelected? 2012** **Vote Share 2012** **Win Margin 2012** **Change in vote share** (percentage of total vote) of incumbent mayor of municipality (m) in election year (2012) compared to previous election year (2008). **Change in win margin** in election year (2012) compared to last election (2008).	Tribunal Supremo Eleitoral The Brazilian Electoral Commission
Y_2 – whether an eligible incumbent reruns. **N = 466** **2008 – 2012**	**Does the eligible incumbent rerun? 2012**	Tribunal Supremo Eleitoral The Brazilian Electoral Commission
X_1	**Preelection audit.** Was the municipality audited or not before the election at year (2012) and after previous election (2008)	Ferraz, Finan and Avis (2017)
X_2	**Corruption** Number of acts of corruption divided by number of service orders for an audit of municipality (m) in year of audit (y- α). [22]	Ferraz, Finan and Avis (2017)
$X_{3,A}$	**Broadband Penetration** Percentage of municipal population with broadband internet users in municipality (m) at year of election (y)	ANATEL Brazilian telecom authority IBGE Population Estimates
Controls 1	**Mayoral characteristics** (sex, net worth, campaign spending, place of birth, etc.)	Tribunal Supremo Eleitoral The Brazilian Electoral Commission
Controls 2	**Socioeconomic & political characteristics** (population, income per capita, illiteracy rates, urban-rural share, whether municipality has judge)	Ferraz, Finan and Avis (2017) IBGE Census 2000
State & Party Fixed effects	-	-
$X_{3,B}$	**Radio** in municipality	IBGE, Perfil dos Municípios 1999-2010

[22] α = years since audit

$X_{3, C}$	**TV** in municipality	IBGE, Perfil dos Municípios 1999-2016
$X_{3, D}$	**Internet service provider (ISP)** with service in municipality	IBGE, Perfil dos Municípios 1999-2016
$X_{3, E}$	**Public and free Wi-Fi** provided by municipal government via access centers.	IBGE, Perfil dos Municípios 1999-2016

D. Summary Statistics

The statistics and the analysis that follows on Table A were estimated for the 321 municipalities that were audited between the 20th and 38th lottery and governed by a first-term mayor who ran for reelection in 2012. It includes descriptive statistics of this study's corruption measure, electoral performance and the municipalities' governmental, socioeconomic and media characteristics. It is constructed similarly to Table 1 from Ferraz and Finan (2008). The statistics report, as a check for randomization, whether major differences exist between municipalities audited before and after the elections. Column (1) reports the means for the 245 municipalities whose audit results were released before the elections and constitute the treatment group. Column (2) reports the means for the 76 municipalities whose audit results were released after the elections and constitute the control group. Column (3) reports the difference in means and column (4) presents the p-values of a t-test of these differences in means for each variable.

The political characteristics in Panel A demonstrate that Brazilian mayors running for reelection enjoy an incumbency advantage and that it is unlikely for more than three political parties to be competing in a given municipality. These results, and that of the party characteristics, are in the ballpark of Ferraz and Finan (2008)'s summary statistics. It is important to note, however, that even though 21 political parties are represented in our sample, over 75% of the elected mayors belong to one of the six major parties presented in Panel B. Like in the extant study, Panel C indicates that the municipalities in the sample tend to be less populated and relatively poor. An important caveat for Panel C is that the data used, received

from Ferraz, Finan and Avis (2017), was collected in the 2000 IBGE Census. Panel D's data, which was collected in 2012 by the IBGE in their Perfil dos Municípios publication, verifies that Brazil has a relatively low penetration of newspapers and broadband and that radio, TV and other forms of internet have a greater presence in its average municipalities.

Because column (3) shows only small differences in means between the municipalities audited preelection and postelection, the characteristics listed are therefore well distributed between the treatment and control groups. Additionally, the small differences between the groups are not statistically significant at a 10% level across 29 of the 31 characteristics. Controlling for the variables with statistically significant differences does not affect the estimation results. [23]

[23] The descriptive statistics of the dataset with 466 observations of all eligible incumbents will be provided in a future version of this paper.

Table A: Municipal Characteristics	Preelection Audit	Postelection Audit	Difference	p-values
Panel A: Political				
Reelection Rate	0.617	0.576	0.041	
Number of Parties	2.579	2.728	-0.149	0.320
Panel B: Mayoral				
Age	49.850	49.820	0.03	0.980
Schooling Level (2-8 scale)	6.583	6.531	0.052	0.829
Female	0.117	0.129	-0.012	0.798
Member of PMDB	0.200	0.207	-0.007	0.904
Member of PT	0.117	0.125	-0.008	0.860
Member of PSD	0.133	0.102	0.031	0.476
Member of PSDB	0.117	0.098	0.019	0.662
Member of PP	0.050	0.090	-0.04	0.314
Member of PDT	0.033	0.098	-0.065	0.109
Panel C: Socioeconomic and Political				
Log of Municipal Population	9.201	9.337	-0.136	0.373
Illiteracy Rate (%)	24.321	25.256	-0.935	0.635
Urban (%)	0.541	0.570	-0.029	0.381
Income per Capita ($R)	274.513	260.864	13.649	0.535
Income Inequality (Gini)	0.548	0.553	-0.005	0.588
Zoning Laws	0.350	0.363	-0.013	0.848
Economic Incentives	0.617	0.605	0.012	0.873
Public Employment by Population	0.058	0.053	0.005	0.071
Police Force	0.150	0.207	-0.057	0.318
Judiciary District	0.367	0.473	-0.106	0.139
Panel D: Media				
Local Newspaper	0.350	0.320	0.030	0.660
Local Radio	0.517	0.582	-0.065	0.359
Broadband Penetration	-4.173	-4.187	0.014	0.944
Local TV	0.517	0.602	-0.085	0.231
ISP	0.117	0.113	0.004	0.941
Public Wi-Fi	0.702	0.694	0.008	0.912
Panel D: Corruption				
Corruption	2.926	2.734	0.192	0.291

Notes: Reelection rate is the proportion of mayors running for reelection in 2012 that won. Number of parties in 2012 is the average number of political parties that ran in the 2012 elections. PMDB, PT, PSD, PSDB, PP, and PDT are major political parties in Brazil. Urban (%) is the share of households that live in urban areas. Log per capita income is the log of the average monthly per capita income of a household. Income inequality is the Gini coefficient computed for monthly income; Zoning laws is an indicator for whether the municipality has zoning laws; Economic incentives is an indicator for whether the municipality provides economic incentives to businesses. Public employment by population is the number of public employees in a municipality divided by the municipality's 2012 estimated population at the time of the audit. Police force is an indicator for whether a municipality has its own police force. Judiciary district is an indicator for whether the municipality has a judiciary district. Local Newspaper is an indicator for whether a municipality has a newspaper. Local Radio is an indicator for whether a municipality has a radio station. Log of Broadband Penetration is equivalent to the 2012 number of broadband plans in a municipality divided by the 2012 estimated population, logged. Local TV is an indicator of whether a municipality has a TV station. ISP is an indicator of whether a municipality has access to an internet service provider. Public Wi-Fi is an indicator of whether a municipality government offers public and free Wi-Fi via access centers. Guaranteed Wi-Fi is an indicator of whether a municipality guarantees Wi-Fi access at free or no cost, with coverage varying by municipality. Internet Expansion Program indicates if a municipality is running a program that expands internet access to low-income areas and groups. Digital Inclusion Program indicates whether a municipality has a plan for digital inclusion.

VI. Estimation Strategy

A. Legend

E_{msp} – electoral performance of an eligible incumbent who ran for reelection in municipality *m* of state *s* as member of party *p*.

D_{msp} – decision of an eligible incumbent to run for reelection.

C_{msp} – acts of corruption committed under administration of incumbent divided by the number of service orders in an audit of a municipality.

A_{msp} – binary variable, audit of municipality released prior to the elections or not. Effect of being audited and of the public release of audit information.

M_{msp} – categorical or continuous variable for the existence of a medium in a municipality.

X_{msp} – vector of municipality and mayor characteristics.

v_{sp} – state and party fixed effects.

ε_{msp} – random error term.

B. Modeling the Effects on Electoral Outcomes of Rerunning Incumbents

Model (1) to estimate an average effect of the audit policy on electoral outcomes:

$$E_{msp} = a + \beta A_{msp} + X_{msp}\gamma + v_{sp} + \varepsilon_{msp}$$

Model (2) to estimate the effect of information on incumbent's corruption activities:

$$E_{msp} = a + \beta_1 A_{msp} + \beta_2 C_{msp} + \beta_3 (A_{msp} * C_{msp}) + X_{msp}\gamma + v_{sp} + \varepsilon_{msp}$$

*β_2 captures the causal impact of the policy, conditional on the municipality's level of corruption.

Model (3) to estimate impact of internet (radio):

$$E_{msp} = a + \beta_1 A_{msp} + \beta_2 C_{msp} + \beta_3 M_{msp} + \beta_4 (A_{msp} * M_{msp}) + \beta_5 (A_{msp} * C_{msp}) + \beta_6 (A_{msp} * C_{msp} * M_{msp}) + X_{msp}\gamma + v_{sp} + \varepsilon_{msp}$$

C. Modeling the Effects on the Decision to Run of Eligible Incumbents (Selection Effect)

Model (1) to estimate an average effect of the audit policy on electoral outcomes:

$$D_{msp} = a + \beta A_{msp} + X_{msp}\gamma + v_{sp} + \varepsilon_{msp}$$

Model (2) to estimate the effect of information on incumbent's corruption activities:

$$D_{msp} = a + \beta_1 A_{msp} + \beta_2 C_{msp} + \beta_3 (A_{msp} * C_{msp}) + X_{msp}\gamma + v_s + \varepsilon_{msp}$$

*β_2 captures the causal impact of the policy, conditional on the municipality's level of corruption.

Model (3) to estimate impact of internet (radio):

$$D_{msp} = a + \beta_1 A_{msp} + \beta_2 C_{msp} + \beta_3 M_{msp} + \beta_4 (A_{msp} * M_{msp}) + \beta_5 (A_{msp} * C_{msp}) + \beta_6 (A_{msp} * C_{msp} * M_{msp}) + X_{msp}\gamma + v_{sp} + \varepsilon_{msp}$$

VII. Results

The following subsections detail the estimation results from this study's models. The audit program is statistically unbiased, per the findings of section A, corresponding to the conclusions of Ferraz and Finan (2008). The effects of the audits, conditional on their detected corruption, present no significant variation (section B). According to section C, the internet and other media do not significantly impact electoral punishment. Accounting for the possibility of selection effect, section D finds that the higher corruption detected causes eligible incumbents to

not run for reelection, irrespective of whether its preelection or postelection.

A. The Average Effect of the Audits on Electoral Outcomes

This subsection investigates the average effects of the audit program on various measures of electoral performance. These effects are detailed in Table A, which presents the regression results from several variations of equation (1) from the Estimation Strategy section, subsection A. Column (1) represents a model that estimates the effects of the audit program on the probability that an incumbent running is reelected. Columns (2) through (5) estimate the effects of the program on incumbent vote share and win margin, and the change in incumbent vote share and win margin between the 2008 and 2012 elections.

The results from column (1) suggest that the audits and their disclosed information did not, on average, have a significant effect on the reelection outcomes of incumbent mayors running for reelection. Even though the probability of reelection is lower in municipalities subject to preelection audits (column [1]), we cannot reject the possibility that this effect is not statistically different from zero (standard error is 0.317).

Although audits do not appear to have significantly affected reelection probabilities, winning or losing the election is a non-continuous measure. The program may have impacted other electoral measures, such as vote shares and margin of victory without affecting the election outcome. However, as presented in columns (2) through (5), there is no evidence that the audit policy affected the other measures of electoral performance. The audit policy's effects on each of the four measures are statistically insignificant at the 10% level. This effect on the election outcome by the audit program is expected, given that the policy depends on randomized selection and is therefore intended to be unbiased.

Table B: Average Audit Effect on Elections	**Models b/se**				
Variables	Pr(reelection) (1)	Vote share (2)	Win Margin (3)	Change in Vote Share (4)	Change in Win Margin (5)
Preelection Audit (β)	-0.107 (0.317)	-0.004 (0.022)	-0.006 (0.014)	-0.004 (0.021)	0.009 (0.038)
N	321	321	312	315	288
Measure of Fit +	0.0778	0.105	0.847	0.496	0.240
Overall significance test -	0.0039	0.0032	0.000	0.000	0.0000

Significantly different from zero at 99 (***), 95 (**), 90 (*) % confidence.
+ adjusted R^2 for (1), pseudo R^2 for (2) – (5)
- Chi^2 test p-value for (1), F test p-value for (2) – (5)

B. The Average Effects of Audits on Electoral Outcomes Conditional on Detected Corruption

Because of the random release of the audit, it can be inferred that the corruption detected in the reports can exogenously affect the electoral outcomes. This is, after all, the effect reported by Ferraz and Finan (2008). This section conducts the same tests – introducing the corruption variable to show the effect of a preelection audit, varying by its level of detected corruption, on electoral outcomes. The format of Table B, where these results are displayed, and the construction of the electoral outcome variables, are analogous to those of section A.

Columns (1) through (5) demonstrate that the interaction of the audit policy and the corruption detected do not have significant effects on various measures of electoral performance. This means that corruption does not significantly influences vote behavior, conditional on that it is revealed preelection by the audits. This is true even though the audit policy is unbiased, per the results from the previous section.

Table C: Average Audit Effect on Electoral Performance, with Corruption detected	**Models by Dependent Variable** **b/se**				
Variables	**Pr(reelection) (1)**	**Vote share (2)**	**Win Margin (3)**	**Change in Vote Share (4)**	**Change in Win Margin (5)**
Preelection Audit (β_1)	-1.192 (0.867)	-0.082 (0.056)	0.037 (0.036)	-0.086 (0.055)	0.006 (0.102)
Corruption (β_2)	-0.357 (0.251)	-0.032* (0.017)	0.023** (0.011)	-0.033** (0.016)	0.003 (0.030)
Corruption and Preelection Audit (β_3)	0.365 (0.272)	0.026 (0.018)	-0.013 (0.012)	-0.023 (0.019)	0.002 (0.032)
N	304	304	301	304	301
Measure of Fit +	0.0923	0.1176	0.7954	0.4695	0.2224
Overall significance test -	0.0051	0.0024	0.0000	0.0000	0.0000
Significantly different from zero at 99 (***), 95 (**), 90 (*) % confidence. + adjusted R^2 for (1), pseudo R^2 for (2) – (5) - Chi^2 test p-value for (1), F test p-value for (2) – (5)					

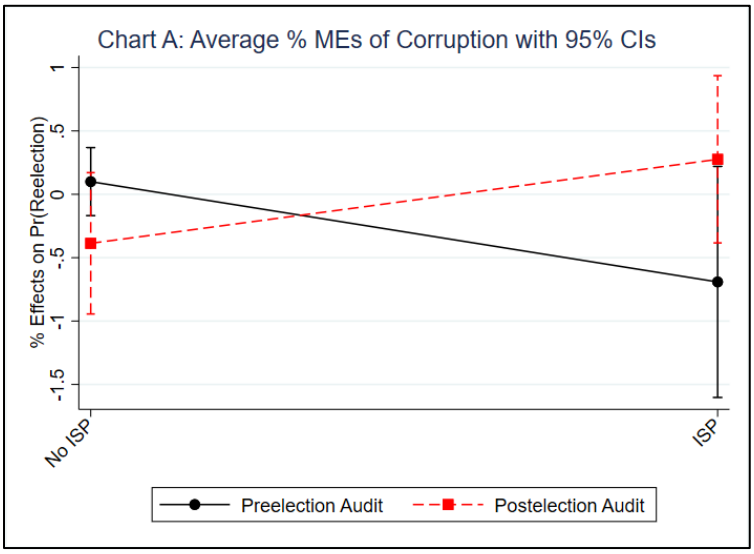
C. The Average Effects of Audits on Electoral Outcomes Conditional on Detected Corruption and Local Media

The following section reports the effects of the audits and their detected corruption when considering the influence of local media. Eight media variables are used in this subsection, six of which pertain to internet access and the remaining two being binaries on the presence of local TV and radio stations. Out of the six internet access variables, only the Broadband Penetration measure is continuous while all other are categorical indicators on the presence of a certain form of internet (refer to Table A: Summary Statistics for detailed descriptions). The testing of my hypothesis on the effect of media access on electoral punishment is represented by the interaction of the audit release binary, the continuous corruption variable and the media access variable, which is continuous or categorical depending on the measure used.

Table D: Average Audit Effect on Electoral Performance, with Corruption detected and Media	**Models b/se**	
Variables	**ISP on Pr(reelection) (1)**	**Radio on Pr(reelection) (2)**
Preelection Audit (β_1)	-1.157 (0.895)	-1.243 (0.986)
Corruption (β_2)	-0.317 (0.253)	-0.361 (0.253)
Corruption and Preelection Audit (β_3)	0.413 (0.278)	0.374 (0.294)
ISP (β_4)	0.729 (1.192)	
Preelection Audit × ISP (β_5)	0.148 (1.622)	
Preelection Audit × Corruption × ISP (β_6)	-0.551* (0.333)	
Radio (β_4)		0.312 (0.595)
Preelection Audit × Radio (β_5)		0.011 (0.869)
Preelection Audit × Corruption × Radio (β_6)		0.006 (0.215)
N	315	315
pseudo R^2	0.096	0.084
chi^2 p-value	0.0025	0.0114
Significantly different from zero at 99 (∗∗∗), 95 (∗∗), 90 (∗) % confidence.		

My regression results find little evidence that media access intensifies a punishing effect of the audits per different levels of corruption. Table D, model (1), which observes the effect of the presence of an internet service provider (ISP) in a municipality on the probability of reelection, is the single model for which the triple interaction of audit, corruption and media resulted in a coefficient significant at the 10% level. Holding the corruption variable constant, the model shows a crossover interaction between ISP and Preelection Audit, as displayed on Chart A. However, given that none of the main effects are significant and that their confidence intervals overlap with zero, I cannot prove beyond a reasonable doubt that these effects do not equal zero in the population. This means that it is impossible to discern ISP's impact on the effect of corruption on reelection probabilities.

In addition to the insignificance of the main effects, no other model with an alternative electoral performance measure as the dependent variable (vote shares, win margins, or the change in these indicators election-year by election-year) reported a significant triple interaction coefficient at the 10% level. Varying the measure of internet or media also does not produce a significant relationship of media on electoral punishment. For example, model (2) detects no significant impact from having a local radio station in a municipality on the probability of reelection (running counter to the findings of Ferraz and Finan (2008) for the 2004 elections).



D. The Role of Selection Bias – an Incumbent Mayor's Decision to Run

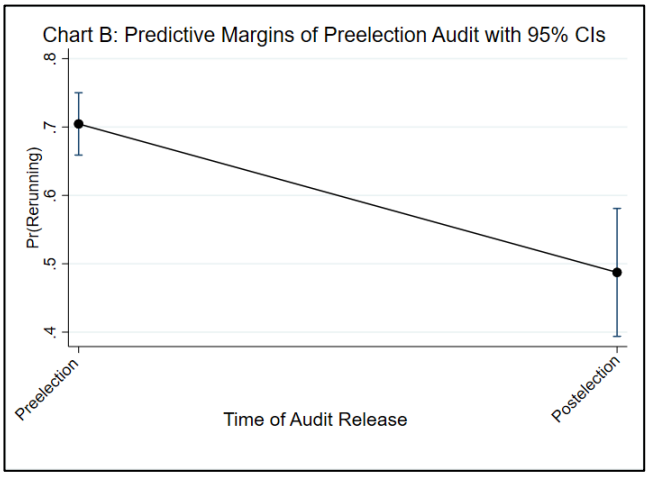
To test for the possibility of a selection effect, I refer to a dataset of 466 eligible incumbents that were audited.[24] The goal is to determine if the audit policy and the information it reveals, as well as the local media, influence an eligible incumbent's decision to run for reelection. I achieve this by running the same sets of x-variables in the previous sections' models on a binary corresponding to the eligible incumbents' decisions to rerun. The models' results are reported in Table E.

[24] Seven incumbents who were audited postelection and decided to run for reelection and lost are excluded to restrict the analyses of audits released and corruption detected to only the incumbents, not newly elected mayors.

Table E: Average Audit Effect on Decision to Run, with Corruption detected and Media	**Models b/se**			
Variables	**Preelection Release on Pr(rerunning) (1)**	**Corruption on Pr(rerunning) (2)**	**ISP on Pr(rerunning) (3)**	**Guaranteed Wi-Fi on Pr(rerunning) (4)**
Preelection Audit (β_1)	0.983*** (0.240)	-1.206 (0.782)	-0.956 (0.800)	-1.254 (0.795)
Corruption (β_2)		-0.510** (0.204)	-0.515** (0.205)	-0.519** (0.207)
Corruption and Preelection Audit (β_3)		0.451** (0.224)	0.360 (0.228)	0.534** (0.230)
ISP (β_4)			-0.037 (0.829)	
Preelection Audit × ISP (β_5)			-2.530* (1.363)	
Preelection Audit × Corruption × ISP (β_6)			0.953** (0.399)	
Guaranteed Wi-Fi (β_4)				1.085 (0.866)
Preelection Audit × Guaranteed Wi-Fi (β_5)				0.450 (1.281)
Preelection Audit × Corruption × Guaranteed Wi-Fi (β_6)				-0.664** (0.313)
N	446	441	441	441
pseudo R^2	0.0709	0.0672	0.081	0.081
chi^2 p-value	0.0002	0.0039	0.0015	0.0015
Significantly different from zero at 99 (***), 95 (**), 90 (*) % confidence.				

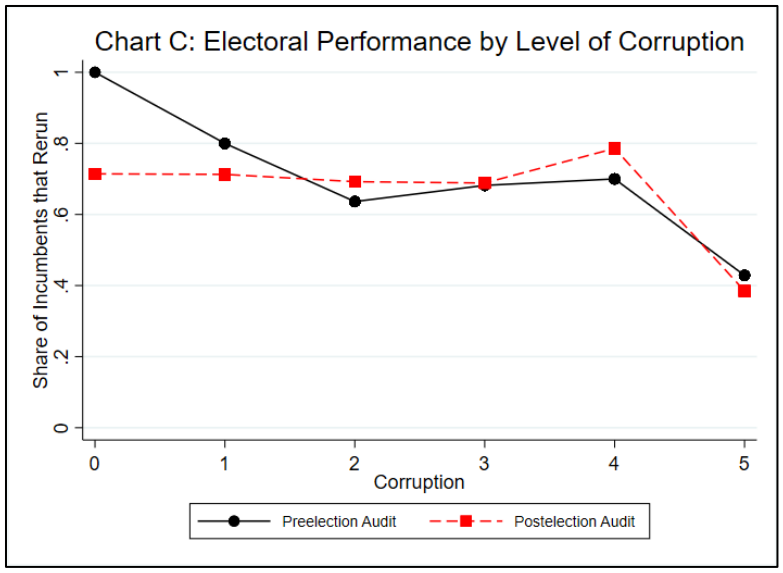
I. The Average Effect of the Audits on the Decision to Run

The results from model (1) suggest that the audits and their disclosed information did, on average, have a significant, positive effect on eligible incumbent mayors' proclivities to run for



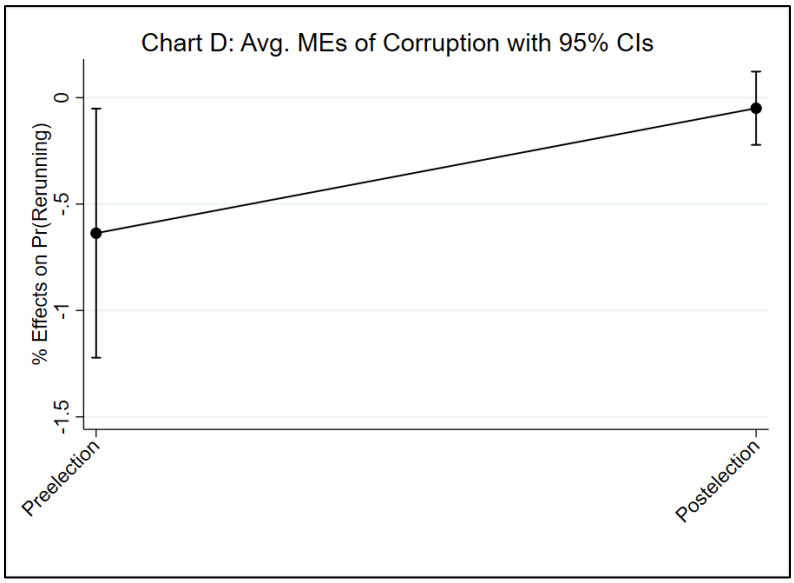
reelection. Because the log-odds coefficient is significant at the 1% level of confidence, I can reject the null hypothesis that the effect of the audit policy is statistically different from zero. The effect on the probability of rerunning is displayed in Chart B. According to the marginal effects plot, having an audit released preelection increases the probability of rerunning by more than 20%.

II. The Average Effect of the Audits on the Decision to Run, conditional on Detected Corruption



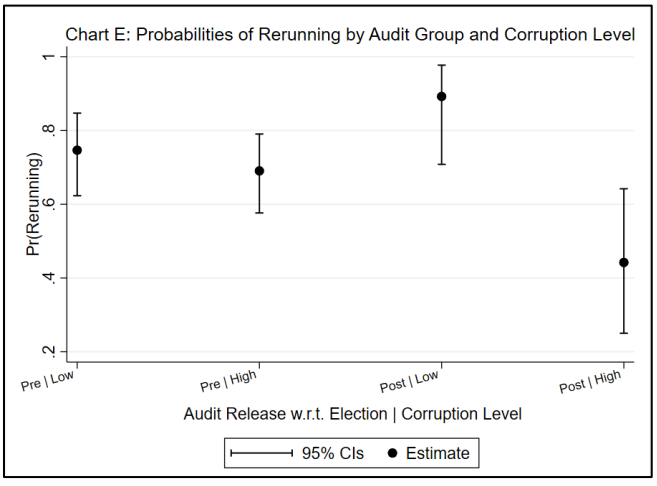
Per the results of model (2), there is strong evidence that the likelihood of rerunning varies negatively as corruption detected increases. Chart C displays these effects for the preelection and postelection release groups. As corruption detected increases at the observational level, Chart C reports a decline in the reran rate, suggesting that incumbents rather run when less corruption is revealed.

Whether the audit release timing matters for the incumbent, however, is unclear. Chart D shows that the difference between the preelection and postelection effect is insignificant—the confidence intervals for both cases overlap. Based on the location of these marginal effects on the plot, it is safe to assume that the average marginal effect of corruption for the preelection audited group is negative and possibly close to zero and that the same measure for the postelection audited group is a number approximately close to zero. Given the similarity of the plotted lines on Chart C and the findings from Chart D, the negative effect of higher corruption



on the probability of rerunning seems to persist regardless of whether the audit release is preelection or postelection.

Chart E shows how the predicted probability of rerunning changes between less corrupt



and more corrupt individuals in the preelection and postelection segment. Given that the confidence intervals overlap for the incumbents subject to audits released preelection, it is impossible to determine if the differences between low and high corruption in this segment are significant. However, incumbents subject to postelection-released audits report a significant difference between the effects of low and high corruption detection.

III. The Average Effect of the Audits on the Decision to Run, conditional on Detected Corruption & Local Media

The impact of local media on incumbents' decisions to run is nonexistent or inconclusive, per the findings of this section. The results for models (3) and (4) show that the effects of having an ISP or guaranteed Wi-Fi in a municipality run opposite to each other in the interaction term with the audit policy and its detected corruption. The visuals can convey this finding. Chart F and G both display crossover effects between the preelection and postelection groups when an ISP or Guaranteed Wi-Fi is present. However, the effect of ISP is positive and significant,[25] while for Guaranteed Wi-Fi it is indistinguishable from zero and insignificant. Additionally, Charts H and I display no consistent trends on how changes in corruption affect the decision to rerun when one of these mediums are present. Finally, no other measures of local media presence produced a significant coefficient for the interaction term when applied to the binary dependent variable.

[25] At least in the preelection group

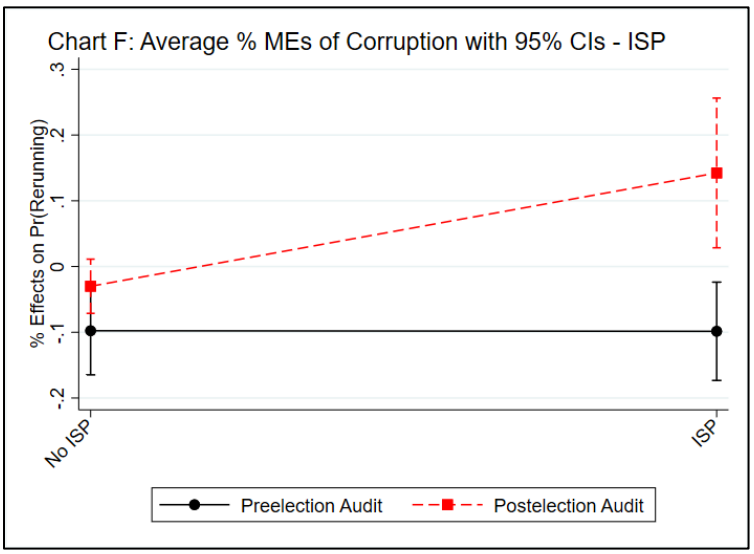


Chart F: Average % MEs of Corruption with 95% CIs - ISP
% Effects on Pr(Rerunning)
-.2
-.1
0
.1
.2
.3
No ISP
ISP
Preelection Audit
Postelection Audit

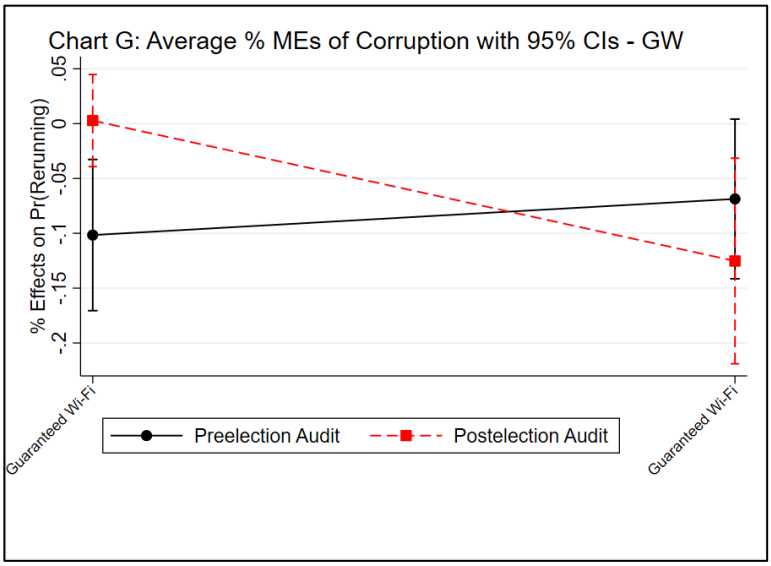


Chart G: Average % MEs of Corruption with 95% CIs - GW
% Effects on Pr(Rerunning)
-.2
-.15
-.1
-.05
0
.05
Guaranteed Wi-Fi
Guaranteed Wi-Fi
Preelection Audit
Postelection Audit

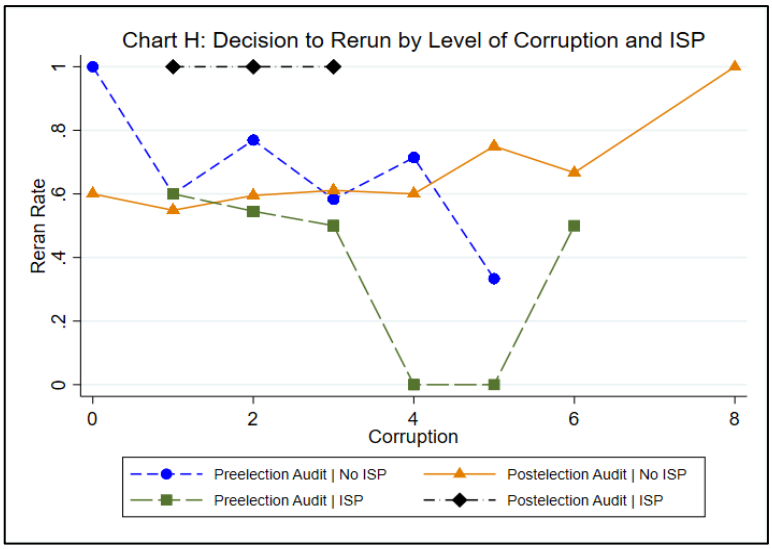
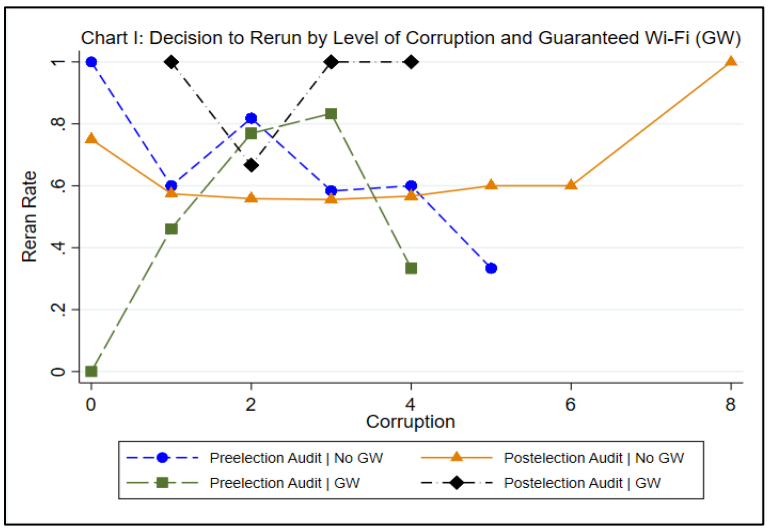


Chart H: Decision to Rerun by Level of Corruption and ISP
Reran Rate
0
.2
.4
.6
.8
1
0
2
4
6
8
Corruption
Preelection Audit | No ISP
Postelection Audit | No ISP
Preelection Audit | ISP
Postelection Audit | ISP



VIII. Interpretation

A. Incumbent Incentives

Although this paper diverges from the empirical results of the extant study, it does not diverge in terms of a theoretical framework. Ferraz and Finan (2008) found that the release of audits detecting corruption preelection dampened the electoral performance of audited incumbents. Effects like these, however, do not exist indefinitely because the incentives of actors are destined to change so they may maximize their utility in the new environment. Therefore, a possible interpretation of my findings—the program's insignificant effect on 2012 elections and significant, possibly negative, effect on the decision to run when corruption increases— is that eligible incumbents revealed to be corrupt are less likely to have run because of the punishments expected to be inflicted by electoral and non-electoral mechanisms after preelection audit. After all, it is reasonable to expect for eligible incumbents labeled as corrupt (and thereby rendered unpopular) to opt for pulling out from the election race.

Electoral punishment, however, is not the sole form of accountability that corrupt politicians may be subject to. When the CGU detects corruption in municipal administrations,

the results are shared with various branches of government, including the municipality's local judiciaries. This mechanism is reflected in Ferraz, Finan and Avis (2017), which finds that drops in detected corruption in municipalities that are audited twice is mostly the result of non-electoral forms of discipline, such as those stemming from a judiciary. Therefore, the same logic can be applied to incumbents that are disqualified by Brazil's elections commission from rerunning for mayor because of a CGU corruption audit—there are costs to expect if corruption is detected. They may include judicial proceedings disqualifying the incumbent from running just as much as the incumbent deciding for themselves to pull out. If the selection bias observed in my dataset has evolved from actors adapting to the new environment, this would mean that less corrupt politicians have been rerunning to become mayors in Brazil. I consider this to be a positive outcome of the audit program.

This possible equilibrium that results from incumbent incentives further supports the Ferraz, Finan and Avis (2017) finding that elections are not the most reliable way to punish politicians for corruption. Instead, the results suggest that checks from other branches of government, such as the judiciary, should play a greater role in democracies. This is not to say that there is but one way to punish politicians, but that there should be non-electoral and electoral costs inflicted on politicians that are corrupt and unethical in office.

B. The Audit Policy

My original theory for this research was as follows: if my dataset is large enough to detect the variation in the population, if voters are well-informed, and if the effects of selection bias cannot explain why corrupt incumbents are not punished electorally, voter behavior may well be considered irrational (in the social scientific sense of the word).

However, I now find this logic to be flawed because I have accepted the idea that voting choices are the result not necessarily of what *information* is received, but what *assumptions* are

had. This interpretation maintains voters as rational actors. For example, it is possible that voters believe that the CGU lacks credibility, thus causing them to disregard the corruption audits entirely. [26] The average voter is also possibly indifferent to the audit reports and their detected corruption, irrespective of whether they believe that the CGU is credible and despite that it is likely that candidates utilized corruption allegations against each other in campaigns. As Ferraz and Finan (2008) evidenced in their study, voters have levels and thresholds of corruption that they are willing to accept in candidates. This makes sense given that voting obligations are mandatory in Brazil and that the corruption problem is so widespread. The implication of this reality is that citizens are forced to condone corruption because they are often choosing exclusively between corrupt politicians.

These behaviors, although nonsensical to the informed voter, happen in participatory frameworks all over the world. Emitted information on candidates do not necessarily change voter behavior because of assumptions that voters carry. Sometimes, candidates that the public knows are corrupt remain popular because of charisma and personality, or due to their abilities as public administrators. This is especially true in countries in Latin America, where corruption has long been a part of the public discourse. In terse terms, detected corruption does not kill many incumbents' chances of being reelected, especially if they have the ability and desire to rerun.

C. Media

Observing that the presence of radio stations in municipalities renders electoral punishment more likely, per Ferraz and Finan (2008), I predicted that internet would simply intensify this relationship. My findings, that the effects of internet on electoral performance are

[26] The fact that the CGU corruption audits are not well-disseminated in the internet could be a contributor of such a phenomenon. After all, my web searches of the audit detected little content that would be digestible to voters such as news articles, blogs, advertisements, or social media (the most relevant ones were referenced in the Case Study section)

insignificant, suggest that access to a wealth of information does not necessarily lead to better voting decisions. This finding falls in line with a large body of scientific literature that has assesses the role of the internet to be dynamic in elections and that the medium's distinct traits (compared to more traditional media) lead to unusual and less predictable effects on elections. For example, the effects of radio in the Ferraz and Finan (2008) paper were clearly delineated compared the results of internet in this study. This difference in the significance of the effects l likely stems from the differences in how these two technologies operate as mediums of political information.

The effects of radio in my study are also insignificant, indicating that the radio is possibly no longer as effective in Brazil at influencing voter behavior. In effect, the radio, once known to reliably motivate voters to punish corrupt politicians, is now overtaken in influence by the internet, a medium that offers unparalleled and accessible networks of information. The downside, perhaps, is that the effects of internet are less predictable in how they affect accountability through elections.

IX. Conclusion

Replicating the methodology of Ferraz and Finan (2008), this paper models the effect of the internet and other media on electoral punishment. The results indicate the effect on electoral performance of corruption audits released before the 2012 election is insignificant and that no form of media tested improved this effect. Additional testing for selection bias in the sample found that corruption levels detected in incumbents eligible for reelection in 2012 varies negatively with their likelihood of rerunning in 2012. Explanations of this phenomena include that incumbents are less likely to run after being exposed as corrupt because of expected electoral and non-electoral costs. Whether or not this is true, voters in Brazil may be indifferent

to the corruption disclosures from the CGU, dissuading them from punishing corrupt politicians in the experimental sample.

This study contributes to a growing literature that suggests that better access to information through improved technologies, such as the internet, is not necessarily better for political selection. In the future, research exploring how specific internet mediums like social networks affect elections will be useful in parsing out the most concentrated effects of internet. More quantitative analysis of how audit disclosures and other anticorruption programs disincentivize corruption, or prevent politicians likely to engage in corruption from running, can have a positive impact in public administration.

X. Appendix Tables I – N are an accumulated set of results from this study. Each table corresponds to a specific dependent variable for which the models are specified. Preelection Audit and Corruption estimates are included on each table and correspond to models (1) and (2) from the Estimation Strategy section. I selected the most significant media estimates for each table's presentation of model (3). Coefficients significantly different from zero subscribe to 99 (***), 95 (**), 90 (*) % confidence respectively.

TABLE I: Logit Regressions with Binary Election as Dependent Variable

	Preelection Release b/se	Corruption b/se	Public Wi-Fi b/se	ISP b/se	Radio b/se
Preelection Release	-0.107 (0.317)	-1.192 (0.867)	-3.758*** (1.349)	-1.157 (0.895)	-1.243 (0.986)
Corruption		-0.357 (0.251)	-0.499* (0.298)	-0.317 (0.253)	-0.361 (0.253)
Preelection Release × Corruption		0.365 (0.272)	0.764** (0.364)	0.413 (0.278)	0.374 (0.294)
Public Wi-Fi			-1.759** (0.820)		
Preelection Release × Public Wi-Fi			3.092*** (1.113)		
Preelection Release × Corruption × Public Wi-Fi			-0.333 (0.253)		
ISP				0.729 (1.192)	
Preelection Release × ISP				0.148 (1.622)	
Preelection Release × Corruption × ISP				-0.551* (0.333)	
Radio					0.312 (0.595)
Preelection Release × Radio					0.011 (0.869)
Preelection Release × Corruption × Radio					0.006 (0.215)
Constant	-4.158 (3.870)	-2.377 (4.075)	0.453 (4.502)	-3.857 (4.274)	-0.777 (4.161)
N	315	315	278	315	315
pseudo R^2	0.075	0.080	0.092	0.096	0.084
chi^2 p-value	0.0039	0.0051	0.0143	0.0025	0.0114

TABLE J: Linear Regressions with Vote Shares as Dependent Variable

	Preelection Release b/se	Corruption b/se	Public Wi-Fi b/se	TV b/se	Radio b/se
Preelection Release	-0.004 (0.022)	-0.082 (0.056)	-0.199** (0.079)	-0.081 (0.070)	-0.056 (0.065)
Corruption		-0.032* (0.017)	-0.035* (0.019)	-0.033* (0.017)	-0.032* (0.017)
Preelection Release × Corruption		0.026 (0.018)	0.050** (0.024)	0.025 (0.022)	0.019 (0.020)
Public Wi-Fi			-0.061 (0.050)		
Preelection Release × Public Wi-Fi			0.158** (0.074)		
Preelection Release × Corruption × Public Wi-Fi			-0.028 (0.019)		
TV				0.027 (0.040)	
Preelection Release × TV				-0.004 (0.062)	
Preelection Release × Corruption × TV				0.002 (0.017)	
Radio					0.031 (0.040)
Preelection Release × Radio					-0.050 (0.059)
Preelection Release × Corruption × Radio					0.012 (0.015)
Constant	0.574** (0.288)	0.707** (0.296)	0.754** (0.327)	0.766** (0.300)	0.732** (0.299)
N	315	315	278	315	315
adj. R^2	0.105	0.112	0.083	0.108	0.107

TABLE K: Linear Regressions with Win Margin as Dependent Variable

	Preelection Release b/se	Corruption b/se	ISP b/se	Radio b/se
Preelection Release	-0.006 (0.014)	0.037 (0.036)	0.037 (0.038)	0.010 (0.042)
Vote Share	1.538*** (0.042)	1.544*** (0.042)	1.548*** (0.043)	1.550*** (0.042)
Corruption		0.023** (0.011)	0.023** (0.011)	0.022** (0.011)
Preelection Release × Corruption		-0.013 (0.012)	-0.013 (0.012)	-0.009 (0.013)
ISP			-0.002 (0.040)	
Preelection Release × ISP			0.002 (0.061)	
Preelection Release × Corruption × ISP			0.005 (0.014)	
Radio				-0.032 (0.026)
Preelection Release × Radio				0.050 (0.038)
Preelection Release × Corruption × Radio				-0.008 (0.010)
Constant	-0.803*** (0.187)	-0.896*** (0.192)	-0.870*** (0.202)	-0.913*** (0.194)
N	312	312	312	312
adj. R^2	0.847	0.849	0.847	0.848
F test p-value	0.0000	0.0000	0.0000	0.0000

TABLE L: Linear Regressions with Change in Vote Share as Dependent Variable

	Preelection Release b/se	Corruption b/se	Broadband b/se	ISP b/se
Preelection Release	-0.004 (0.021)	-0.086 (0.055)	-0.129 (0.104)	-0.070 (0.057)
Vote Share 2008	-0.892*** (0.057)	-0.888*** (0.057)	-0.891*** (0.058)	-0.891*** (0.057)
Corruption		-0.033** (0.016)	-0.033** (0.019)	-0.028* (0.016)
Preelection Release × Corruption		0.027 (0.018)	0.043 (0.033)	0.027 (0.018)
Broadband Penetration			0.014 (0.020)	
Preelection Release × Broadband Penetration			-0.012 (0.025)	
Preelection Release × Corruption × Broadband Penetration			0.004 (0.006)	
ISP				0.119* (0.061)
Preelection Release × ISP				-0.041 (0.094)
Preelection Release × Corruption × ISP				-0.036 (0.022)
Constant	0.528** (0.288)	0.663** (0.295)	0.790** (0.328)	0.688** (0.305)
N	315	315	314	315
adj. R^2	0.496	0.500	0.498	0.509
F test p-value	0.000	0.000	0.000	0.000

TABLE M: Linear Regressions with Change in Win Margin as Dependent Variable

	Preelection Release b/se	Corruption b/se	Broadband b/se	ISP b/se
Preelection Release	0.009 (0.038)	0.006 (0.102)	-0.096 (0.200)	0.048 (0.106)
Vote Share 2008	-1.109*** (0.128)	-1.109*** (0.129)	-1.113*** (0.132)	-1.115*** (0.129)
Corruption		0.003 (0.030)	0.015 (0.035)	0.013 (0.030)
Preelection Release × Corruption		0.002 (0.032)	0.018 (0.065)	-0.003 (0.033)
Broadband Penetration			0.042 (0.037)	
Preelection Release × Broadband Penetration			-0.034 (0.049)	
Preelection Release × Corruption × Broadband Penetration			0.007 (0.013)	
ISP				0.233** (0.109)
Preelection Release × ISP				-0.134 (0.168)
Preelection Release × Corruption × ISP				-0.036 (0.039)
Constant	0.549 (0.548)	0.534 (0.569)	0.776 (0.611)	0.709 (0.590)
N	288	288	287	288
adj. R^2	0.240	0.234	0.228	0.242
F test p-value	0.0000	0.0000	0.0000	0.0000

TABLE N: Logit Regressions with Decision to Run as Dependent Variable

	Preelection Release b/se	Corruption b/se	ISP b/se	Guaranteed Wi-Fi b/se	Local Radio b/se
Preelection Release	0.983***	-1.206	-0.956	-1.254	-1.631
	(0.240)	(0.782)	(0.800)	(0.795)	(1.001)
Vote Share 2008	-1.184*	-0.905	-0.873	-0.936	-0.882
	(0.631)	(0.679)	(0.685)	(0.685)	(0.681)
Corruption		-0.510**	-0.515**	-0.519**	-0.556***
		(0.204)	(0.205)	(0.207)	(0.215)
Preelection Release × Corruption		0.451**	0.360	0.534**	0.456*
		(0.224)	(0.228)	(0.230)	(0.253)
ISP			-0.037		
			(0.829)		
Preelection Release × ISP			-2.530*		
			(1.363)		
Preelection Release × Corruption × ISP			0.953**		
			(0.399)		
Guaranteed Wi-Fi				1.085	
				(0.866)	
Preelection Release × Guaranteed Wi-Fi				0.450	
				(1.281)	
Preelection Release × Corruption × Guaranteed Wi-Fi				-0.664**	
				(0.313)	
Radio					-0.599
					(0.570)
Preelection Release × Radio					0.421
					(0.807)
Preelection Release × Corruption × Radio					0.072
					(0.190)
Constant	-3.587	2.042	2.286	0.670	2.731
	(3.203)	(3.604)	(3.736)	(3.661)	(3.664)
N	466	441	441	441	441
pseudo R^2	0.0709	0.0672	0.0809	0.0811	0.0696
chi^2 p-value	0.0002	0.0039	0.0015	0.0015	0.0093

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