Active and Passive Transparency in Brazilian Municipalities

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Abstract

In this paper, I analyze the simultaneous effect of active and passive transparency on government performance and the imposition of sanctions for government wrongdoing. I find that double transparency does not significantly improve social welfare beyond single transparency of either type. In addition, I provide cross-effects of passive transparency on corruption and of active transparency on information quality, a yet unexplored relationship in the literature. As expected, passive transparency decreases corruption by 13.2 percent but active transparency surprisingly reduces information quality by 5.2 percentage points. These results suggest that governments should choose the transparency alternative which is appropriate to the goals they want to achieve.

Keywords: government performance; transparency; accountability; corruption; governance.

JEL classification: D73; K42; P48; H83.

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1 Introduction

Institutional scholarship often claims that government transparency is a key factor for good governance and economic development (Kaufmann et al., 1999; Bo Rothstein, 2012). When governments make their business public, they allow for the scrutiny and oversight of actions taken by elected officials and civil servants. In many countries, for instance, citizens can check the use of public resources by accessing expense reports filed by politicians and, if unhappy, demand proper use of government funds. Under these conditions, transparency creates an accountability mechanism aligning the interests of agents and principals and further supporting economic and social progress. In recent debates about the impact of institutions on development, however, there is an increasing push for a more granular understanding of these accountability mechanisms. Investigations on the endogeneity of institutions and their strength (Acemoglu et al., 2005; Levitsky and Murillo, 2009; Dal Bo et al., 2010) are becoming more widespread and this project contributes to this scholarship as the first account of the simultaneous effects of *active* and *passive* transparency on government performance.

There are many studies looking at active and passive transparency separately. The former can be understood *as any action initiated by government, or its partners, releasing information about government business*, of which top-down monitoring is the most important mechanism. Using experimental evidence from Indonesia, Olken (2007) shows that delivering top-down audits of road construction projects with certainty reduces the amount of missing expenditures by eight percentage points, while grassroots community initiatives have no effect on the misallocation of public resources. Ferraz and Finan (2008) investigate whether the release of corruption information via audits impacts the electoral performance of incumbent mayors in the Brazilian municipal elections of 2004. They find that stronger allegations (as measured by the level of corruption revealed in the audit reports) significantly reduced the chances of incumbent reelection by as much as seven percentage points. In the presence of a local AM radio station, the impact increases to a 23 percentage point hit to the reelection probability. Bobonis et al. (2016) document a 67 percent reduction in corruption when municipalities in Puerto Rico undergo their timely audits before election period, corroborating the evidence that top-down monitoring consistently prevents misallocation of resources.

The active transparency effect on corruption is present even when accountability comes from media coverage. Campante and Do (2014) show that isolated U.S. state capitals have higher corruption levels, as measured by federal convictions for corruption-related crimes, due to the lower concentration of population and newspapers in and around their geographical area. This media monitoring effect does not only impact criminal behavior, such as corruption, but also non-criminal behavior, such as day-to-day political work. Snyder Jr and Strömberg (2010) use the geographical intersections of media markets and U.S. congressional districts to isolate the effect of media coverage on political behavior. They find that representatives from districts where media coverage is larger are more aligned with their constituents' preferences, more likely to participate in congressional hearings, and to serve in committees directly relevant to their constituents. Though

these studies are conducted at multiple time periods and across different countries, they jointly point to the same positive effect of active transparency on government accountability.

Passive transparency, on the other hand, has only recently become a topic of academic interest, so much so that it does not have a widely-accepted definition yet. To that end, I define it *as any action initiated by government, or its partners, in which information is made available but released only upon request.* The key difference to active transparency is the information release component. In actuality, passive transparency has mostly taken the form of freedom of information acts (FOIAs). FOIAs constitute dormant accountability measures which are activated when there is an explicit request from the public, the media, or any other non-governmental agent. In one of the earlier analyses of freedom of information policies, Escaleras et al. (2010) find that passive transparency does not reduce corruption; in fact, in developing nations, their evidence is that implementing FOIAs actually *increases* corruption. Costa (2013) corroborates these findings with micro-level data from the World Bank Business Environment and Enterprise Performance Survey, where she shows that after the adoption of FOI laws firms are eight to 12 percentage points more likely to perceive corruption as an obstacle to business. These studies, however, rely on corruption perception indexes and thus are susceptible to two simultaneous measurement errors: the increase in corruption could come from (i) FOIAs detecting more of otherwise uncovered corruption (an issue in Escaleras et al., 2010) thus leading to (ii) firms perceiving more corruption (an issue in Costa, 2013). Both cases are compatible with unchanged (or perhaps lower) levels of corruption. The results in Cordis and Warren (2014) are more aligned with the expected relationship between passive transparency and corruption: using the same corruption (objective) measure of Campante and Do (2014), federal convictions for corruption-related crimes, they find that U.S. states switching from weak to strong FOIA access experience twice as many corruption detection and convictions.

To my knowledge, this is the first study bringing together active and passive transparency. At first, analyzing the joint effect of transparency might seem uninteresting. If separately these policies improve governance, either by looking at corruption or political behavior outcomes, and they are both expressions of government accountability, then it is intuitive to conclude that both transparency policies favor good governance and performance. A more nuanced reasoning, however, reveals puzzling questions. In a world where government resources are scarce, authorities might perceive these as competing policies and choose the implementation of one over the other. As such, any analysis that directly compares the net effect of each alternative is of great policy value. In addition, if we allow for heterogeneous behavior of individuals working in government, we can expect different reactions to the implementation of either policy; for instance, they might fear audits more than FOIA requests. Finally, there are a number of recent studies looking at whether better-informed voters can ensure better governance practices (Pande, 2011; Winters and Weitz-Shapiro, 2013; Chong et al., 2015; Weitz-Shapiro and Winters, 2017). In common, these studies stress out the important difference between good/credible and bad/not credible information. Therefore, an open question remains as to which type of transparency produces the most credible information for holding politicians and bureaucrats accountable for their actions.

I take advantage of a unique policy environment in Brazil to answer these questions. Between 2003 and 2015, the Office of the Comptroller-General (CGU) implemented a random audit program investigating the use of federal resources by municipalities across Brazil when implementing local public policies. This program provides exogenous variation in active transparency for a random sample of municipalities during this period. In 2012, however, Brazil also enacted its Freedom of Information Act, known *in Portuguese* as LAI, establishing channels of information release across all government levels. By overlaying random audits and LAI across municipalities over time, I artificially create a two-by-two factorial experiment where municipalities fall into one of four treatment arms: (i) control (municipalities not audited before LAI); (ii) passive transparency (municipalities not audited after LAI); (iii) active transparency (municipalities audited before LAI); (iv) active and passive transparency (municipalities audited after LAI).[1] I then compare the effect of these treatments on government performance and sanctions applied to government, politicians, and civil servants charged with wrongdoing between 2006 and 2017.

Besides the random audit policy, CGU also established a program in 2015 called *Transparent Brazil Scale* (EBT), which measures the implementation of the freedom of information act across a random sample of municipalities via submission of homogeneous information requests to local governments. To the same extent as the corruption findings published in CGU reports,[2] the data collected in the EBT program forms an unbiased, objective measure of information quality when LAI is enacted – precisely speaking to the credible information literature. Thus, using the outcomes from both CGU programs, I take one step further and provide estimates of the cross-effect of transparency, i.e. the effect of active transparency on information quality and the effect of passive transparency on corruption and misallocation of resources.

Preliminary results indicate significant cross-effects. For audited municipalities, passive transparency reduces corruption by 13.2 percent but increases acts of mismanagement by 45.9 percent. This result suggests that passive transparency does not unconditionally improve government performance; rather, it reduces corruption at the expense of mismanagement. On the other hand, in the period after the implementation of LAI (post-2012), being audited actually reduces the quality of information by 5.2 percentage points but has no effect on the time taken to respond back to information requests. This is not an entirely unexpected result since officials might feel more pressured to respond to information requests after being audited but compromise information quality in the process. The effects of both treatments on the probability of sanctions and the adoption of an urban development plan are not statistically significant, indicating little additional contribution of one transparency program when another is in place. I discuss this further in the results section.

The remaining of this paper is organized as follows: in section 2, I discuss the institutional design that allows for the causal identification of both active and passive transparency effects; section 3 presents the data used in this project; section 4 suggests the theoretical mechanisms and

[1] This design is similar to a difference-in-differences strategy but one in which the time component is an additional treatment arm.

[2] As extensively discussed in Ferraz and Finan (2008, 2011); Brollo et al. (2013); Zamboni and Litschig (2018); Avis et al. (2018).

hypotheses of the impact of various types of transparency on government performance; section 5 outlines the empirical strategy (whose results are reported in section 6); finally, section 7 lays out the necessary steps for the conclusion of this project.

2 Institutional Background

The Office of the Comptroller-General (CGU) was established in 2003 to oversee the use of federal resources across the executive branch. Its mission involved investigating and guaranteeing the proper use of resources not only across the federal executive, but also across all levels of executive government – states and municipalities included. Over time, its attributions have expanded from a purely monitoring function to rule-making and even the imposition of legal sanctions on state and municipal governments, public officials, and private parties contracted by the Brazilian government. Since its inception, CGU has been the most important anti-corruption agency in the country and, despite political change, it has maintained its high-profile status as an autonomous oversight agency within the federal government.

CGU is responsible for a number of transparency programs. It processes freedom of information requests at the federal executive level, it hosts annual conferences on fighting corruption, it works jointly with other legal authorities (Federal Policy and the Office of the Prosecutor-General) to conduct investigations on misuse of public resources, it publishes civil servant wages, just to name a few of its responsibilities. One of its most recognized programs is the random audit of municipalities, which begun in 2003 and ended in 2015.[3] This program consisted of a short visit, generally a week or two long, to a municipality for the investigation of the use of federal resources in public services. The central CGU office provided state teams with a list of inspection orders, covering transfers from the federal level to municipalities in the previous three to four years, and the state team would check this list against the records provided by municipal officials. After the visit, auditors summarized their findings in a report which was then made available on CGU's website and forwarded to all prosecuting authorities, such as the Federal Police, and local legislative branches, e.g. city councils and state legislative bodies.

The program has been successful since the beginning. In 2004, CGU fed the Federal Police evidence of a corruption scheme covering over 100 procurement contracts for the purchase of emergency vehicles in 119 municipalities between 2000 and 2002, with an estimated loss of $7 million (in 2002 dollars). In addition, the program's design has made it a prolific source of academic research. CGU randomly selected a certain number of municipalities in each state, along with the (monthly) federal lottery draws, and assigned teams of independent, highly-qualified bureaucrats to scrutinize all expenditures made by municipalities under policy programs. CGU officials are tenured civil servants who have been approved in national competitive exams and whose income is both independent of their audit findings and higher than the national average for professionals of same qualification. Thus, not only the random audit program is an excellent source of unbiased,

[3]The program still exists today but, instead of randomly selecting and auditing municipalities, CGU uses an internal risk score model to assign audits to municipalities most at risk of corruption.

objective measures of municipal corruption for the period between 2003 and 2015 in Brazil, but also constitutes an exogenous shock of active transparency imposed on a sample of municipalities starting in 2003.

The second institutional feature making Brazil the perfect case for this research project is the passage of its freedom of information act (LAI), approved by the Brazilian Congress in 2011 but coming into force in May 2012. The law requires that all government branches, levels, and its affiliated agencies set up systems of access to public information. Its provisions are similar to that of other FOIAs across the world: all information is public unless expressed and justified by the agency responsible; no agency can charge for use of government data; any individual or company, national or foreign, can file a request for data access. The nationwide scope, the immediate effect, and the standardized, mandatory rules established by LAI make it an exogenous and uniform shock of passive transparency across Brazil starting in May 2012.

While the random audit program both creates an exogenous shock of active transparency and a rich dataset of objective measures of corruption, the same is not true of LAI – which only imposes the passive transparency shock. Thus, I create the objects measures of information quality using another program managed by CGU, called *Transparent Brazil Scale* (EBT). The EBT program started in 2015 and it created a national ranking of the quality of freedom of information systems across municipalities and states based on a set of standardized objective criteria. These criteria form a very detailed, 20-page evaluation guide on many aspects in LAI ranging from a check on whether the local government has a functioning website to the actual submission of four information requests. What is even more interesting is that EBT is also applied on a random sample of Brazilian municipalities; CGU has a detailed sampling strategy available online for two out of three rounds of EBT,[4] where they explain how municipalities are sampled and how their scores are calculated. Thus, EBT also provides an unbiased, objective measure of information quality useful in answering the research questions in this proposal.

3 Data

The data come from various sources and spans over multiple years (2003-2017). I construct a repeated cross-section database of Brazilian municipalities with corruption, information, performance, and sanction outcomes. The variables of interest are audit (active) treatment, LAI (passive) treatment, and both (active and passive transparency). I supplement all analyses with municipal covariates and year of observation indicator variables.

Corruption outcomes come from the random audit program run by CGU until 2015. For transparency purposes, I use the same dataset as Avis et al. (2018), which is publicly available as a response to a freedom of information request on CGU's website. It contains all inspection orders in municipalities randomly selected for audits since 2006, which is when CGU developed their standardized coding of corruption and mismanagement infractions. The corruption, mismanagement,

[4] I have submitted a LAI request to CGU to obtain the sampling strategy for the first round, which is also a random draw on about 9% of all municipalities in each state of Brazil.

and number of irregularities outcomes are the same as AvisGovernmentAuditsReduce2018, i.e. the (logged) number of infractions of each type. The level of observation is the municipality-lottery pair, so there are 1,084 observations for 1,011 unique municipalities in this dataset.[5]

The data on transparency information comes from the EBT program. Specifically, I use four information requests sent to municipalities in the evaluation of three EBT rounds in 2015, 2016, 2017. These requests measured the quality of information on two dimensions: (i) whether the municipality reported back in the time mandated by LAI; (ii) whether the information provided was accurate. These four requests covered four policy areas: health, education, social development, and transparency. For the time outcome, I compute whether the municipality has responded to any of the four requests within the deadline. For the accuracy dimension, I compute whether the municipality has provided correct answers to any of the four requests. It is important to point out that CGU submitted information requests on policy programs that are crafted at the federal level but delivered at the local level; therefore, for these programs, CGU maintains a federal record of implementation that can be compared to responses provided by local governments so as to construct a perfect measure of information accuracy. There are 2,327 unique municipalities[6] (level of analysis) in this sample. When I join this data with audit reports, there are 3,287 total observations (2,830 municipalities) receiving at least one of the transparency treatments.

Next, the third source of data is the Brazilian National Statistics Office (IBGE). It produces a statistical profile of municipalities every two or three years, from which I extract the performance outcome in this study. According to the Brazilian Constitution, all municipalities with population above 20,000 are required to have a municipal urban development plan (MUDP). These plans lay out land use regulations and zoning laws that support structured spatial growth of municipalities. Since crafting such a plan needs inputs from all areas of local government, they are good proxies of performance as they are only as good as the people who put them together. In addition, though mandated by law, MUDPs have an expiry date and are enacted into law by negotiation between city councils and mayors, so it is not unusual to find a number of municipalities that do not have a valid urban development plan at any point in time. Therefore, I build a dataset of MUDP adoption for all waves of the statistical profile issued by IBGE and match them to audit and EBT municipalities in this study.

Finally, I create the sanction outcome from three datasets of agencies with investigative authority in Brazil. The Federal Police and CGU have public data on corruption crackdown operations carried out across the country since 2003 also used in (also used in Avis et al., 2018). I use their dataset to track municipalities that have had one of these operations as mandated by judicial rulings. The second dataset comes from CGU and reports all independent CGU operations which aimed at seizing evidence as part of an ongoing corruption investigation at the federal level. I again match the municipalities in this sample that were targeted by these operations. Finally, I use a

[5]This reflects the fact that some municipalities have been randomly selected to inspection more than once.

[6]EBT selected about 1,100 municipalities to participate in the first round of the program but then tracked about half of them over time. Therefore, EBT only added about 550 new municipalities to its record of LAI quality every year.

dataset on nationwide convictions for misuse of public office maintained by the National Council of Justice. It compiles information from all state court systems on politicians or bureaucrats who were convicted for violations to the law on misconduct in public office (Law 8,429/92). Again, I match municipalities in our sample and compute if they have had at least one conviction for breach of Law 8,426/92. The final sanction outcome is a binary variable for a panel of municipality-year pairs taking up value one if any of three sanctions have been applied to a municipality in that year of analysis.

Descriptive statistics are reported in table 1, where I display covariates used in this analysis. These municipal characteristics come from the Brazilian Census of 2010 and control for variation in municipal conditions that could bias treatment results.

Table 1: Descriptive Statistics by Treatment Condition

	Active Transparency			*Passive Transparency*			*Active and Passive Transparency*		
	Control	Treatment	Diff.	Control	Treatment	Diff.	Control	Treatment	Diff.
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Share Urban (Pop.)	0.625	0.631	−0.062	0.631	0.625	−0.007	0.629	0.624	−0.007
			(0.082)			(0.023)			(0.023)
Share Female (Pop.)	0.505	0.505	0.000	0.505	0.505	0.001	0.505	0.506	0.001
			(0.003)			(0.002)			(0.002)
Illiteracy Rate	0.179	0.173	0.055*	0.172	0.181	0.021*	0.174	0.193	0.021*
			(0.029)			(0.011)			(0.011)
Income Per Capita (ln)	9.052	9.131	−0.348*	9.139	9.046	−0.137	9.112	8.998	−0.137
			(0.187)			(0.086)			(0.086)
Gini Coefficient	0.512	0.512	0.030**	0.511	0.514	0.011*	0.512	0.523	0.011*
			(0.014)			(0.006)			(0.006)
Human Development Index	0.645	0.651	−0.037*	0.652	0.644	−0.016**	0.650	0.636	−0.016**
			(0.019)			(0.008)			(0.008)
Share Poor (Pop.)	0.270	0.256	0.089**	0.254	0.273	0.037**	0.259	0.293	0.037**
			(0.043)			(0.019)			(0.019)
Presence of AM Radio	0.203	0.210	0.047	0.210	0.205	0.006	0.208	0.218	0.006
			(0.123)			(0.038)			(0.038)
Presence of Health Council	0.767	0.758	0.036	0.758	0.768	0.016	0.760	0.774	0.016
			(0.109)			(0.046)			(0.046)
Presence of Ed. Council	0.971	0.970	0.083**	0.971	0.968	−0.028	0.971	0.944	−0.028
			(0.037)			(0.019)			(0.019)
Seat of Judiciary Branch	0.486	0.516	−0.012	0.512	0.497	0.062	0.505	0.581	0.062
			(0.144)			(0.039)			(0.039)
N	2,203	1,084		960	2,327		3,163	124	

Note: This table displays means for all observations in each treatment arm against all others. Thus, the sum of observations is larger than the total sample size (3,287). The difference across treatment conditions in subsamples are calculated using regressions on treatment variable plus lottery fixed-effects (active transparency) and year fixed-effects (passive transparency). Standard errors in parentheses are clustered at the state-level. *p<0.1; **p<0.05; ***p<0.01.

According to table 1, differences across groups are small and mostly concentrated in income-related covariates (illiteracy rates, income per capita, Gini coefficient, Human Development Index, share of poor population). These differences are mostly due to potential differences present in 2010, when these covariates are measured, that could have likely decreased over time. Besides, there are small differences in the sampling strategy and sample size between the two programs. While the random audits were limited to 180 municipalities per year, at most, EBT selected over 1,100 municipalities to form its ranking in each round between 2015 and 2017. Also, random

audits were constrained to municipalities under 450,000-500,000 residents whereas EBT sampled municipalities across the the whole distribution of population size. In any case, I estimate all regressions controlling for these covariates to reduce the potential for bias in our parameters of interest.

Though there are overlapping treatment arms, the most important limitation of this study is the lack of information quality and corruption outcomes for all observations in the sample. Since the outcomes are produced by the same programs that assign treatments to municipalities, I can only measure such outcomes following the subgroups in table 2.

Table 2: Observations by Transparency Condition

	Passive		
Active	Pre-LAI	Post-LAI	Total
Not Audited	-	2,203	2,203
Audited	960	124	1,084
Total	960	2,327	3,287

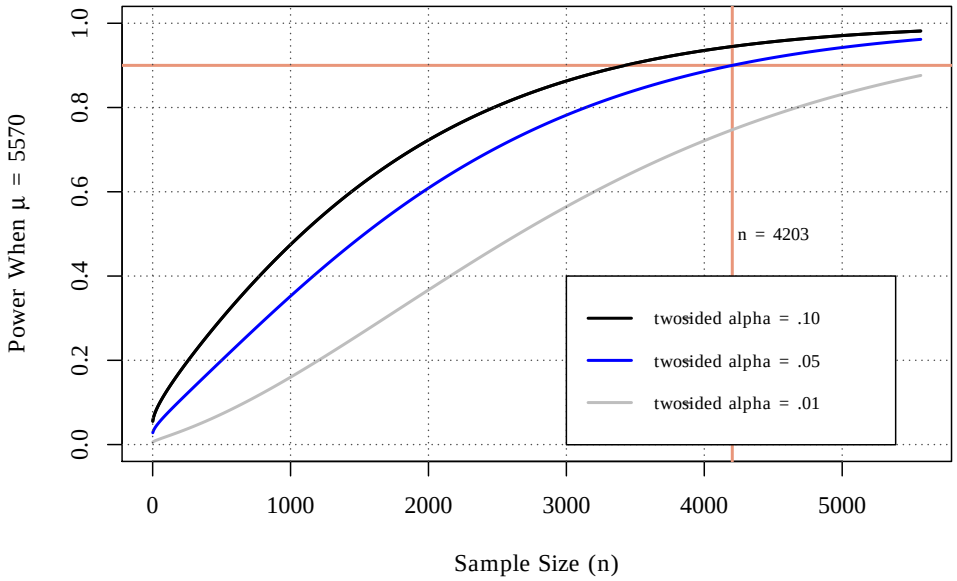
Corruption outcomes are only available for observations in row "Audited" while information outcomes are only measured for observations in column "Post-LAI." While I use these subgroups under either treatment for measuring cross-effects, I want to investigate further the joint effect of either treatment on performance and sanctions. To that end, I need to draw a random sample of Brazilian municipalities that have not been audited prior to 2012 so that I can include them as the control group in this project. I lay out this sampling strategy in the following section.

3.1 Sampling Strategy

This project is not a social experiment according to standard industry practices. The researcher is not manipulating the environment, has not chosen the outcomes of interest, and has no pre-analysis plan to bind the research methods and hypotheses *ex-ante*. Its unique design, however, is in many ways similar to an experimental study allowing for causal identification of different transparency effects. Audit treatment participants are randomly selected from the universe of Brazilian municipalities both before and after the implementation of LAI, so I can mimic a combined randomized control trial (audits) plus difference-in-differences (LAI) design to isolate the causal effect of each transparency type.

I have identified two relevant outcomes for this research design: government performance and sanctions imposed on local governments, politicians, and bureaucrats as the result of police and judicial investigations. I already have the panel with outcomes for all Brazilian municipalities over the period 2003 and 2017. The remaining step to create the artificial two-by-two experimental design is the random draw of the control group. Following best practices in the experimental literature, I am aiming at a five percentage point minimum detectable effect size with 90 percent power and five percent alpha. The power calculation is represented by figure 1 below and indicates a sample size of 4,203 municipalities, which means the control group should have at least 916

Figure 1: Power Calculation for Sampling Strategy



observations. Thus, in the final version of this project, I will include this subsample in the analysis presented in section 6. Unfortunately, I cannot balance the number of observations across all treatment conditions since I am using two interventions previously implemented by government.

The final sampling strategy for the remaining 916 units follows closely that of audit lotteries, the reasoning being that LAI treatment is uniform across municipalities but only EBT outcomes are collected randomly (as discussed in section 2). Therefore, the strata are the six years and 26 states for which audit lotteries were conducted before 2012. The random draw and methodology will form an appendix to the final version of this project.

4 Theory and Hypotheses

In this paper, I investigate the relationship between transparency and governance defined as a broad category containing performance, sanctions, information, and corruption outcomes. I suggest breaking down transparency into two finer subgroups, active and passive transparency, and look at two main outcomes that most closely align to similar studies in the literature.

4.1 Active Transparency

Active transparency speaks to the studies looking at ways to prevent wrongdoing in government, mostly described by either corruption or misallocation of resources. Becker (1968); Becker and Stigler (1974); Rose-Ackerman (1975) pioneered this field of research by suggesting that criminal behavior can be described by individual cost-benefit calculations, that government should choose an optimal level of law enforcement which depends on enforcement cost functions, and that corruption incentives depend on market structure in the provision of goods and services being contracted by

government. Audits are attempts at uncovering wrongdoing by increasing the probability of crime detection. They come, however, at a cost of setting up teams, sending them out to municipalities, producing audit reports, and everything else involved in the investigations. Though municipal corruption markets are likely decentralized, I can expect local governments to exert significant market power as a result of the low penetration of firms and markets in development settings. The efficiency gains of preventing corruption are likely to be large and thus we can expect better governance in the presence of active transparency.

Performance Hypothesis (H1a). *A municipal government that has experienced an active transparency intervention (audits) should see an improvement in government performance (measured by the adoption of urban development plans).*

Increasing the detection of wrongdoing should be followed by the imposition of more sanctions, which comes from prosecuting authorities having more cases, or more evidence, available to pursue cases. The reasoning is straightforward. Prosecutors have a fixed endowment of time to pursue various criminal cases (income effect zero), see an inflow of government malfeasance cases or evidence (relative price of prosecuting such cases falls), and substitute out other cases for cases involving misuse of public office (substitution effect is positive). This relationship is described below.

Sanction Hypothesis (H2a). *The imposition of active transparency initiatives (audits) should be followed by an increase in sanctions imposed for government wrongdoing (measured by the likelihood of being targeted in operations seizing evidence and judicial convictions).*

I lastly expect that audits positively impact information quality. When local governments welcome a team of auditors and have to go through their program records in order to answer inspector questions, it is likely that governments will learn from the experience and improve information storage in response to increased scrutiny. As a result, both the time it takes to release information and the accuracy with which government data is communicated would see improvements after a CGU audit has taken place. Hypothesis 3 summarizes this reasoning.

Information Hypothesis (H3). *In the presence of active transparency measures (audits), governments are likely to improve the quality of information release (measured by the time to respond to freedom of information requests and the accuracy of the information in the responses).*

4.2 Passive Transparency

Passive transparency can also be seen as a measure to increase detection and prosecution of government crimes. However, it has not been as explored as other monitoring initiatives have, so its theoretical underpinnings are less widely understood.

The first important question is whether any type of transparency is inherently positive (a discussion first held in Prat (2005)). In the active case, the release of information concerning corruption or poor allocation of resources is unconditionally beneficial, since both actions are detrimental to social welfare. Principals want less of both. This might not be true of passive transparency. Governments would scramble to organize their files and make sure all information is available at the expense of their core responsibilities. If, eventually, these data are not requested by anyone outside government, or if data are requested but there are no wrongdoings, then passive transparency has unequivocally consumed resources and has not produced social benefits.[7] Social welfare most likely improves where administration problems abound, i.e. when public officials are not highly-skilled, or when there is an active civil society interested in government affairs. Moreover, if the implementation of freedom of information acts simultaneously reduces corruption and increases the detection of government malfeasance, these effects could largely offset each other and show no significant effect of passive transparency on government efficiency, as rightly suggested by Cordis and Warren (2014). I expect a positive effect, nonetheless, since local governments in Brazil are generally exposed to poor governance and attract low-skills professionals, but certainly an attenuated effect when compared to active transparency.

Performance Hypothesis (H1b). *A municipal government that has experienced a passive transparency intervention (post-LAI) should see an improvement in government performance (measured by the adoption of urban development plans) of smaller magnitude when compared to active transparency.*

For the sanctions hypothesis, I also expect a positive effect, the reason being that passive transparency supports the application of sanctions on governments and officials because it expands the toolkit available to prosecuting authorities for collecting data. Suppose a state prosecutor is trying to collect evidence for a case of misuse of public office which has happened in a town from the other end of the state. In the absence of LAI, they (or their office) would have to individually connect with the municipal government in question, get authorizations, and finally obtain the data. The documents might not be useful, in which case the prosecutor has to decide whether to reach out in the first place. When LAI is enacted, this cost becomes close to zero and prosecutors might ask for information even if it is only marginally relevant.

Sanction Hypothesis (H2b). *The imposition of passive transparency initiatives should be followed by an increase in sanctions imposed for government wrongdoing (measured by the likelihood*

[7] The case where there are benefits of organizing information for active transparency is different in at least two dimensions. First, the former case is primarily concerned with the use of specific resources instead of all data on government activities. The benefits of investigating and correcting the use of funds are much more clear than that of making all municipal normative acts public; second, in cases where public administration is sound, it is likely that benefits of transparency have been exhausted or are close to zero. This is because we can reasonably assume that the returns to transparency are decreasing in scale, such that, after being audited, the contribution of passive transparency to governance becomes less strong.

of being targeted in operations seizing evidence and judicial convictions).

The impact on corruption should also be straightforward. For municipalities that have experienced an audit in the past, that know the implications of being audited and the legal risks of corruption or misallocation findings for governments, politicians, and officials, the adoption of LAI should be an additional source of concern that has a strong disciplining effect on the use of resources. Hypothesis 4 summarizes this relationship.

Corruption Hypothesis (H4). *In the presence of passive transparency initiatives (LAI), governments, politicians, and bureaucrats shift away from corruption.*

Clearly, I cannot know with certainty whether corruption has reduced because corrupt officials have decided to steer clear from such practices or because they have become more skilled at hiding their behavior. In the preliminary analysis section (6), I suggest looking at other audit outcomes to try and answer this question.

4.3 Active and Passive Transparency

The double treatment is only available for the performance and sanction outcomes. As discussed in previous sections, however, I unfortunately do not observe corruption and information outcomes for all municipalities in this sample. This is a direct limitation of the exogenous shocks and outcome measurements created by audit and LAI interventions. Nevertheless, the evidence I present in cross-effect analyses are also new to the literature and contribute to the relevance of this project.

I first claim that double treatment effects will be smaller than single treatment effects combined. In other words, I am suggesting that the interaction between active and passive monitoring produces decreasing returns to scale. When a municipality has experienced one type of transparency, the other would just marginally add to social welfare.

Performance Hypothesis (H1). *A municipal government experiencing double transparency treatment should see a proportionally smaller performance improvement than the sum of the two independent treatment effects.*

Sanction Hypothesis (H2). *A municipal government experiencing double transparency treatment should see a proportionally smaller sanction improvement than the sum of the two independent treatment effects.*

The decreasing returns come from various sources. First, both treatments might reveal the same information used for prosecuting wrongdoing or create the same incentives for setting up an urban development plan. Second, governments, politicians, and bureaucrats might not perceive the second transparency intervention as concerning as the first. Once problems, or sound governance, have

been revealed in the first wave of transparency, there is a smaller reputation effect of confirming further good or bad governance. In fact, there is no way of knowing whether there will be a second information release action since establishing freedom of information channels does not imply the release of public documents (which is true for audits). Therefore, it seems straightforward to conclude that double treatment has decreasing returns to scale. In sum, table 3 displays the relationships in this section.

Table 3: Hypotheses Table by Transparency Condition

	Double	Active	Passive
(H1) Performance	+	+	+
(H2) Sanction	+	+	+
(H3) Information		+	
(H4) Corruption			−

5 Empirical Strategy

I estimate the effect of both types of transparency on repeated cross-sections of municipal observations in Brazil between 2006 and 2017. Municipal characteristics are observed in the 2010 Census. Municipalities belong to one of the four quadrants in table 2 (control; active-only; passive-only; double treatment). Since CGU audits are randomly assigned over the period of 2006 and 2015, I can compare municipalities audited before and after the introduction of the freedom of information act in 2012 to identify the causal effect of passive transparency on corruption. Avis et al. (2018) use a similar sample and find that the number of irregularities found in these audit reports is relatively stable across municipalities, suggesting that there is no heterogeneity in audit quality over space and time.

$$y_i = \alpha + \rho \cdot \text{LAI} + X\beta + \sum \lambda_k + \varepsilon_i \tag{1}$$

In equation (1), y_i is the audit outcome of interest, either the (logged) number of (i) acts of corruption, (ii) mismanagement, or (iii) any irregularity for municipality i. Treatment condition is captured by LAI, which becomes one for municipalities audited in or after 2012, and ρ is the causal effect of passive transparency on y_i. The matrix of municipal characteristics is represented by X and λ_k are k lottery fixed-effects to absorb up any time-invariant component of the stochastic error term ε_i. This equation is symmetric for information outcomes. Since these outcomes are only observed for a random sample of municipalities participating in the EBT, and the audits are also randomly assigned to municipalities, I have unbiased outcomes, samples, and treatment assignment yielding unbiased estimates of active transparency on information quality.

$$y_i = \alpha + \rho \cdot \text{audit} + X\beta + \sum \lambda_k + \varepsilon_i \tag{2}$$

The dependent variables y_i are whether CGU's freedom of information requests are responded

back within the mandated legal deadline and whether the information provided was accurate. Treatment condition is being audited (audit) and the causal parameter of interest is ρ. X is the matrix of municipal characteristics and λ_k are the k years of data collection fixed-effects to also control for time-invariant effects in the error term. Effects on performance and sanction outcomes are estimated using regression equation (3), a standard difference-in-differences equation. Performance and sanction are binary dependent variables turning on when the municipality either adopts an urban development plan or is targeted by sanctioning operations led by CGU, the Federal Police, or the Judiciary.

$$y_i = \alpha + \rho_1 \cdot \text{LAI} + \rho_2 \cdot \text{audit} + \gamma \cdot \text{LAI} \times \text{audit} + X\beta + \sum \lambda_k + \varepsilon_i \tag{3}$$

Parameters ρ_1, ρ_2 capture the effect of each independent treatment on performance and sanctions (passive and active transparency respectively). Double treatment is represented by the interaction between LAI and audit, and the causal effect is γ. Equation (3) controls for the same characteristics as in equations (1) and (2), e.g. 2010 Census covariates and year fixed-effects. In the final version of this paper, I will analyze the conditions for a DID estimation: (i) parallel trends; (ii) stable composition of groups; (iii) absence of confounding (unobservable) effects simultaneous to the two treatments in this study.

6 Preliminary Results

I first present cross-effects of transparency. In table 4, I report the results for the effect of active transparency on information (H3). My preferred specifications are regressions in columns (2) and (4) which control for municipal characteristics and lottery year fixed-effects.

Table 4: The Effect of Active Transparency on Information Requests

	Outcomes:			
	LAI Request (time)		LAI Request (accuracy)	
	(1)	(2)	(3)	(4)
Active Transparency	−.061**	−.040	−.072**	−.052*
	(.030)	(.027)	(.030)	(.027)
Municipal Controls	-	Yes	-	Yes
Year Fixed-Effects	-	Yes	-	Yes
Observations	2,327	2,327	2,327	2,327
R^2	.001	.123	.002	.125
Adjusted R^2	.001	.118	.001	.120

Note: This table displays the regressions measuring the effect of active transparency (being audited by a team of officials from the Office of the Comptroller-General – *CGU*) on information requests for a random sample of municipalities across Brazil participating in the *Transparent Brazil* program. For each outcome, I display two regressions including and excluding municipal controls and year fixed-effects. The variable of interest is whether the municipality was audited by CGU after 2012. Clustered (at the municipal level) robust standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Being inspected as part of CGU's random audit program has no statistically significant effect on whether municipalities respond to freedom of information requests in time. In column (4), however, we see a significant negative impact of audits on the accuracy of the information provided. Being audited causes a 5.2 percentage point drop in the likelihood that the information will be correct. These results go against hypothesis 3, which suggested a positive effect on information quality both in the time it takes for issuing a response to a LAI request or the accuracy of the response given. However, these results are not entirely unexpected. If bureaucrats fear the consequences of information requests, they might be willing to provide any information, even if of poor quality, or delay their responses, in hopes of not being challenged by the author of the request. Unless the LAI response is checked against the database held by CGU, there is no way that individuals requesting the information know exactly how accurate the information is. I explore this issue further in the final paper, but the lack of a clear penalty for cases in which government agencies breach LAI might explain such result.

Table 5: The Effect of Passive Transparency on Corruption

	Outcomes:					
	Acts of Corruption (ln)		Acts of Mismanagement (ln)		No. of Irregularities (ln)	
	(1)	(2)	(3)	(4)	(5)	(6)
Passive Transparency	−.082	−.132**	.459***	.462***	−.047	−.092*
	(.051)	(.043)	(.083)	(.084)	(.048)	(.041)
Municipal Controls	-	Yes	-	Yes	-	Yes
Observations	1,084	1,084	1,084	1,084	1,084	1,084
R^2	.002	.226	.023	.033	.001	.201
Adjusted R^2	.001	.218	.022	.022	-.000	.192

Note: This table displays the regressions measuring the effect of passive transparency (post-adoption of freedom of information act – LAI) on corruption and mismanagement of public resources for a random sample of municipalities which audited by the Office of the Comptroller-General (CGU) from 2006 to 2015. For each outcome, I display two regressions including and excluding municipal controls. The variable of interest is whether municipalities were audited after the implementation of LAI. Clustered (at the municipal level) robust standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 5 displays the cross-effects of passive transparency on corruption. According to H4, we should expect the passage of LAI to reduce corruption at the municipal level. Indeed, that is confirmed by column (2) in table 5, where the introduction of passive transparency reduces acts of corruption by 13.2 percentage points. As suggested in section 4.2, and confirmed here, some of this effect moves over to misallocation of resources. There is a significant increase in acts of mismanagement of 45.7 percent,[8] meaning that politicians and bureaucrats might be trying to dress their corruption actions as mismanagement. The net effect, however, is efficiency-improving, since the total number of infractions goes down by 9.2 percent, as displayed in column (6).

[8]Beginning in 2006, CGU coded their findings in three categories ordered by severity: minor, moderate, and major infractions. I follow Avis et al. (2018) and merge moderate and major infractions into the corruption category while leaving minor irregularities as evidence of mismanagement. Under this criteria, there are more corruption rather than mismanagement occurrences, such that the large jump in acts of mismanagement is not unsurprising.

Hypotheses 1 and 2 are partially presented in table 6. Since the sampling of the control group is part of the final version of this paper, I can only present results for the double treatment in this proposal.

Table 6: The Effect of Active and Passive Transparency on Performance and Sanctions

	Outcomes:			
	MUDP Adoption		Official Sanctioned	
	(1)	(2)	(3)	(4)
Active and Passive Transparency	.033	−.005	−.003	.001
	(.046)	(.042)	(.016)	(.016)
Municipal Controls	-	Yes	-	Yes
Year Fixed-Effects	-	Yes	-	Yes
Observations	3,287	3,287	3,287	3,287
R^2	.000	.269	.000	.030
Adjusted R^2	-.000	.264	-.000	.024

Note: This table displays the regressions measuring the effect of active and passive transparency (being audited by CGU after 2012) on the adoption of municipal development plans (MDP) and on sanctions imposed to politicians and bureaucrats for a sample of random municipalities selected for audits and participation in the *Transparent Brazil* program. For each outcome, I display two regressions including and excluding municipal controls and year fixed-effects. The variable of interest is whether the municipality was audited by CGU after 2012. Clustered (at the municipal level) robust standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 6 reports no effect of active and passive transparency on performance and sanctions. However, this result should not be taken at face value. In equation (3), we have double treatment as γ, single treatments (ρ_1, ρ_2), and baseline (α) parameters. In the absence of a control group, I can only include one treatment in the regression equation while also avoiding perfect collinearity across treatment groups. This approach does not find theoretical support, however, because the double treatment indicator would be meaningless: if one treatment is omitted (as part of α), the double treatment effect is naturally $\alpha+\rho_1$ or $\alpha+\rho_2$, depending on which transparency we explicitly keep, and there would be no need for estimating γ. The inclusion of γ would only absorb up the shared covariance of ρ_1 and ρ_2, which is why I only present double transparency effects in this proposal.

7 Further Development

In this paper, I explore the heterogeneous effects of active and passive transparency on a number of governance outcomes. I look at the effect on performance, sanctions, information quality, and corruption. To my knowledge, this is the first study looking simultaneously at these issues.

This project is feasible. I have collected all data on outcomes and independent variables, have drafted a sampling strategy for the remaining observations forming the control group, and have run initial regressions analyzing the effects of transparency. The complete paper contributes to the literature investigating transparency initiatives as mechanisms of good governance using the unique policy environment in Brazil between 2003 and 2017. Beyond just developing countries, this

project is well suited for discussions of the implementation of monitoring measures across the world. When resources are scarce, governments will want to adopt the transparency policy which yields the greatest net benefit, and this is a central result of this paper. A final contribution is the innovative research design which combines two sources of exogenous variation to mimic a two-by-two factorial design. Ingenious projects are necessary for uncovering complex social relationships.

The limitations of this project are twofold. First, I unfortunately do not observe corruption and information outcomes for all municipalities in the sample. I take advantage of two programs that randomly measure outcomes and that, despite unbiased, are not available for municipalities that have not been selected to participate in the evaluation process. Yet, the cross-effects that I am able to measure are novel to the literature. Second, this is not, in reality, an experimental study; though I treat for potential unobservable heterogeneity and control for observable differences across units, I cannot entirely rule out potentially confounding effects taking place simultaneously during the period under study. The final paper will include robustness checks to fend off any concerns about confounding effects.

Sampling the control municipalities, collecting political covariates, and including robustness checks are the immediate steps necessary for the completion of this project. Lastly, I will compare the results against similar studies in the literature and further develop the theoretical mechanisms underlying the results.

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