

Who Is Punishing Corrupt Politicians - Voters or the Central Government? Evidence from the Brazilian Anti-Corruption Program*

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Abstract

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Abstract

Exploiting the exogenous variation of the release of the audit reports and the Brazilian institutional scheme, there is evidence that the central government reduces the amount of infrastructure transfers to municipalities with unveiled corrupt mayors after the release of the audit reports. Furthermore, the effects of the dissemination of corruption information on the probability of incumbent's re-election seem to gradually disappear with time. Then, when corruption information is gone, voters punish corrupt politicians as a consequence of the reduction on transfers.

1 Introduction

Corruption at the local level poses an important obstacle to economic development, diverting public investment away from education and infrastructure projects and undermining economic incentives. In developing countries with high degree of decentralization of public-service delivery, local corruption is a concern when accountability is limited. In recent years, anti-corruption programs that aim to increase political accountability, strengthen civil society participation, and improve public-sector management at the local level have become frequently adopted by national governments¹.

When corruption at local level can be detected by central government and revealed to voters and assuming all else is constant, the incumbent mayors probability of re-election should decrease if the corruption revealed is greater than voters prior beliefs of corruption with regard to the challenger. However, in a very decentralized developing country where the amount of local revenues are extremely limited, the role of the dissemination of corruption information on the political process to sort in those politicians who are most likely to act in voters' interests is not clear. Corruption at local level might be positive associate with the amount of federal transfers². When compensated with an adequate level of public goods or service delivery, voters may turn a blind eye to corruption and dissemination of corruption information may have little effect on the probability of re-election of corrupt incumbents. On the other hand, if the central government reduces the amount of transfers to unveiled corrupt local mayors, voters could punish corrupt politicians at the ballots because of the lower amount of federally-transferred resources. Thus, understanding the channels through which these anti-corruption programs act is of great importance to the debate of whether or not, and in which extend, great information provision is beneficial for voters.

Brazil presents ideal conditions to analyze the mechanisms by which the anti-corruption program is working. In 2003 an anti-corruption program was launched by the central government

¹The World Bank has been providing support for programs to improve governance and control corruption to nearly 30 countries in Sub-Saharan Africa, Latin America, Eastern and Central Europe and Asia.

²In Brazil, political corruption at local level is positively associated to the allocation of federally-transferred funds. For instance, over-invoiced public contracts with "rigged" bidding procedures, the destination of public funds to "philanthropic" foundations linked to the decision makers, the allocation of funds to local governments for public works and services never executed and the requirement of a percentage kickback from government contractors to insure disbursements for services and public works already executed, etc. (Ames, 1987). In 2006, a federal investigation called "operação sanguessuga" found that 3,043 ambulances which had been bought since 2000, were over-invoiced by at least 110%. Local mayors apply for federal funds in order to buy these ambulancies. The accomplishment of these federally-transferred resources depends on the completion of agreements called *CONVÊNIO*. These agreements originate from the Brazilian Fiscal Budget and in most cases usually depend on the federal deputies collaboration in proposing amendments to the federal budget. During this investigation it was found that there had been an "aggrement" between local mayor and some parliamentaries to falsify procurement practices and to choose the supplier of ambulances that was indicated by these federal politicians. Additionally, in many different reports Brazilian federal auditors (CGU) documented that local mayors diverted federal funds to their own polical campaign

in order to examine the allocation of federal resources by local governments. Since then, on a monthly basis, municipalities have been randomly chosen by lottery to be audited. The audit reports are available on the internet and are sent to all level of governments about 2 months after the audit finishes. In the literature there is evidence that the probability of re-election of eligible incumbent mayors decreases with the number of violations reported before the municipal elections (Ferraz and Finan 2008)³. However, any kind of mayor's policy outcome is included in their analysis. There could be other channels rather than the dissemination of corruption information that affect the probability of re-election of unveiled corrupt incumbent mayors. For instance, the central government could have punished unveiled corrupt local politicians reducing the amount of federally-transferred resources to these municipalities after the release of the audit reports. This reduced amount of transfers translates into a relatively lower amount of public goods delivery. Brazilian municipalities are strongly dependent on these transfers as a source of revenue. Moreover, these transfers might be positively associated with lower literacy rates, lower per-capita income and higher local corruption (Bardhan and Mookherjee, 2006). For instance, with lower transfers there is less room for diversion of funds to mayor's electoral campaign. Therefore, the inclusion of federally transferred resources into the analysis is an important concern in the Brazilian context where political clientelism is present.

This paper aims to open this "black box" in the literature and identifies the channels through which the Brazilian anti-corruption program acts. I coded the information contained in these audit reports and exploited the exogenous variation of the release of the audit reports and the Brazilian institutional scheme to investigate how the central government reacts to the disclosure of local corruption and its consequences on the local political process. There is evidence that the central government reduces the amount of infrastructure transfers to those local administrations found to be corrupt after the release of the audit reports. There is also evidence that voters punish unveiled corrupt politicians at the ballots after the release of the audit reports. However, the dissemination of corruption information seems to gradually fade after 8 months of the release of the audit reports. Then, the results suggest that voters punish unveiled corrupt politicians, when the corruption information is gone, as a consequences of the reduction on transfers. Reducing the amount of transfer to unveiled corrupt mayors the central government therefore can affect local electoral outcomes when political clientelism is present.

I first investigate the effects of unveiled corruption information on federal resources transferred to local administrations. Analysis show that the central government significantly reduced the amount of transfers by 42% after the release of audit reports to municipalities with more than 2 corruption violations reported (30% of the sample). Then the duration of the punishment phase is included in the analysis. This effect lasted at least 3 years after the release of the audit reports. However, municipalities with corruption released which are affiliated to the president's political party receives relatively more transfers in the subsequent years after the release of the audit reports. Additionally, the Brazilian institutional context makes the analysis of the punishment mechanisms interesting within the central government. National politicians, to avoid getting involved in corruption scandals of national proportions, could reduce their support for corrupt mayors. I then use an alternative dataset on federal budgetary amendments to assess the role of legislative politicians and the president in reducing transfers to corrupt municipal administrations. The executive branch significantly reduces the amount of budgetary amendments executed (paid) when at least 2 corruption violations are reported. Moreover, with this dataset I also verify that the actual reduction on transfer is not demand-driven. For instance, local mayors could reduce their effort in applying for discretionary federal funds after the release of the audit reports.

³Ferraz and Finan (2007) investigate whether the possibility of re-election affects the level of rents extracted by incumbent politicians. The authors find that 2nd term mayor is more corrupt in relation to 1st term mayor

Following this, I estimated the effects of the released audit reports and the number of violations reported on political party probability of re-election, and additionally, on the incumbent mayors probability of re-election. Using the timing of the release of the audit reports and the Brazilian institutional scheme, I disentangle the sources of electoral punishment. Dissemination of corruption information seems to work. I found that the release of corruption information has a greater impact on the probability of re-elections of incumbent mayors and political parties in municipalities with released audit reports close to municipal elections although, this effect does fade with time. The results suggest that voters have time to perceive the reduction on federal transfers if the release of the audit reports occurs at least 15 months prior to the municipal elections. The reduction on federally transferred resources to more corrupt mayors has a negative impact on the probability of re-election of incumbent mayors and political parties when it can be perceived by voters before the municipal elections. Therefore, when the effect of the dissemination of corruption information is gone, voters punish corrupt politicians at the ballots when they suffer the consequences of the reduction of federal transfers before the elections.

This article is organized as follows. After the Introduction, Section 2 discusses the *Related Literature*. Section 3 reviews the *Brazilian Institutional Context*. Section 4 explains the *Data Employed*. Section 5 presents the *Estimation Strategy and Results*, Section 6 shows some *Additional Checks*. Finally, *Concluding Remarks* are provided in Section 7.

2 Related literature

This paper contributes to the debate of whether great information provision is good for voters. Besley and Smart (2007)⁴ presents a political agency model with moral hazard and adverse selection that exploits the Public Choice tradition argument that strategic inefficiencies in revenue collection can raise welfare by acting as a restraint on government. The effects of great information provision on voter welfare depend on the trade-off between discipline (offering incentives for low-quality incumbents) and selection (improving the average quality of office-holders) in the case of inefficient taxation. The authors show that better information about government tends to reduce discipline and increase 1st term rent seeking. However, it improves selection as bad incumbents are less likely to survive re-election. Therefore, the effects of great information provision will depend on the trade-off between short-term costs of reduced discipline and long-term benefits that result when bad politicians reveal their type i.e. corrupt politicians are removed from office. However, in developing countries with high degree of decentralization political clientelism and patronage where corruption might be positively associated with poorer regions an anti-corruption program that changes the allocation of federal resources could create additional undesirable effects in terms of voter welfare.

Because most Brazilian municipalities are strongly dependent on federal transfers, this study is related to the literature of corruption, decentralization, and accountability in developing countries⁵. The traditional view of this literature asserts that when the central government expects less corruption at the local level than at the national level, the delivery of public goods and services to local governments increase. This trend relies mainly on two arguments: one is that the availability of information on local needs is greater for local administrations than for the central government, which is a reasonable assumption. The contrasting argument, which asserts that local institutions are more accountable for the poor, does not seem to be reliable, particularly in

⁴Lockwood (2005) shows that there is always a non-empty set of parameter values for which the hybrid equilibrium in the Besley and Smart model is unstable.

⁵Decentralization refers to the delegation of public goods and service delivery to local authorities. See Cai and Treisman (2005), Rodden and Rose-Ackerman (1997), Shleifer and Vishny (1993), Waller, Verdier and Gardner (2002), Seabright (1996), Sonin (2003) Bardhan and Mookherjee (1999, 2005, 2006)

developing countries. In this context, political contestability, political participation, or political awareness is limited. Thus, the risk of losing office is reduced, and local governments might be vulnerable to some practices such as capture by special interest groups (Bardhan and Mookherjee 1999, 2005 and 2006). The magnitude of these constraints depends on the distribution of literacy and the socio-economic status of the region, not just exposure to independent media sources. When the illiteracy rate is higher, the capture of public funds should increase as the amount of transfers from central to local government increases.

In recent years, the number of empirical papers on the accountability of local governments and the determinants of accountability, especially in developing countries, has been increasing. Relating capture to the communities literacy and wealth status, Reinikka and Svensson (2004a) provide a methodological tool through which to gather information on government resource flow and to quantify capture by local officials. They show a negative relationship between average income and local capture in primary education in Uganda. Besley, Pande, and Rao (2004) used household and village survey data from South India. They found that the more disadvantaged social groups attend village meetings, the more the targeting of resources toward the groups with higher needs improves. Galasso and Ravallion (2005) consider Bangladeshs Food-for-Education programs and found that within-village target improves with program size and deteriorates in communities with higher land inequality.

Evidence of the limitations of grassroots participation in monitoring allocation of public funds is presented by Olken (2007). The author relates the allocation of public funds to monitoring by higher level governments. With a randomized, controlled field experiment in 608 Indonesian villages, the author analyzes whether top-down monitoring or grassroots participation by community members can reduce corruption. The evidence suggests that corruption is reduced as the probability of external audits is increased. However, when grassroots participation is increased, only missing labor expenditures are reduced.

Empirical literature analyzing the behavior of voters when there is available information on corruption is rare⁶ due to difficulties in measuring corruption, especially at the local level and particularly in developing countries. In an American context, Peters and Welch (1980) measured the effects of corruption charges from 1968 to 1978 on congressional elections. They compare the outcomes of candidates accused of corruption to candidates who were not accused of corruption during election campaigns. Their evidence indicates that corruption charges generally produce a decline in voter share of 6% and 8%, depending on the nature of charge.

Even when information on corruption is available, whether or not voters punish corrupt politicians is not a trivial question, especially at local level and in developing countries. Only media can increase the ability of citizens to ascertain whether proper attention has been paid to the relevant costs and benefits. Even in the case where media has access to information regarding corruption, its effectiveness depends on the extent to which the media is captured by politicians or social elites (Besley, Burgess, and Prat 2006). Reinikka and Svensson (2004b) provide evidence of the effect of a newspaper campaign to reduce the capture of public funds for education in Uganda. The closer the schools are to a newspaper outlet, the less the capture of funds.

When redistributive policies are also taken into account, empirical evidence is even scarcer⁷

⁶Proper corruption data is scarce, especially at the local level. At the aggregate level, most studies rely on indices of corruption perception. See for example, Person, Tabellini and Trebi (2003), Kunicova and Ackerman (2005), Chang and Golden (2004), and Chang and Golden (2007), Picci and Golden (2007). Most empirical studies that analyze voter behavior and corruption information consider accusation as a measure of corruption. See Peters and Welch (1980) for U.S. and Chang (2005) for the Italian case.

⁷Political determinants of redistributive policies are analyzed in Person Tabellini (2000). In a model of corruption, decentralization and accountability in developing countries, Bardhan and Mookherjee (2006) assumes that central government increases the amount of transfers to local authorities when local-level corruption is expected

Despite a number of empirical studies on the political determinants of the distribution of public infrastructure expenditure in many nations, there is no evidence of how disclosure of corruption at a local level can affect these redistributive policies and their consequences on the local political process.

The originality of this paper is the inclusion of federal transfers into the analysis of the effect of the disclosure of local corruption on local electoral outcomes. Exploiting some features of the Brazilian institutional context, the effects of the dissemination of corruption information and of the reduction on federally-transferred resources on the local electoral outcomes are disentangled. Then, this study points out the important role of transfers to this Brazilian anti-corruption program in disciplining corrupt politicians when political clientelism is present and when the dissemination of corruption information gradually disappears. Because corruption is positively associated with poorer areas, the effect of the release of the audit reports on federal transfers could also have a detrimental impact on voter welfare, however.

3 Institutional context

3.1 Decentralization of Social Programs and Infrastructure Services Delivery

Since the 1988 constitution was ratified in Brazil, municipal administrators have become increasingly responsible for a relevant share of the provision of public services. In this context, decentralization is relative to the delivery of social programs⁸ (education, health, and social assistance) as well as delivery of infrastructure services (pavement of roads, installation of sewer systems, water distribution systems, hospital equipment, etc.).

The Brazilian municipalities resources come from (a) local revenues, such as fines, exemptions, service taxes (ISS), and residential property taxes (IPTU); (b) transfers for the federal government; (c) transfers from the state government; and, (d) transfers from other municipalities. The federal government transfers are from 3 different types: (1) constitutional automatic transfers (Fundo de Participacao do Municipio FPM); (2) discretionary transfers (*CONVÊNIO*), referring to infrastructure services delivery; and (3) transfers tied to delivery of social programs in areas related to education, health, and social assistance. A substantial share, 87% on average, of these social transfers is distributed according to a fixed coefficient determined by the constitution.

Excluding some big cities such as Brazilian state capitals, the municipalities are strongly dependent on these transfers as a source of revenue (tax revenue represents only 16% of the revenues with total transfers, on average). The total amount of automatic constitutionally mandated transfers (83% of total federal transfers, on average), which is distributed throughout Brazilian municipalities, is a percentage of the total amount of income taxes and tax over industrialized products (IPI) collected by the central government⁹. The criteria for how these constitutional transfers are distributed are determined by fixed coefficients. The population size, per-capita income, and the state in which the municipality is located are all taken into account. From this total amount of federal transfers received by each municipality, there are also fixed coefficients

to be lower than corruption in the national government. Examples of empirical evidence are: Italy (Picci and Goldman 2007), Albania (Case 2001), Brazil (Ames 2001), and Russia (Treisman 1996).

⁸ Some examples of social programs are FUNDEF (education), PNAE (school lunches), PNTE (school transport), PNLN (textbook), PROINFO (computer science education), PETI (children into the school), Farmacia Basica (purchase and distribution of medicines), Saude da Familia (family health care), and others.

⁹ 50% of the total amount collected by the Central Government is redistributed, of which 25% goes to the states and 25% to the municipalities.

that establish the amount of funds to be converted into education and health expenditures¹⁰.

Another important source of federal transfers is discretionary transfers referring to infrastructure projects (4% of total federal transfers, on average). On average, 75% of the total amount of infrastructure transfers is discretionary. The accomplishment of these transfers depends on the completion of agreements called *CONVÊNIO*¹¹ between the central government and the local administration. The agreement is proposed by the interested party (municipal administration) to the titleholder of the ministry or the body responsible for the program. The municipal administration presents a work program that should contain the following information: justification for the project, a full description of what is to be executed as well as the goals to be achieved, stages of execution specifying start and end of forecast, proof that the municipality is not in a breach-of-contract situation, and proof to federal institutions that there are no irregularities. If auditors find out that the municipality is found to be in a breach of contract situation, regardless of who committed the violation - new mayor or incumbent mayor - local authorities will not be able to continue receiving these discretionary transfers. In cases of corruption evidence (specially those regarding fraud or diversion of funds) a procedure called "tomada de contas especial" should be established. If the former mayor has committed to violation, the current mayor should request the procedure¹². When the Ministry responsible for the *CONVÊNIO* receives the audit reports, they should feed the system of financial information of the federal government. As explained in the law governing such agreements, counties with irregularities are unable to continue receiving resources from these agreements, as well as, to carry out new agreements. The managers of these agreements in each ministry are also subject to audit procedures.

In addition, a council comprising members of the community not belonging to the local administration is required¹³. Information about the completion of the agreements is published on the internet as well as the *Dirio Oficial da União* (the official government records). Payment can occur outright or in instalments, depending on the projects specifications. In cases of instalments, subsequent payments are conditional on accountability of the previous instalment. These agreements originate from the Brazilian Fiscal Budget and in most cases usually depend on the federal deputies collaboration in proposing amendments to the federal budget.

3.2 Budget Process

"The legislative process begins and ends at the presidents discretion" (Rodden and Arretche, 2004).

The executive branch has the initiative for all three budgetary laws. The Ministry of Planning is in charge of preparing a draft budget, which is examined and amended by the president. The president then forwards the bill for consideration by the national congress¹⁴. In congress, all budgetary laws are subject to amendments by legislators. The majority of amendments propose benefits to local areas, such as linking the houses to the general sewer or water system, the opening or paving of roads, etc. The proposed amendments are deliberated by a Committee

¹⁰Most of these constitutional transfers occurs to pay salaries to public employees

¹¹Instrução Normativa STN nº 1, de 15 de janeiro de 1997.

¹²In the audit reports, for some municipalities, I found evidence that the execution of the project mired because of cuts in transfers from the central government regarding the execution of the project. According to the audit report, this cancelling on federal transfers had occurred because the previous municipal authority was found in a breach-of-contract situation during a previous audit.

¹³A frequent occurrence on the audit reports is relative to non-existence of these councils or irregularities on its structure. In most cases, there is evidence that they exist but are not in operation. I classified this situation as an occurrence of bad administration. Also, in some of these occurrences there is evidence that members of these councils ignore what is a procurement bid or the fact that this procedure is required.

¹⁴Legislators can only amend those bills that are in line with the Govern Budget Plan (PPA) elaborated by the executive as well as with the Law of Budget Guidelines

of deputies and senators, which is divided, by topics, into several subcommittees. The budget committee is composed of 63 deputies and 21 senators; the political parties appoint members of the committee in proportion to the number of chairs they have in congress. Amendments can be proposed on an individual basis, by state or region, and by the parties. There are limits for both the number and the amount of the amendments proposed¹⁵. The Budget Committee is responsible for authorization of the bill. Congress votes for the budget following discussions, and the budget is then promulgated to the president. Brazilian budgets are not mandatory. The process by which money is disbursed to realize the budget is called budgetary execution. It is the responsibility of the executive branch to coordinate the execution of the budget¹⁶

The executive branch chooses which projects authorized by the Budget will be carried out first. Only expenditures that were authorized by the legislative can be accomplished by the executive branch. However, according to the Brazilian constitution, the executive branch does not necessarily have to consummate the expenditures that were authorized by the legislative branch. Naturally, that prerogative provides an important weapon for political negotiation to the government. As a result, most budgetary amendments are executed in December, at the end of the fiscal year. Figure 1 shows the timing of payments of budgetary amendment during the period from 2000 to 2005.

[figure1]

This study also exploits this three-phase process, which attributes different values to each law of the budget process: 1) the value of the budgetary law initially approved in the Brazilian annual budget; 2) the value of budgetary amendments later authorized by the Budget Committee, which can be less than, equal to, or greater than the value previously approved; and 3) the value of budgetary amendments executed, which can be only equal to or less than the value authorized by the legislative branch.

3.3 The Brazilian Anti-Corruption Program

In 2003 an anti-corruption program was launched by the central government. Since then, municipalities have been randomly chosen by lottery to be audited on a monthly basis. Auditors examine the allocation of federal transfers at the local level. During the lottery, members of the government, media, and society are present. Controladoria Geral da Uniao (CGU) is the body that conducts the audits. For each municipality selected by the lottery, auditors collect documents and information relative to the local administration from the period 2001 to the present. A few months after the audit, a summary of the audit reports is sent to all levels of government and is also available on the website of CGU. Each report contains information about

¹⁵According to Pereira and Mueller (2002), the execution of individual amendments is an important mechanism that the executive branch has at its disposal to negotiate its preferences with the coalition in congress. Limongi and Figueredo (2006) argue that individual amendments are far from being the most important way that congress participates in the budgetary process. According to the authors, during the period 1996-2001, 82% of all resources allocated by Congress to public investments in the federal budget came from collective or institutional actors. These collective budgetary amendments are mostly in favor of Brazilian States and do not go directly to the municipalities. Since 1995, every year Congress defines ceilings to individual amendments, limiting the maximum number of amendments and the maximum amount of resources each legislator can appropriate. Throughout the whole period, a maximum of 20 amendments per representative per year was the rule. Regarding the amount of resource available in the appropriation bill, the ceiling has varied during the period. From 1996 to 1999, the ceiling was established at R\$ 1,5 million, raising to R\$ 2 million in 2000. In the 2001 budget, this amount was again reviewed, changing to R\$ 2.5 million.

¹⁶A budget law can be executed only if the agreement (*CONVÊNIO*) is completed. In order to have the agreement completed, the municipal administration has to present a proof that the municipality is not in a breach-of-contract situation.

the total amount of federal transfers audited. Most importantly, the audit report contains a list of each irregularity describing the occurrences full details and the related sector - health, education, social assistance, and infrastructure services delivery. The federal transfers tied to specific projects or public works are examined for irregularities, such as diversion of funds, non-competitive bidding in the procurement contracts, incompleteness, or non-utilization.

Initially, 50 municipalities are randomly selected to be audited. Later, 60 municipalities per lottery are selected. To date, the number of municipalities audited is over 1,000. In every audit process, information is collected on all federal funds transferred to the municipal government from 2001 onward.

This study considers 784 municipalities randomly selected through 15 lotteries. In all of these lotteries, the occurrences reported are due to the municipal administration in power during the period from 2001 to 2004. I also consider federal transfers from 1999 to 2006. From these 15 lotteries, 376 municipalities had the release of the audit reports before municipal elections (October 2004). Figure 2 provides information about the number of municipalities by lottery and the time of release of the audit reports. In 2003, 4 lotteries (176 municipalities); in 2004, 5 lotteries (260 municipalities); and, in 2005, 6 lotteries (360 municipalities). 376 municipalities had the audit reports released before the 2004 elections (before dotted line) and 410 municipalities after the elections.

[figure2]

4 Data

4.1 Measuring Corruption using the Audit Reports

The number of occurrences described in the audit reports is mainly divided into corruption violations and poor administration. Illegal procurement practices, diversion of funds, over-invoicing of goods and services, and fraud are the most common irregularities reported.

These corrupt irregularities are defined as follows. Illegal procurement practices occur when 1) a required procurement was not executed; 2) the minimum number of bids was not attained; and 3) when there is evidence that competition was limited, for example, when the firms of the mayors family or friends received non-public information on the value of the project. The most common diversion of funds occurred when a mayor diverted funds originally intended for social programs to public or private goods, such as purchase of computers, printers, motorcycles, cars, fuel, or payment of associates salaries. There are also many cases reported when expenses are not proven. Over-invoicing occurs when there is evidence that public goods or services are bought for a value above the market price. There are also many occurrences of fraud. In most cases, this is related to an illegal procurement process or falsified documents to prove municipal expenses.

Summary statistics of municipal characteristics and corruption variables are reported in Table 1. Column 1 and 2 present the mean of municipal, mayors characteristics and the average amount of infrastructure transfers before and after release of the audit reports according to the level of corruption reported. Column 1 considers means of municipalities with few corruption violations reported (from 0 up to 2 corrupt violations reported); column 2 presents the means of municipalities with at least 3 corrupt violations reported; column 3 presents the differences between the means and column 4 the standard error of the differences. The differences between means reported in column 1 and 2 are positively significant for literacy rate, log of per-capita income, percentage of persons living in urban areas, percentage of houses linked to the general water system, re-election rates for the 2004 mayors re-election rates and municipalities in which

the mayors affiliation party in 2004 is the governing party (PT) and Partido Democrata Trabalhists (PDT) governing partys coalition. The difference in means is significantly negative for those municipalities in which the mayor is affiliated to PFL, the most important Lula opposition party¹⁷.

From 784 municipality audits reviewed in this study, 79% reported at least one violation, and 30% report at least 3 violations. Only 3.5% of the sample present more than 5 irregularities associated with corruption.

4.2 Transfers and Political Party Data

The Tesouro Nacional website (<http://www.stn.fazenda.gov.br>) provides information from municipal and states annual balance sheets about assets, liabilities, revenues, and expenditures for all Brazilian municipalities and states. It is also possible to distinguish between the amounts of constitutional transfers received by each municipality from amounts that are discretionary. It is also possible to distinguish between those tied to social programs, as well as the amount of transfers tied to infrastructure delivery. This paper also uses data on individual budgetary amendments for the period from 1997 to 2005 which were obtained in the Brazilian senate website of the (<http://www.stn.fazenda.gov.br>). This data provides detailed information (the authors name, the value in R\$, and the recipient municipality) for each budgetary amendment.

Information about mayors characteristics such as party affiliation, age, marital status, education is obtained in the survey *Perfil dos Municípios Brasileiros* for the years 2002 and 2004, which is elaborated by the Brazilian Institute of Geography and Statistics (IBGE). For the years 1999, 2000, 2001 and 2005 data on mayors party affiliation was obtained from Tribunal Superior Eleitoral (TSE)¹⁸.

The 9 most important political parties considered are PT (the federal governing party after 2002), PMDB¹⁹, PDT, PTB, and PSB (the governing party coalition after 2002), and PFL, PSDB, and PP (the opposition parties after 2002). Data on municipal characteristics were obtained from Brazilian Census 2000 and *Perfil dos Municípios Brasileiros 2004*.

5 Estimation Strategy and Results

In this section I first present the econometric model used to estimate the effects of the release of the audit reports on infrastructure transfers and on executed budgetary amendments. Following this, I briefly explain the strategy to estimate the effect of the release of the audit reports on incumbent mayors probability of re-election that allows the disentanglement between the effects of the dissemination of corruption information and reduction on transfers by the central government on the incumbent mayors probability of re-election. The results are presented subsequently, after each model specification.

5.1 The Effects of Released Audit Reports on Transfers

Taking advantage of the random nature of the release of the audit reports and considering the federal transfers received by these municipalities during the period from 1999 to 2006, I first investigated if the amount of infrastructure transfers from the central government to these

¹⁷For these municipal and mayoral characteristics there are no statistically significant differences between the audited sample and the non-audited municipalities. The results are available upon request

¹⁸For the year 2003 and 2006, I assumed the same information as year 2004 and 2005, respectively.

¹⁹PMDB became part of Lula's governing party coalition in 2006.

municipalities decreases with the release of the audit report. The effect of the release of the audit reports on the amount of transfers received by the municipalities is estimated as:

$$y_{it} = \beta A_{it} + \delta w_{it} + \tau_t + \eta_i + e_{it},$$

where the left-hand side of the equation is the log of the total per-capita amount of infrastructure transfers received by municipality i in the year t . The variable A_{it} denotes the timing of release of the audit reports and is equal to 1 in the year of the audit event and in the subsequent years after. Time-varying control is whether the mayor's political party affiliation is the party of the president PT after 2003 and PSDB before it). Year fixed-effect τ , and municipal fixed-effect η , are also included. The coefficient of interest is β which measures the effect of the audited reports on the amount of infrastructure transfers. Under the assumption that $E(e_{it}|A_{it}, \eta_i) = 0$; the fixed effect estimator is consistently estimated. With the random sample, by taking account that A_{it} varies within and across municipalities and by allowing for any temporal trend, it could be possible to identify the causal effect of the release of the audited reports on the amount of federal transfers.

However, this specification does not account for unobservable time-varying variables that could be correlated with the timing of the audit and the number of violations reported. This is an important concern as CONVENIO agreements need to be proposed by the local administration based on specific needs. In order to verify if the amount of infrastructure transfers requested by municipalities actually decreases following the audit disclosure I also employ data on the budgetary amendment approval, authorization and payment process. There is no evidence that this reduction on transfers is driven by reduction on the amount applied by these municipalities. The results are shown later on in this section (table 4) and also in section 6.2 (additional checks section).

In order to verify if infrastructure transfers decrease as the number of corruption violations reported increases, A_{it} is also interacted with the number of corruption violations reported. I start this analysis considering an unbalanced panel data with 779 municipalities and 8 years of observations to show that, after the release of the audit reports, transfers decrease as the level of corruption reported rises. The results are reported in Table 2. Regression displayed in column 1, 2 and 4 consider all audited municipalities. Column 3 considers all municipalities that are considered by the anti-corruption program (all Brazilian municipalities with less than 450,000 inhabitants) regardless as to whether they were audited. Column 5 considers only those municipalities with no corruption violation reported. Column 6 considers only the sample of municipalities with few corruption violation reported and in column 7 only the sample of municipalities with many violations are considered.

Column 1 displays the results of the model specified above. The amount of infrastructure transfers decrease significantly (by 21.1% on average) for audited municipalities. Since 79% of these municipalities have at least 1 corruption violation reported, the number of violations reported should matter. The results of regressions reported in column 2 and 3 consider a semi-parametric specification with three different levels of corruption reported which are interacted with A_{it} , they are: *no violations* (= 1 if no violation is reported); *few violations* (= 1 if 1 or 2 violations are reported); *many violations* (= 1 if at least 3 violations are reported). In column 2 (audited sample), the effect of released audit reports on transfers is negative and increases in magnitude as the degree of corruption rises. After the audit event, for municipalities with many corruption violations reported, transfers decrease by 41.7% (standard error 0.113).

When all municipalities are considered (column 3), the interaction terms equal 0 for non-audited municipalities. In this specification the number of observation rises from 5,350 up to 37,848. Having many corruption violations reported reduce the amount of infrastructure transfers, on average, by 20% (standard error 0.087). The specification in column 3 takes account

of unobservable variables which are correlated with the time of the audit release and/or with the degree of corruption reported. Before Lula's first mandate, municipalities affiliated to PFL, PSDB, PMDB and PP (FHC main governing coalition) received relatively more transfers. With the government change, transfers could have been relatively reduced to municipalities affiliated to one of these political parties. For instance, it could be that since the beginning of Lula's administration, the amount of transfers is reduced to municipalities affiliated to the Lula's opposition party. Lula's opposition parties had also been part of the governing coalition during the 2 consecutive previous presidential mandates (Fernando Henrique Cardoso "FHC", 1994-2002). Because corruption might be correlated with transfers it could be also associated with the mayor's political party affiliation²⁰.

In order to check for the lengthy time (persistence in time) of the punishment I specify six other dummy variables: *will be audited in 3 years*; *will be audited in 2 years*; *will be audited in 1 year*; *audited this year*; *audited 1 year ago*; and, *audited 2 year ago* and *audited 3 year ago*. The amount of transfers before and after the audit event might vary according to the level of corruption reported. Then I consider different samples according to the degree of corruption reported. Figure 3 illustrates these effects. Municipalities with no corruption violations reported received relatively more transfers after the release of the audit reports. The effect of released audit reports in the current year had a negative effect on transfers when few corruption violations are reported. In subsequent years, this effect is reversed. For municipalities with many violations reported, the release of the audit reports have a negative impact on the amount of infrastructure transfers.

[figure3]

The timing of central government punishment is also reported in table 2²¹. The regression displayed in column 4 consider the sample of all audited municipalities. Dummy variables which denote the audit timing are interacted with the dummy variables which denote the degree of corruption reported. According to the results, transfers are reduced after the release of the audit reports only in municipality with many violations reported. In column 6 (sample of municipalities with few corruption violations reported), the amount of infrastructure transfers decreased by 27.5% (standard error 0.118) in the current year of the release of the audit reports. According to the results reported in column 7, (sample of municipalities with more than 1 corruption violation reported), in the year of the audit event transfers decreases by 36.4% (standard error 0.122). When the release of the audit reports occurred 1 year ago the amount of transfers decreases by 38.8% (standard error 0.144). If the audit release event occurred 2 years ago, the amount of infrastructure transfers decreases by 62.2% (standard error 0.216). And, 3 years after the release the amount of transfers are reduced by 64.7% (standard error 0.364). In the additional checks section (6.1) I present evidence that the reduction on transfers also occurs before 2005, the subsequent year after municipal elections.

Additionally, table 3 reports the results of regressions when a dummy variable which denotes whether the mayor is affiliated to the president's party is interacted with the dummies *audited this year*; *audited 1 year ago*; and, *audited 2 year ago* and *audited 3 year ago*. The most interesting results are displayed in column 3 which reports the results when only the sample of municipalities with more than 1 corruption violation is reported. The results suggest that municipalities with at least 2 corruption violations reported where the mayor belongs to the political party of the

²⁰The results are also maintained if the lag of infrastructure transfers are considered in the right-hand side of the equation (GMM estimator). These results are available upon request

²¹Note that the results in table 2 differs from those illustrated in figure 3. It is due to the fact that regressions in table 2 do not consider the variables *will be audited in 3 years*; *will be audited in 2 years*; and, *will be audited in 1 years*.

president receive significantly more transfers in the subsequent years of the release of the audit reports (76% one year after audit release). However, the coefficient of the interaction term *audited this year*president's party* is negative and not significant.

5.2 The Effects of Corruption Disclosure on Budgetary Amendments Execution Process

Data on individual federal budgetary amendments makes it possible to test whether legislative politicians and the president are punishing corrupt administrations at the municipal level. Moreover, with this dataset it is also possible to verify if the reduction on transfer is demand-driven. For instance, local mayors could reduce their effort in applying for discretionary federal funds after the release of the audit reports.

There are three values for each budgetary amendment that correspond to different stages in the process of the execution of a budgetary amendment. Based on these values, three different variables are considered in this analysis: APP_{it} is the log of the per-capita value of the budgetary law initially approved by the president in the Brazilian annual budget to the municipality i that was executed in year t . AUT_{it} is the log of the per-capita value of the budgetary law amendment later authorized by the legislative branch to the municipality i in year t . It can be less than, equal to, or greater than APP_{it} . $PAID_{it}$ is the log of the per-capita value of budgetary law amendment executed (paid) by the executive branch to the municipality i in year t . It must be equal to or less than AUT_{it} .

Additionally, this dataset reports the month of payment of the budgetary amendments. Therefore, information about the month of the released audited reports is also included into the analysis. The right-hand side variables considered are the interactions between A_{it} and dummy variables denoting the number of violations reported.

Using a semi-parametric specification, I then verify the effect of uncovered corruption on the three variables described above. With an unbalanced panel data with 9 years of observations (1997-2005), I estimate the effects of the release of the audit reports on the budgetary amendments execution process.

Panel A of table 4 shows the results when $Audit_{it}$ equals 1 in the year, in the same and subsequent months of the release of the audit reports; and also in the subsequent years²². For instance, if a budgetary amendment for a given municipality was executed (paid) in the same year and one month before of the release of the audit report, $Audit_{it}$ equals 0. However, the approval and authorization of the budgetary amendments occurs before its execution. There is no information available about the month of approval and authorization of the amendments. Therefore, the regression displayed in panel A, indeed, does not capture the effects of the released audit reports on the amount of budgetary amendments approved and further authorized by the federal deputies at least in the year of the release of the audit reports.

Regressions displayed in columns 1, 2, 3 and 4 consider only the sample of audited municipalities. The results of regressions which consider all municipalities are reported in column 5, 6, 7 and 8. the left-hand side variable in regressions reported in columns 1 and 5 is APP_{it} ; in columns 2 and 6 is AUT_{it} ; and in columns 3 and 7 is $PAID_{it}$. The dependent variable in the regressions displayed in columns 4 e 8 is the difference $AUT_{it} - PAID_{it}$. Note that $PAID_{it}$ is equal or less than AUT_{it} . The results shown in Column 7 (interaction terms equal 0 for non-audit municipalities) suggest that after the release of the audit reports the log of per-capita value of budgetary amendments executed (paid) significantly reduces to municipalities with 2 and 3 corruption violations reported (estimate points -0.192 and -0.229; respectively). The results are similar when only the sample of audited municipalities is considered (column 3). The difference

²²When an amendment is executed in instalments during the same year, the first month of payment is considered.

$AUT_{it} - PAID_{it}$ increases after the release of the audit reports when 3 corruption violations are reported (columns 4 and 8).

Panel B of table 4 reports the results of regressions when the variable $Audit1_{it}$ is considered. This variable equals 1 only in the subsequent years of the release of the audit report. With this specification it is possible to verify whether the legislative branch is authorizing less for those municipalities with many corruption violations reported. Moreover, it is also possible to check if corrupt local mayors reduce their effort in applying for transfers after the release of the audit reports (More additional checks regarding this issue are presented in section 6). In this specification there is also no effect of the release of the audit reports for any level of corruption reported in the per-capita amount of budgetary amendment approved and further authorized by the legislative branch ²³. Note that the coefficients of the interaction term $Audit1_{it} * n. of violation = 0$ are significantly positive and negative in columns 7 and 8, respectively.

5.3 The Effects of Corruption Disclosure on Electoral Outcomes

In this section, exploiting the time variation in the release of the audit reports across municipalities before the elections I estimate the effects of corruption reported on the eligible incumbent mayors probability of re-election and also on incumbent political parties' probability of reelection. With this specification is possible to infer how the effect of the release of the audit reports on the electoral outcomes change with the timing of release before the municipal elections. Transfers, corruption and electoral outcomes might all be correlated. Therefore, disentangling the effects of transfers and corruption on electoral outcomes is not a trivial task. However, exploiting some particularities in the Brazilian institutional environment and the timing of transfers it is possible to address this issue. Because most infrastructure transfers occur at the end of the Brazilian fiscal year (December), only voters in municipalities with many corruption violations reported in 2003, on average, should have suffered the consequences of the reduction in the amount of transfers before the municipal elections (October 2004). Moreover, the dissemination of corruption information should fade with time. For instance, the effects of the dissemination should be stronger in municipalities with audit reports released closer to the municipal elections.

Thus, if the source of electoral punishment is only monitoring from the central government (cutting resources of infrastructure projects to corrupt mayors), those municipalities that were examined as a result of the first lotteries had more time to be punished by the central government before the municipal election and should have a greater negative impact on the probability of mayors re-election. Conversely, if the source of punishment is only the dissemination of corruption information at the local level, those municipalities with unveiled corruption closer to the 2004 municipal elections should have a greater negative impact on incumbents probability of re-election.

The model is specified below. Municipalities for which the release of the audit reports occurred before the 2004 municipal elections are considered as the treatment group, while the control group is those municipalities in which the disclosure of corruption information did not occur until after the election.

$$R_i = \alpha + \sum \beta(D_{ji} * C_i) + \sum \omega D_{ji} + \gamma P_i + \delta C_i + \chi' W_i + e_i, \quad j = \{0, 2, 6, 8, 10, 12, 13, 15\},$$

The variable R_i is equal to 1 if the eligible incumbent mayor in municipality i is re-elected in the 2004 municipal elections²⁴. D_i are dummy variables which denote the "distance" in

²³when all municipalities are considered AUT_{it} reduces (at 10% significance level) after the release of the audit reports when there is 2 violations reported. However, when robust standard errors increase when not clustered by municipalities

²⁴Only Brazilian municipalities where mayors are eligible for re-election are considered. In 2000, for the first

time (number of months) from the release of the audit report to the municipal elections in the municipality i . The variable P_i denotes the pre-elections audit which is equal to 1 if the release of the audit report occurs before the October 2004 municipal election and it is interacted with the number of corruption violations reported; C_i is the number of corruption violations reported in the municipality i ; W_i is a vector of mayoral and municipal characteristics; and e_i is the error term.

It is usual that Brazilian mayors, during or after their first mandate run for state or federal elections. Furthermore, occurrence of impeachment charges against a mayor is not unusual. Moreover, unveiled corrupt mayors (eligible) could have not run for re-election in 2004. Taking this fact into account I also consider a specification in which the left-hand side variable is the probability of re-election of a political party (which also considers the political party coalition). Considering only municipalities where the mayor is eligible for re-election, this variable is equal to one if the incumbent political party, or its electoral political party's coalition is elected in the 2004 municipal elections.

The effects of the release of the audits on the probability of re-election are reported in Table 5. The left-hand side variable in regressions displayed in columns 1, 2 and 3 consider is the probability of re-election of a political party (only the sample of municipalities where the mayor is eligible for re-elections). In columns 4, 5 and 6 the left-hand side variable is the probability of re-election if the eligible incumbent mayor. Regressions in columns 1 and 4 consider all audited municipalities. Columns 2, 3, 5 and 6 do not consider outliers ($c > 5$). These observations represent less than 4% of the sample. All regression reported in table 5 includes municipal and mayoral controls. The results of regressions reported in column 2 suggest that uncovered corruption has a detrimental effect on political party probability of re-election (where the incumbent mayor is eligible for re-election) in municipalities with release of the audit reports close to October 2004 municipal elections. However this effect seems to fade with time.

However, when voters forget about the corruption information the reduction on transfers to municipalities with unveiled corrupt mayors has a strong effect on the probability of re-election of a political party. In column 2, the point estimate of the interaction term *number of violations*2 months to elections*; *number of violations*6 months to elections* and *number of violations*8 months to elections* are: -0.160 (standard error 0.073); -0.152 (standard error 0.083) and -0.128 (standard error 0.060) respectively. The point estimate of the interaction term *number of violations*10 months to elections* are still negative but not significant (point estimate; -0.104 standard error 0.073). With 12 months to elections, the coefficient of the interaction term turns to be positive. However, every additional corrupt violation reported decreases the probability of re-election of political party by 26.4% (standard error 0.092) in municipalities with unveiled corrupt mayors 15 months prior to the elections. Column 5 reports the results when the dependent variable is the probability of re-election of eligible incumbent mayors. The results are similar to those in column 2.

The bottom of table 6 displays the results (p-value) of tests of joint significance for regression reported in columns 2 and 5. Moreover, note that the estimate coefficients for *number of violations*15 months to the elections* and *number of violations*13 months to the elections*, and also the estimate coefficients for *number of violations*15 months to the elections* and *number of violations*12 months to the elections* are statistically different at 0.046 and 0.006 significance level (p-value), respectively, for the preferred specification (column 2).

In order to check if this substantial effect of the estimate coefficient *number of violations*15 months to the elections* is due to the reduction on the amount of infrastructure transfers after the release of the audit reports, I also report the results when the average amount of per-capita

time, Brazilian municipal mayors are allowed to run for 2 consecutive terms. Therefore, in 2004, only 40% of the audited sample was eligible to run for re-election.

infrastructure transfers after the release of the audit reports are included in the analysis (columns 3 and 6). Then, in order to check whether this effect is capturing the effect of reduction on transfers to corrupt municipal administration, the dummies *15 months to elections* and *2 months to elections* are also interacted with transfers. If transfers matter, it should capture the effects of the number of corruption violations reported. According to the results displayed in columns 3 and 6, the coefficient of *number of violations*15 months to elections* is no longer significant. Now in column 3 the point estimate of *number of violations*15 months to elections* is -0.156 (standard error 0.117). However, the point estimate of *number of violations*2 months to the elections* is still significant (-0.149; standard error 0.079). Moreover, the interaction term *15 months to the elections*transfers after audit* has a positive and significant effect on the probability of re-election (point estimate 0.017; standard error 0.010).

These results suggest that with the dissemination of corruption information voters punish corrupt politicians at the ballots (otherwise transfers should have captured the effect of the number of corruption violations when it is interacted with the dummy 2 months to elections). However, information seems to fade with time and when voters forget about the audit reports but suffer the consequences of reduction on transfers, the probability of political party's re-election also decreases with the number of violations reported (the interaction term *transfers after audit*15 months to elections* captures the effect of *number of violations*15 months to elections*).

In the next section, I provide additional evidence to support the results that the central government monitoring channel is effective only for municipalities with audit reports released at least 15 months prior to municipal elections.

6 Additional Checks

6.1 Other checks for the reduction on transfers

It would be interesting to check whether the reduction on transfers occurs before 2005, the subsequent year of municipal elections. The political selection induced by the release of the audit reports (audits increase turnover resulting in more 1st term mayors) could drive the results if there are disadvantages of 1st term mayors in alluring federal-transferred resources.²⁵ Considering only the sample of municipalities with audit reports released in 2003 and 2004 and transfers in the period 1999-2004 I check if the effect of the unveiled corrupt mayors on transfers still holds. The results are reported in column 1 of table 6 and they are similar of those reported in table 2 (column 2). Therefore, incumbent mayors had the amount of transfers significantly reduced before 2005. The regression displayed in column 2 includes non-audited municipalities. For these municipalities the interaction terms equal 0 for non-audited municipalities. In this specification the number of observation rises from 2,239 up to 35,485 and, as explained before (section 5.1), it takes account of unobservable variables which are correlated with the time of the audit release and/or with the degree of corruption reported. In this case the magnitude of the point estimate $Audit_{it} * many_violations_i$ is smaller and still significant, though.

²⁵I also check whether there are significant differences in the amount of transfers received between 1st and 2nd term mayor after the electoral year 2004. There may be a self-selection problem of estimating the causal effect of 1st term mayors due to unobservable mayor ability and voter preferences. I attempt to estimate this effect similarly to Lee (2001). Considering only those municipalities where the incumbent mayor runs for re-election (municipalities in which the incumbent does not run for re-election may be very different from those in which the incumbent does run), I restrict the sample of municipalities in which incumbents won and lost by a close margin. I find no evidence of 1st term mayors disadvantages relative to 2nd term mayors in alluring federal transfer after the municipal elections in 2004 when municipal and mayoral controls are included in the regressions. The results are available upon request.

Columns 3, 4, 5 and 6 of table 6 check for reduction on transfers by corruption level before the 2004 municipal elections according to mayor status in the mandate after the 2004 elections. All these specifications consider the sample of municipalities with audit reports released prior to the 2004 elections and the incumbent mayor run for re-elections in 2004. Regressions reported in column 3 and 5 consider the period 1999-2006. Columns 4 and 6 only the period 1999-2004. Columns 3 and 4 consider only those municipalities in which a 1st term mayor is elected in 2004. Columns 5 and 6 consider only municipalities in which the incumbent mayor was re-elected instead. Unveiled corruption seems to negatively affect the amount of transfers received in both samples of 1st and 2nd term mayors when the entire period 1999-2006 is considered. However, when the period is restricted to 1999-2004, only in the sample of 1st term mayors (column 4) the negative effects of having many violations reported is significant. Note that the number of observations in column 6 is higher than in column 4. Also, the point estimate of the interaction term in $Audit_{i,t} * no\ violations$ turns to be positive, but not significant in column 6. We cannot infer from these regression that a new mayor was elected in 2004 in municipalities with many violations reported because of the lower transfer received before the elections even if only municipalities where the incumbent mayor (before 2005) run 2004 elections. There still might be unobservable variables that might be correlated with the mayor status in 2005. However, it seems that the release of the audit reports affects transfers in both samples when the entire period is considered. According to these results there is no evidence that the effects on transfer are driven by 1st term mayors in the first years of their mandate after 2004 municipal elections.

6.2 Checking for the timing in the Central Government Punishment

Most budgetary amendments are executed at the end of each fiscal year. However, there are cases where transfers are sent before the release of the audit reports in a given year. Municipalities with audit released closer to the end of the Brazilian fiscal year (December) have a better change of having received transfers before the release. Additionally, there could be some bureaucracy in the central government punishment process. In this case, municipalities with audit reports released in the last months of the fiscal year would not have time to have their transfers cut in the current year. In order to check for this I use data on budgetary amendments for year 2005²⁶ and a quadratic specification of number of violations reported (which is justified from the results of the semi-parametric specification reported in table 4). Taking differences between the per-capita values of budgetary law amendment authorized (AUT) and executed (PAID), which controls for any unobservable characteristics of the municipality that is constant within the interval of time between authorization and payment process, it is possible to check for the timing in central government punishment. Note that as the amount paid decreases with the number of corruption violations reported, the difference AUT - PAID should rise.

Table 7 reports the results. Panel A and panel B show the results for municipalities with audit reports released from January to October 2005 and from January to July 2005, respectively. The coefficient for the per-capita value of budgetary law amendment executed is negative in both specifications. However, it is statistically significant only for regression in panel B. Most importantly, the effect of the coefficient of the difference between the per-capita values of budgetary

²⁶Note that only for individual budgetary data it is possible to identify the name of the municipality which is beneficiated. There are few observations of individual budgetary amendment for years 2003 and 2004. This check requires cross-section data. Note that as explained in section 3.1, if auditors find out that the municipality is found to be in a breach of contract situation, regardless of who committed the violation, new mayor or incumbent mayor, local authorities will not be able to continue receiving these discretionary transfers. In this case, auditors have to return to the municipality and to verify that the current local administration has proved that the reason for being in a breach-of contract-situation at that time does not hold any more.

law amendment authorized and executed is significant and stronger in panel B. The results displayed in column 4 is also an additional check for the argument that the reduction on transfers to unveiled corrupt mayors could be demand-driven.

7 Concluding Remarks

This study addresses the role of the central government in the Brazilian anti-corruption program in circumstances in which corrupt practices are accompanied by high levels of public goods provision. The main idea is that the dissemination of corruption information may have a limited effect on improving the average quality of office-holders at the local level when political clientelism is present. In this case the central government, by reducing the amount of transfers to local unveiled politicians, can trigger punishment by voters at the polls because of the lower amount of transfer received. In the context of the Brazilian anti-corruption program, there is evidence that the central government reduces the amount of infrastructure transfers to municipalities with corrupt politicians when corruption is revealed. However, in the subsequent years of the release of the audit reports, municipalities with more than 1 violation which belongs to the president's party are even compensated by the central government. This result suggest that the central government, in an attempt to minimize political capital losses triggered by the audit reports "compensates" municipalities with corruption where the local mayor is affiliated to the president's party. At least one year after the release of the audit reports these municipalities receives relatively more infrastructure transfers. However, also for them, transfers are reduced in the year of the release of the audit reports. Note that this "compensation" should not have had consequences in the 2004 municipal election because of the timing of federal transfers regarding infrastructure projects.

Exploiting some particularities in the Brazilian institutional environment and the timing of transfers, the effects of the dissemination of corruption information and of the reduction on federal transfers are disentangled. Voters could have time to feel the effect of the reduction on transfers before the municipal election only in some municipalities with the release of the audit reports in 2003 (at least 15 months to elections). There is evidence that the dissemination of corruption information affects the probability of re-election of unveiled corrupt politicians when the release of the audit reports occurs at least 8 months before the municipal elections. However, the dissemination of corruption information seems to gradually disappear with time. Then, voters punish corrupt politicians when they forget about the audit reports but suffer the consequences of the reduction on transfers.

There are some concerns that are addressed in this paper. First, respective to the estimation strategy of the effects of unveiled corruption on the amount of transfers, a natural concern arises. This reduction on transfers can be demand-driven. This issue is addressed in the subsection 5.2 and 6.2 which exploit the 3 different phases of the budgetary amendments execution process. Second, the political selection induced by the release of the audit reports (audits increase turnover resulting in more 1st term mayors) could drive the results if there are disadvantages of 1st term mayors in alluring federal-transferred resources in municipalities. Section 6.1 presents evidence that this is not the case.

A third issue is related to the disentanglement of the sources of punishment by voters at the polls, dissemination of corruption information and lower amount of transfer received. Figure 1 shows that budgetary amendments execution (payment) for the period 1999-2005 occur at the end of Brazilian fiscal year, December. Section 5.3 presents evidence that the dissemination of corruption information is effective if it occurs closer to the municipal elections in October 2004

(not more than 8 months prior to the elections). Then, when the information is forgotten, voters punish corrupt politicians at the ballots when they can realize the effects of the reduction on transfers before the elections (at least 15 months prior to elections). Section 6.2 provides evidence that the central government reduces transfers in the same year of the release of the audit reports when this release occurs by June of that year. Also in section 5.3, I provide evidence that the effect of unveiled corruption on probability of an incumbent political party or incumbent mayor to these municipalities might be due to the reduction in the amount of infrastructure transfers process. In this case, the amount of transfers received after the audit release and its interaction with audit release time dummies are included. The variable *transfers after audit* captures the effects of corruption revealed for those municipalities with audit released 15 months prior to the elections. However, the effects of dissemination of corruption information hold when the release of the audit reports occur closer to the municipal elections ($C * 2 m. to elections$).

This paper provides some important policy implications that can be taken into account in developing countries with high degree of decentralization political clientelism and patronage. Because poorer municipalities are positively associated with corruption, the punishment of the central government with regard to counties with corruption revealed can create distortions in the welfare of voters. On the other hand, local accountability works only if the release of the audit reports occurs few months before the local elections.

Whether or not this anti-corruption program has been effective in curbing corruption and in increasing voters' welfare still remains an open question for future research.

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Table 1: Municipal characteristics and corruption

	(1)	(2)	(3)	(4)
Panel A	Many	Many	Difference	Sd error
Municipal characteristics	violations=0	violations=1		
Literacy rate (%)	0.828	0.759	0.069	0.008***
Income (log, per-capita)	5.002	4.606	0.395	0.046**
Persons living in urban areas (%)	0.615	0.561	0.054	0.017***
Houses linked to the general system of water (%)	0.587	0.551	0.036	0.018**
Transfers before audit (per-capita)	2.316	2.347	-0.031	0.107
Transfers after audit (per-capita)	2.435	2.138	0.297	0.170*
Zoning laws	0.195	0.150	0.045	0.029
Local tax (electricity)	0.517	0.494	0.023	0.038
Local tax (fire)	0.034	0.019	0.015	0.013
Municipal guard	0.179	0.208	-0.029	0.030
Re-election rates for the 2004 elections	0.276	0.158	0.119	0.039***
Mayor's sex	0.942	0.956	-0.001	0.017
Mayor's age	49.77	49.67	0.098	0.698
Mayor's education level	4.32	4.04	0.282	0.136**
<i>Mayor's party affiliations in 2004:</i>				
PT	0.042	0.015	0.027	0.014*
PFL (Lula's opposition party)	0.149	0.238	-0.090	0.029***
PMDB	0.231	0.192	-0.090	0.029***
PSDB (Lula's opposition party)	0.183	0.181	0.002	0.029
PDT	0.061	0.023	0.038	0.016**
PTB	0.057	0.062	-0.004	0.018
PP (Lula's opposition party)	0.095	0.065	0.030	0.021
PL	0.057	0.077	-0.020	0.019
Panel B				
Years of release of audit reports	Total	2003	2004	2005
Mean of number of violations	1.844	1.486	1.591	2.211
	(1.612)	(1.364)	(1.528)	(1.711)
<i>N. of municipalities with:</i>				
Zero corruption violations reported	167	44	72	51
1 corruption violations reported	222	60	73	89
2 corruption violations reported	164	34	52	78
3 corruption violations reported	124	24	35	65
4 corruption violations reported	55	10	16	29
5 corruption violations reported	24	1	4	19
More than 5 corruption violations reported	28	2	7	19
Total	784	175	259	350

Notes: Robust standard errors are reported in parentheses. *** (**) [*] denote significance at the $P < 0.01$, 0.05, and 0.1 level. Many corruption violations = 1 if at least 3 corruption violations are reported.

Table 2: The effects of release of the audit reports on transfers
Left-hand side variable: log of per-capita infrastructure transfers

Sample	(1) Audited	(2) Audited	(3) all	(4) Audited	(5) only c=0	(6) only c>0 & c<3	(7) only c>1
Audit _{it}	-0.211*** (0.081)						
Audit _{it} *no_violations _i		-0.124 (0.113)	0.081 (0.094)				
Audit _{it} *few_violations _i		-0.159* (0.092)	0.051 (0.067)				
Audit _{it} *many_violations _i		-0.417*** (0.113)	-0.201** (0.087)				
Audit this year*no_violat.				-0.179 (0.129)	0.053 (0.175)		
Audit 1 year ago*no_violat.				-0.089 (0.161)	0.294 (0.279)		
Audit 2 years ago*no_violat.				-0.059 (0.216)	0.428 (0.393)		
Audit 3 years ago*no_violat.				0.429 (0.300)	1.008* (0.536)		
Audit this year*few_violat.				-0.146 (0.099)		-0.275** (0.118)	
Audit 1 year ago**few_violat.				-0.068 (0.140)		-0.221 (0.177)	
Audit 2 year ago**few_violat.				-0.216 (0.191)		-0.399 (0.244)	
Audit 3 year ago**few_violat.				0.155 (0.267)		-0.016 (0.332)	
Audit this year*many_violat.				-0.371*** (0.132)			-0.364*** (0.122)
Audit 1 year ago*many_violat.				-0.296* (0.173)			-0.388** (0.144)
Audit 2 year ago*many_violat.				-0.424* (0.248)			-0.622** (0.216)
Audit 3 year ago*many_violat.				-0.664* (0.389)			-0.647* (0.364)
President 's party _{it}	-0.043 (0.073)	-0.046 (0.073)	0.083*** (0.028)	-0.045 (0.073)	-0.092 (0.167)	0.058 (0.100)	-0.109 (0.101)
Observations	5350	5350	37848	5350	1204	2652	2619
R-squared	0.118	0.119	0.120	0.122	0.124	0.106	0.125
N.of municipalities	779	779	5457	779	165	385	392
Year FE	yes	yes	yes	yes	yes	yes	yes
Municipality FE	yes	yes	yes	yes	yes	yes	yes

Notes: Robust standard errors are reported in parentheses. *** (**) [*] denote significance at the $P < 0.01$, 0.05, and 0.1 levels. Audit_{it} (1/0) is equal to 1 in the year of release of the audit report and the subsequent years. Panel data (1999-2006). President's party_{it} (1/0) is equal to 1 when the mayor belongs to the political party of the president (PT after 2002 and PSDB before 2003). When all municipalities are considered (Column 3), the interaction terms equal 0 to non-audited municipalities. *few violations* = 1 if the municipality has less than 3 corruption violations reported. *many violations* = 1 if the municipality has at least 3 corruption violations reported.

Table 3: The effects of release of the audit reports on transfers by mayoral political affiliation
Left-hand side variable: log of per-capita infrastructure transfers

Sample	(1)	(2)	(3)
	only c=0	only c=1	only c>1
Audit this year	-0.013 (0.183)	-0.200 (0.147)	-0.360*** (0.133)
Audit 1 year ago	0.241 (0.271)	0.002 (0.237)	-0.422** (0.190)
Audit 2 years ago	0.403 (0.382)	-0.024 (0.333)	-0.661** (0.257)
Audit 3 years ago	1.023** (0.515)	0.429 (0.445)	-0.696* (0.360)
Audit this year*President's party	0.221 (0.490)	1.163*** (0.303)	-0.191 (0.554)
Audit 1 year ago*President's party	1.251** (0.633)	-0.533 (0.515)	1.031** (0.478)
Audit 2 years ago*President's party	-0.115 (0.813)	-0.213 (0.841)	1.246 (1.001)
Audit 3 years ago*President's party	-0.322 (1.362)	0.082 (0.599)	1.703*** (0.309)
President's party	0.152 (0.166)	0.066 (0.148)	0.156 (0.102)
Observations	1210	1512	2619
N. of municipalities	164	220	392
R-squared	0.134	0.122	0.127
Year FE	yes	yes	yes
Municipality FE	yes	yes	yes

Notes: Robust standard errors are reported in parentheses. *** (**) [*] denote significance at the $P < 0.01$, 0.05 , and 0.1 level. President's party is equal to 1 when the mayor belongs to PT after 2002 and PSDB before 2003.

Table 4: The effects of release of the audit reports on the federal budgetary amendments process

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	app	aut	paid	aut-paid	app	aut	paid	aut-paid
Sample	audited	audited	audited	audited	all	all	all	all
Panel A								
Audit _{it} *n. of violations=0	-1.559 (2.632) [8.273]	4.032 (5.324) [13.056]	-0.006 (0.130) [0.127]	0.366 (0.226) [0.156]**	-2.009 (2.690) [5.422]	-1.611 (3.474) [7.117]	0.061 (0.073) [0.061]	0.014 (0.113) [0.071]
Audit _{it} *n. of violations=1	-3.287 (2.360) [8.156]	0.224 (4.354) [12.872]	-0.156 (0.125) [0.125]	0.325 (0.197)* [0.154]**	-3.793 (2.509) [5.061]	-5.384 (3.154)* [6.642]	-0.092 (0.061) [0.057]	-0.023 (0.076) [0.066]
Audit _{it} *n. of violations=2	-2.253 (2.327) [8.645]	0.910 (4.248) [13.643]	-0.256 (0.126)** [0.132]*	0.408 (0.200)** [0.163]**	-2.712 (2.676) [6.519]	-4.797 (3.223) [8.557]	-0.192 (0.079)** [0.073]***	0.063 (0.099) [0.085]
Audit _{it} *n. of violations=3	4.919 (5.233) [9.520]	10.635 (6.685) [15.024]	-0.307 (0.145)** [0.146]**	0.700 (0.225)*** [0.180]***	3.804 (6.128) [8.532]	4.379 (6.864) [11.198]	-0.229 (0.102)** [0.095]**	0.345 (0.142)** [0.112]***
Audit _{it} *n. of violations=4	-3.881 (2.423) [9.501]	-0.532 (5.581) [14.995]	0.015 (0.198) [0.145]	0.296 (0.204) [0.179]*	-4.246 (2.781) [8.473]	-5.840 (3.828) [11.121]	0.085 (0.150) [0.095]	-0.064 (0.112) [0.111]
President's party	0.915 (1.103) [2.841]	0.618 (1.184) [4.484]	-0.006 (0.052) [0.043]	-0.018 (0.061) [0.054]	-1.623 (2.995) [1.505]	-2.090 (3.446) [1.975]	0.107 (0.024)*** [0.017]***	-0.107 (0.023)*** [0.020]***
Observations	4765	4765	4765	4765	27508	27508	27508	27508
N. of municipalities	712	712	712	712	4919	4919	4919	4919
R-squared	0.021	0.015	0.658	0.225	0.014	0.012	0.624	0.209
Panel B								
Audit1 _{it} *n. of violations=0	0.986 (1.101)	0.627 (1.180)	-0.003 (0.052)	-0.026 (0.060)	-1.601 (2.978)	-2.065 (3.427)	0.108*** (0.024)	-0.108*** (0.023)
Audit1 _{it} *n. of violations=1	-1.029 (1.747)	0.735 (3.274)	0.181* (0.106)	-0.172 (0.143)	-2.901 (2.759)	-2.461 (3.723)	0.108 (0.085)	-0.108 (0.126)
Audit1 _{it} *n. of violations=2	-2.166 (1.529)	-3.148 (3.048)	-0.015 (0.102)	-0.093 (0.117)	-4.165 (2.568)	-6.396* (3.651)	-0.089 (0.080)	-0.025 (0.098)
Audit1 _{it} *n. of violations=3	-1.053 (1.467)	-1.727 (2.201)	-0.076 (0.113)	-0.041 (0.152)	-2.775 (2.552)	-4.848 (2.998)	-0.155 (0.100)	0.034 (0.139)
Audit1 _{it} *n. of violations=4	14.048 (9.817)	12.520 (8.747)	-0.18 0 (0.147)	0.010 (0.163)	11.954 (10.126)	9.225 (9.049)	-0.243* (0.140)	0.077 (0.152)
President's party	-0.899 (1.793)	0.104 (1.949)	0.109 (0.117)	-0.081 (0.157)	-2.762 (2.874)	-2.97 0 (2.956)	0.038 (0.094)	-0.021 (0.139)
Observations	4765	4765	4765	4765	27508	27508	27508	27508
N. of municipalities	712	712	712	712	4919	4919	4919	4919
R-squared	0.021	0.015	0.657	0.222	0.014	0.012	0.624	0.209
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Municipality FE	yes	yes	yes	yes	yes	yes	yes	yes

Notes: Standard errors clustered by municipality are reported in parentheses. Robust standard errors are reported in brackets. *** (**) [*] denote significance at the $P < 0.01, 0.05, \text{ and } 0.1$ level. APP_{it} denotes the log of per-capita value of budgetary law initially approved in the Brazilian annual budget to the municipality i which were executed in year t . AUT_{it} denotes the log of per-capita value of budgetary amendment later authorized by the Budget Committee to the municipality i which were executed in year t . It can be less, equal or greater than APP_{it} . $PAID_{it}$ denotes the log of per-capita value of budgetary amendments paid to the municipality i in year t . It can be only equal to or less than AUT_{it} . Panel data (1997-2005). $Audit_{it} = 1$ in the year and subsequent months of the release of the audit reports, and also in the subsequent years. $Audit1_{it} = 1$ in the subsequent years of the release of the audit reports

Table 5: The effects of audit reports on re-election outcomes by timing of release

Dependent variable	probability of political party re-election			probability of incumbent mayor re-election		
	all (1)	c<6 (2)	c<6 (3)	all (4)	c<6 (5)	c<6 (6)
15 months to elections *transfers after audit			0.017* (0.010)			0.006 (0.011)
C *15 m. to elections	-0.024 (0.077)	-0.264*** (0.092)	-0.156 (0.117)	0.026 (0.072)	-0.172* (0.093)	-0.142 (0.088)
C *13 m. to elections	0.008 (0.102)	0.001 (0.102)	-0.002 (0.102)	0.019 (0.097)	0.019 (0.096)	-0.061 (0.148)
C *12 m. to elections	0.093 (0.099)	0.095 (0.100)	0.105 (0.100)	-0.443 (0.426)	-0.439 (0.428)	-0.420 (0.411)
C *10 m. to elections	-0.095 (0.092)	-0.104 (0.094)	-0.103 (0.091)	-0.012 (0.094)	-0.011 (0.092)	-0.052 (0.150)
C *8 m. to elections	-0.029 (0.065)	-0.128** (0.060)	-0.110* (0.061)	-0.012 (0.075)	-0.131** (0.058)	-0.122** (0.060)
C *6 m. to elections	-0.144* (0.083)	-0.152* (0.083)	-0.152* (0.061)	-0.128* (0.072)	-0.124* (0.082)	-0.120* (0.072)
2 months to elections *transfers after audit			-0.001 (0.003)			-0.003 (0.003)
C *2 m. to elections	0.023 (0.058)	-0.160** (0.073)	-0.149* (0.079)	-0.028 (0.078)	-0.149* (0.078)	-0.141* (0.083)
C *3 days to elections	-0.021 (0.074)	-0.026 (0.076)	-0.024 (0.077)	-0.065 (0.058)	-0.061 (0.062)	-0.123 (0.121)
Transfers after audit			0.002 (0.003)			0.005 (0.004)
Pre-election audit	0.029 (0.077)	-0.087 (0.163)	0.241 (0.248)	-0.015 (0.204)	0.841 (0.859)	0.108 (0.309)
C	-0.042* (0.024)	-0.037 (0.027)	-0.002 (0.096)	-0.034 (0.025)	-0.034 (0.031)	-0.004 (0.099)
test:15 m. to elections= 13 m. to elections		0.046			0.143	
test:15 m. to elections= 13 m. to elections		0.006			0.523	
Observations	435	424	418	439	427	420
R-squared	0.136	0.159	0.165	0.101	0.103	0.150
# m. to elections	yes	yes	yes	yes	yes	yes
Municipal	yes	yes	yes	yes	yes	yes
Mayoral controls						

Notes: Robust standard errors are reported in parentheses. *** (**) [*] denote significance at the P < 0.01, 0.05, and 0.1 levels. Pre-election audit (1/0) is equal to 1 if the release of the audit reported is before 2004 municipal elections. C=number of corruption violations reported. All regressions reported do not consider municipalities with more than 5 corruption violations reported

Table 6: Other checks for reduction on tranfers
Left-hand side variable: log of per-capita infrastructure transfers

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	audited in 2003 & 2004	non-audited & audited in 2003 & 2004	audited	audited	audited	audited
Sample			incumbent run 2004	incumbent run 2004	incumbent run 2004	incumbent run 2004
Sample			1 st term after 2004	1 st term after 2004	2 nd term after 2004	2 nd term after 2004
Audit _{it} *no_violations _i	-0.127 (0.198)	0.130 (0.112)	-0.459 (0.316)	-0.656 (0.405)	-0.107 (0.216)	0.119 (0.230)
Audit _{it} *few_violations _i	-0.138 (0.181)	0.038 (0.114)	0.015 (0.254)	-0.064 (0.320)	-0.374* (0.225)	-0.292 (0.289)
Audit _{it} *many_violations _i	-0.324* (0.188)	-0.161* (0.091)	-0.553** (0.236)	-0.493* (0.283)	-0.440* (0.236)	-0.662 (0.436)
Observations	2239	35485	902	684	1153	879
N.of municipalities	430	5143	134	132	163	163
R-squared	0.218	0.175	0.203	0.250	0.217	0.268
Years	1999 - 2004	1999 - 2004	1999-2006	1999-2004	1999-2006	1999-2004
Year FE	yes	yes	yes	yes	yes	yes
Municipality FE	yes	yes	yes	yes	yes	yes

Notes: Robust standard errors are reported in parentheses. *** (**) [*] denote significance at the $P < 0.01$, 0.05, and 0.1 level. Regressions in columns 1 and 2 consider the sample of municipalities with audit reports released in 2003 and 2004. Columns 3, 4, 5 and 6 all audited sample. Column 2 include also non-audited municipalities. Columns 3, 4, 5 and 6 considers only municipalities in which incumbent mayors run for re-election in 2004. Columns 3 and 4 municipalities with 1st term mayor elected in 2004. Columns 5 and 6 municipalities with 2nd term mayor, instead. Columns 1, 2, 4 and 6 consider the the period 1999-2004 and columns 3 and 5 the period 1999-2006.

Table 7: Checking for the timing of the central government punishment

Dependent variable	(1)	(2)	(3)	(4)
	app	aut	paid	aut-paid
Panel A				
municipalities with audit reports released between February 2005 and October 2005				
N. of violations	0.629 (0.922) [1.080]	2.380 (1.512) [1.551]	-0.069 (0.046) [0.044]	0.105 (0.071) [0.075]
N. of corruption violations ²	-0.104 (0.139) [0.170]	-0.320 (0.204) [0.244]	0.014 (0.009) [0.007]**	-0.014 (0.009) [0.012]
N. of municipalities	255	255	255	255
R-squared	0.348	0.368	0.175	0.593
Panel B				
municipalities with audit reports released between February 2005 and June 2005				
N. of violations	-0.251 (1.515) [1.508]	3.215 (2.565) [2.236]	-0.153 (0.054)*** [0.064]***	0.182 (0.098)* [0.107]*
N. of corruption violations ²	0.028 (0.294) [0.261]	-0.409 (0.434) [0.386]	0.031 (0.010)*** [0.011]***	-0.027 (0.015)* [0.018]
N. of municipalities	190	190	190	190
R-squared	0.279	0.369	0.234	0.555
Municipal and Mayoral controls	yes	yes	yes	yes

Notes: Standard errors clustered by municipality are reported in parentheses. Robust standard errors are reported in brackets. *** (**) [*] denote significance at the $P < 0.01, 0.05,$ and 0.1 level. Only year 2005 is considered. Panel A considers a sample of municipalities with audit reports released between February 2005 and October 2005. Panel B considers a sample of municipalities with audit reports released between February 2005 and June 2005. APP_{it} denotes the log of per-capita value of budgetary law initially approved in the Brazilian annual budget to the municipality i which were executed in year t . AUT_{it} denotes the log of per-capita value of budgetary amendment later authorized by the Budget Committee to the municipality i which were executed in year t . It can be less than, equal to or greater than APP_{it} . $PAID_{it}$ denotes the log of per-capita value of budgetary amendments paid to the municipality i in year t . It can be only equal to or less than AUT_{it} . Column 4 reports the results for the log of the difference aut-paid. The executive branch can only accomplish expenditures which were authorized by the legislative branch. However, according to the Brazilian constitution, the executive branch does not necessarily have to execute the expenditures which were authorized by the legislative branch. Mayoral controls include political party affiliation.