Does Exposing Corrupt Politicians Reduce Corruption?*

Gustavo J. Bobonis † Luis R. Cámara Fuertes ‡

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Abstract: Does the disclosure of information about corruption practices induce a sustained reduction in corruption levels? We use publicly-released routine audit reports to study this question. Since the 1950s, the government of Puerto Rico established a mechanism to routinely conduct municipal government audits, whose findings were then made publicly available and disseminated to media sources. Using a longitudinal dataset of corruption findings constructed from the audit reports for municipalities during the period 1987-2006, we compare the incumbent governments and subsequent term's levels of reported corruption of municipalities audited before versus after each election. The pre-election release of the audit reports led to significant reductions in municipal corruption levels, unemployment, and crime rates; increases in incumbent mayors' electoral accountability; and a positive selection of subsequent mayors, as measured by their pre-incumbency earnings. In contrast, we find that observed municipal corruption levels in the subsequent term do not differ systematically across pre-election and post-election audit municipalities. Our findings highlight the role of voters' information in disciplining incumbent politicians and enhancing political selection, but its inability to mitigate corruption in the long-run.

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† Assistant Professor, Department of Economics, University of Toronto, BREAD, and CIFAR. Address: 150 Saint George St., Toronto, Ontario, M5S 3G7, Canada. Tel: 416-946-5299. Fax: 416-978-6713. E-mail: gustavo.bobonis@utoronto.ca.

‡ Associate Professor, Department of Political Science, University of Puerto Rico - Río Piedras. Address: P.O. Box 23445, University of Puerto Rico, Río Piedras Campus, San Juan, PR 00931, USA. Tel: 787-764-0000, ext. 4332. E-mail: luisraulcamara@gmail.com.

I. Introduction

In a well-functioning representative democracy, citizens should select competent politicians to administer public affairs and hold these accountable for their performance. A precondition for these aims of democratic government is that citizens have appropriate information about candidates' character, abilities, and performance while in office (Manin, Przeworski, and Stokes 1999; Besley 2006). Accordingly, a growing literature recognizes that voters having access to information to evaluate politicians' performance enhances government responsiveness, reduces corruption and rent-seeking behaviors in the short-run, and promotes electoral accountability (e.g., Besley and Burgess 2002; Reinikka and Svensson 2005; Olken 2007; Ferraz and Finan 2008). However, whether providing information to voters about the corrupt practices of politicians induces a sustainable improvement in government administration and a reduction in rent-seeking – desirable qualities of good government – is less well understood.

This paper studies the effects of the disclosure of local government corruption practices on the longer-run performance of municipal governments. It overcomes previous limitations by using a unique setting to study this question: routine publicly-released audit reports of municipal government activities in Puerto Rico. The government of Puerto Rico has established a systematic mechanism to routinely conduct municipal government audits, whose findings are then made publicly available and disseminated to media sources. Our research design exploits the ordering in which municipalities are routinely audited over time, a rule which helps us establish the effects of this auditing and information dissemination program on the municipalities' subsequent levels of corruption. Specifically, we employ a unique longitudinal dataset of corruption findings constructed from the audit reports for municipalities during the period 1987-2006 to compare incumbent governments levels of reported corruption of municipalities audited before versus after each election, as well as the subsequent term's levels of reported corruption and municipal unemployment and crime rates - outcomes influenced by local governments in Puerto Rico.

Our first set of results confirms previous evidence that the release of the audit reports lead to significant reductions in municipal corruption levels, unemployment, and crime rates – consistent with there being a short-run disciplining effect of the audits in the municipality. Moreover, we show that the audits improved electoral accountability by reducing the re-election rates of incumbent mayors by 7 percentage points (25 percent) in municipalities where two corrupt violations were reported, and by up to 14 percentage points in those where more than two corrupt violations were reported.[1] More importantly, the negative audits led to a significant degree of selection of subsequent mayors based on (higher) pre-

[1] Our findings are consistent with those of the Brazil municipal government auditing program studies by Ferraz and Finan (2008), who find that the electoral performance of incumbent mayors audited before the elections was not significantly different from that of mayors whose municipalities were audited after the election, on average. Ferraz and Finan (2008), when accounting for the level of corruption that was revealed in the audit, find re-election effects of very similar magnitude.

incumbency earnings, as well as improvements in municipality-level unemployment rates and crime rates in the four-year period following the elections. In contrast, we find that observed municipal corruption levels made public in the subsequent term do not differ systematically across pre-election and post-election audit municipalities. Our findings thus highlight the role of the media in possibly enhancing political selection to improve the provision of government public goods and services and associated improvements in citizens' lives – possibly due to the selection of competent politicians (Fearon 1999) – but its relative inability to contain rent-seeking by local politicians and bureaucrats in the long-run.

Our research design contains a number of potential threats to identification. First, even though municipalities were pre-determined to be selected for a pre-election or a post-election audit, the actual auditing process could have differed systematically before and after the elections. We do not however find any evidence that auditors were corrupt or that mayors with more political power or those affiliated with higher levels of government receive preferential audits. A second concern is that political cycles are potentially consistent with the variation in the effects of the timing of the audits on the observed levels of corruption. However, we show that the actual timing of the acts of corruption, as measured by the dates in which acts were committed, is not correlated with the timing of the audit.

Our paper provides support to the idea that information is valuable in promoting good government by reducing asymmetrical information in the political process to enable voters to select better politicians (Besley 2005; Besley, Pande and Rao 2007). Our findings however challenge existing theoretical predictions that political selection mitigates rent-seeking behaviors in equilibrium.

The paper is organized as follows: Section II provides a background on Puerto Rico's municipal audit program, the municipal government system, and the national political debate which influences local politics. Section III discusses the main empirical implications of the political agency models under consideration. Section IV provides a description of the data used in the analysis, followed in Section V by the empirical implementation of the model, the study's research design, and the main identifying assumptions. The central empirical results of the paper and robustness evidence from the tests are presented in Section VI. The paper concludes in Section VII with a discussion toward the reconciliation of the existing evidence.

II. Background

II.A. The OCPR Municipal Government Auditing Program

The Office of the Comptroller of Puerto Rico ("OCPR") is an autonomous government agency created by the 1952 Constitution of the Commonwealth of Puerto Rico and implemented by Act No. 9 of July 24, 1952. The agency's mission is to "audit the property and public funds transactions with independence and objectivity to determine if they have been done in accordance to the law[, and] promote

the effective and efficient use of the government resources for the benefit of our people" (Office of the Comptroller 2009). The OCPR, thus, can examine virtually every (central or municipal) government financial transaction. To do this, the OCPR periodically audits the state-level government agencies and public corporations, including the legislative and judicial branches, as well as municipal governments. The OCPR has been carrying out audits on municipal governments and generating and disseminating reports uninterruptedly since 1953.

According to its constitutive legislation, municipal governments ought to be audited every other fiscal year. However, due to the OCPR's resource constraints, there may be some delay as to the timing of the audit. Importantly for our design, the order of the audits follows a routine pattern: municipalities are audited following a pre-specified order established in the 1950s. Once all municipalities have been audited, a new auditing round takes place following the same pre-specified order.

Once a municipality is identified as to be audited in a fiscal year, the OCPR sends a team of auditors, accompanied by a supervisor, to gather preliminary information on a subset of activities and transactions which have taken place in the time period since the latest audit coverage period. Following this preliminary audit, a team of approximately 10 OCPR auditors are sent to the municipality to examine these accounts and documents, as well as to inspect for the existence and quality of public work construction and delivery of public services. Auditors also interview municipality officials, members of the local community, as well as municipal council members, in order to get direct complaints about any malfeasance. Once the audit is complete, the auditing team completes a preliminary audit report. This preliminary report is then shared with the municipality officials (i.e. mayor and top management) to provide these with an opportunity to contest its findings. Once the response is received and evaluated, a final report is issued and disseminated to the public and to media sources. Although the OCPR cannot officially classify findings as corrupt violations or not, the agency refers findings of misuse of public funds to the P.R. Department of Justice and/or to the executive branch's Office of Government Ethics. When an audit report implicates an important mayor or describes a particularly outrageous corruption scheme it can generate substantial press coverage. Finally, note that the OCPR may publish multiple reports on a municipality for one auditing period; this depends on the size or complexity of the municipal government.

A number of measures are taken to minimize potential biases in the conduct of the audits and in the dissemination of their findings. First, the Comptroller, who is appointed by the governor with the advice and consent of the majority of the members that make up each legislative chamber, serves for a ten-year term (until its successor is named and takes possession); he can only be removed from his/her

position by an impeachment procedure.[2] The intent is that the OCPR is given a substantial degree of autonomy from the rest of the central government structures, to isolate him or her from undue external interference. Also, the OCPR is technically a part of the Legislative Branch (as it is constituted under Article 3 of the Constitution, the article that establishes and rules the Legislative Assembly). Since most of the OCPR's activities are focused on the Executive Branch and the municipalities, this guarantees the office an additional layer of protection. Second, the auditors, who are hired based on a competitive public examination and earn highly competitive salaries, receive extensive training prior to visiting the municipalities. Also, in order to reduce/minimize local-level conflicts of interest, individual auditors are precluded from participating in audits of their municipality of residence.

We do not yet have direct evidence showing that voters learned about the audit reports (data collection is in progress), but some anecdotal evidence suggests that the information from the audits did reach voters. For instance, an article published on September 25th 2008 (before the 2008 elections) in a major newspaper regarding the outcomes of a recent audit of the municipality of San Juan highlighted findings of mismanagement attributed to municipal employees. Specifically, the report highlighted that the Jorge Santini – the mayor –and the municipality's finance team did not appropriately administer the municipality's finances and incurred in extravagant/unnecessary expenditures to highlight the Mayor's image (Hopgood Dávila 2008). This report was used by the PDP opposition candidate for mayor in the 2008 election, Ferdinand Pérez, to declare that Santini was "a disaster as an administrator" and were publicly challenged by the incumbent (Hopgood Dávila 2008).

II.B. Municipal Government Activities and Political System

The 78 municipal governments in Puerto Rico constitute the level of government closest to citizens. There is no jurisdictional distinction between the cities and the municipalities in which they lie. In terms of its organization, a municipality is governed by a mayor and a municipal assembly, officials who are elected for a four-year term following the central (and U.S. federal) government electoral cycle. The size of the municipal assembly, which varies between 12 and 16 members, is a (step) function of the population that resides within its boundaries. Mayors and municipal council members do not face term limits; they can be reelected as many times as their constituents allow them that privilege. In fact, mayors from municipalities where their party is very dominant tend to be reelected almost indefinitely, until they retire or death permanently terminates their political career. Also, although the dominant party usually has a significant majority of the members of the assembly, the law guarantees some representation for political minorities: a small number of seats for the party that ended in second place and one seat for the party in third place. Given their generally small size, municipal assembly members in the minority usually

[2] Third Article, Section 22 of the Constitution of the Commonwealth of Puerto Rico.

carry out an oversight work, exposing waste and corruption. The mayor appoints the top management of the municipality.

Although municipal governments possess some degree of autonomy, compared, for example, to counties and cities in the United States, their sphere of influence is somewhat more limited. The bulk of the services they provide are related to infrastructure construction and maintenance, solid waste management, public health services, and the like. In 1991 the legislature approved a series of laws as part of a package of municipal reforms. These municipal reforms, of which Act No. 81 was the centerpiece, greatly increased the municipal governments' autonomy vis a vis the central government and allowed them a greater role in the social and economic development, as well as the spatial planning, of their territories. Thus, for example, once the municipal reform laws became effective some municipalities began to assert a greater role in education and law enforcement, areas previously reserved for the central government.[3]

In practice, the degree of autonomy and sphere of action that each municipality has is related to its size. Large municipal governments with active mayors such as San Juan (the capital), Guaynabo, Bayamón, and Caguas have asserted a significant degree of autonomy. Smaller municipalities with access to fewer resources are still significantly more dependent on the central government.

A final description concerns the nature of political cleavages, the party structure, and the degree of political participation and competition at the national level, which greatly influence municipal politics. The Commonwealth of Puerto Rico is an unincorporated territory of the United States. Annexed to the U.S. following the Spanish American War by virtue of the Treaty of Paris of 1898, it progressively gained an increasing degree of autonomy until the establishment of the Commonwealth of Puerto Rico ("Estado Libre Asociado"—ELA) in 1952. However, even with the establishment of the commonwealth status, Puerto Rico is still under the territorial clause of the U.S. Constitution. Federal sovereignty and law apply to Puerto Rico, and both the U.S. Department of Justice and the federal judiciary operate in the Island to enforce federal-level laws.[4] Puerto Rico's degree of autonomy to the Federal government is similar to that of a U.S. State except in two important ways: residents of Puerto Rico do not have Congressional representation with voting rights and do not participate in the U.S. presidential elections. In addition, a number of federal laws do not apply or apply differently than to the states, when specified in federal legislation.

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[3] The municipal reform also created two new agencies to further strengthen municipal autonomy: the Office of the Commissioner for Municipal Affairs ("Oficina del Comisionado de Auntos Municipales"—OCAM) and the Center for the Collection of Municipal Revenue ("Centro para el Recaudo de Ingresos Municipales"—CRIM). OCAM is the agency in charge of defending and implementing municipal autonomy. CRIM is the agency responsible for collecting resources such as property taxes for the municipalities. Its board of directors is composed of mayors.

[4]The fact that federal laws apply to Puerto Rico is important in the context of this investigation, since several mayors have gone to jail for racketeering with federal money.

National politics are essentially shaped by the debate over P.R.'s political status or relationship between the island and the United States. The three main political status alternatives: federal statehood, independence, and continuation of the current Commonwealth status, shape the political party system; it is the main political cleavage (Anderson 1989, 1998; Cámara Fuertes 2005). The New Progressive Party (NPP) supports federal statehood, the Popular Democratic Party (PDP) supports the Commmonwealth status, and the Puerto Rican Independence Party (PIP) supports the independent status. The NPP and the PDP are the two main political parties; they are similar in size in terms of electoral support and interchange regularly in power. The PIP is a relatively small third party, usually receiving around three (3) percent of the national electoral vote.

The intensity of the status debate supersedes all other debates, including the economic one typical of most nation states. It has been argued that, as a consequence, parties hold similar positions on many issues and the NPP and PDP have been labeled as catch-all parties (Meléndez 1998). Partisanship in Puerto Rico is high and most voters vote for the same party in the executive, legislative and municipal ballot. Thus, electoral landslides and coattail effects are common. As a general rule (with some notable exceptions) the party of the incumbent governor is the same that overwhelmingly controls both chambers of the Legislative Assembly and municipal governments. Contrary to the United States—and more in common with Latin American and European nations—Puerto Rico has a disciplined party system. This allows for effective partisan control of all levels of government when the same party controls the three administrative levels. Given the constitutional, and often personal, strength of the governor, his or her ideology or point of view is forcefully applied to all levels of government.

III. Theoretical Framework

Should the audit program influence the accountability of incumbent politicians? Should it induce a different type of politician – as characterized by his or her competence or honesty – to enter office? Should this have any consequences in the quality of local governments in subsequent terms? In this section, we summarize the theoretical literature on the influence of information dissemination about politicians' actions and characteristics in the context of a political agency model developed in Besley (2006) to guide the interpretation of our empirical findings.

Politicians differ in their congruence or honesty and in the actions they take, which may not be observed by voters. The incumbent politician uses policy choices as a signaling device towards voters given his/her re-election incentives (Barro 1973; Ferejohn 1986; Banks and Sundaram 1993; 1998). There is variation in whether voters have information about the incumbent's type and his/her actions – the information dissemination program is intended to function as a way of providing voters with information about the politician's actions and competence level. In these models, re-election incentives may work as a

force for 'good' either by improving selection of politicians or by creating greater discipline among dishonest politicians. In these models, the effects of increasing information about the incumbent politician's policy choice induces a disciplining effect and reduces the probability that dishonest types will be re-elected.

IV. Data

IV.A. Measures of Corruption based on the Audit Reports

The main data sources for the study are the municipal audit reports conducted by the OCPR. In this study we work with all municipal audit reports during the 1987-2006 period, which are relevant for the 1988 through 2004 elections. Note that there were two Comptrollers during the period for which we use the audit reports: Ileana Colón-Carlos (1987-1997) and Manuel Díaz-Saldaña (1997-present).

All seventy eight municipalities were audited during that period several more than once. For the 1996 and 2000 electoral periods, almost all or all of the municipalities were audited at least once (see Figure II, Panel A). During this period the OCPR completed 556 municipal audit reports, all of which were coded. Some of the reports were released before the election and some after.

Each report contains a list of findings and a detailed description of each. These are classified as main and secondary findings. Main findings are actions that have substantive consequences, while secondary findings are those considered by the OCPR not to have serious consequences. Each reported finding consists of a detailed explanation of a situation, the implicated individuals (if identifiable), and the reason why it is considered a violation or irregularity. We generate codes from each report's list of findings.[5] For each finding we coded the type of individual implicated in the finding – whether it was (i) the mayor or vice mayor, (ii) a member of the municipality's top management such as the finance director, (iii) a rank and file employee of the municipality, or (iv) whether the individual cannot be identified.

The research team also classified the findings based on the type of act. Although corruption in municipal governments in Puerto Rico takes diverse forms, most corruption schemes used by local politicians and bureaucrats to appropriate resources are based on a combination of fraud in procurement, the use of fake receipts, "phantom" firms, or ""phantom" employees, and over-invoicing the value of products or services. In addition, the audit reports also suggest that some individuals simply divert resources for personal purposes. We also coded the area of government activity in which the act took place (e.g., public infrastructure, law enforcement), the misappropriated amount (if stated), the date(s) of

[5] Before we began the coding process, the research assistants were given extensive training in content analysis, coding, and the details of the audit reports. Then they coded several reports to familiarize themselves with their format. We then ran tests for intercoder and intracoder reliability. The process continued until coder reliability was at least 0.9. The same coders worked with the reports throughout the project. The data was then sent to another research assistant who went over the complete dataset to catch and correct any errors.

the act, and whether the finding was referred to the P.R. Department of Justice or to the Office of Government Ethics. Most importantly, we created a code that specified whether the finding constituted an act of corruption or not. We operationalized corruption as an act by any municipal employee that led to a *personal* financial or political benefit.[6] Thus, the mayor receiving a bribe for a contract, or using municipal employees for his or her electoral campaign would be considered in our coding scheme as acts of corruption. On the other hand, poor bookkeeping was not (unless the report stated that it directly involved the covering up of a corrupt violation).

To construct measures of corrupt violations, we follow Ferraz and Finan (2008) and combine these indicators by summing up the number of times each one of these irregularities appear, overall and by category. However, in contrast to their previous work, because the OCPR may publish multiple reports on a municipality during one auditing period and this depends on the size or complexity of the municipal government, we normalize our measures by the number of reports published in that auditing period. (Note that the mean number of reports per audited municipality during this period ranged from 1.2 for the 1988 period to 2.1 for the 2000 period – see Figure II, Panel B). Finally, as will be made clearer once we discuss the study's research design, we define the time periods preceding each election as the two years preceding the election, and the post-election audit reports as those published in the two-year period following it.[7] To take into account the fact that a subset of the municipalities has audit reports published in both periods, for these we aggregate only those reports published before the election and assign them to the pre-election audit group.

IV.B. Other Data Sources

We employ two additional datasets available from the P.R. State Electoral Commission ("Comisión Estatal de Elecciones"—CEE). The first comprises the electoral results of the municipal and statewide general elections for each municipality for election years 1988 through 2004. These data allow us to construct measures such as whether the incumbent mayor runs for re-election in the general election, whether he/she is re-elected, the vote share and win margin for the election, his/her political party affiliation and whether he/she is in the opposition to the incumbent party in power at the state level, and the terms in office.

[6] This definition is similar to the one use by the Comptroller which states that corruption is the use of government functions for private gain (Díaz Saldaña 2007). It is important to note that the OCPR does not specify whether a finding is considered a corrupt violation or not.

[7] The distribution of pre and post election audit releases changed during the period studied. Pre-election reports increased from 41.5 percent during the 1985-1988 electoral term, to 44.2 percent in 1992, 60.6 percent in 1996, and 70.2 percent in 2004. Thus, there is a clear trend to release the reports before the election in more recent terms.

The second dataset was compiled from publicly available documents which contained financial reports to the Office of Government Ethics, information on property taxes, and audited financial statements for each elected mayor in the 1996, 2000, and 2004 elections, as well as their state-level income tax returns for the four year period preceding each of the 2000 and 2004 elections. These documents are required by law of all candidates to submit the CEE in order to be certified and subsequently become part of the public record.

As municipality-level outcomes that may be influenced by local governments, we use annual municipality-level unemployment rates for the 1990-2008 period (source: Local Area Unemployment Statistics, U.S. Department of Labor) and annual crime rates for the 1990-2003 period (source: Puerto Rico State Police). Finally, to capture underlying variation in municipal characteristics, we rely on the 1990 and 2000 U.S. Census of Population for Puerto Rico. We use measures of the proportion of adult individuals ages 25 and older with schooling attainment levels lower than ninth grade, with a high school education or more, and with a college education or more, as well as the municipality's household median income and poverty ratio for the years 1989 and 1999. Descriptive statistics of these variables are available in Table I.

V. Research Design

We are interested in testing whether the dissemination of the audit reports affects the short-run behaviors of incumbent mayors (and bureaucrats) in the municipalities; the electoral accountability of those mayors; the selection of politicians in the next term; and the subsequent behaviors/performance of municipal officials and municipal outcomes, during the latter period. Our research design exploits the pre-determined routine nature of the publicly-released audit reports and the timing of the municipal elections. We compare the outcomes for municipalities whose audit reports were disseminated in the two-year period before each election, relative to those whose audit reports were disseminated in the two-year period following each election, for the election years 1988 through 2000. Although municipalities are not selected at random, we can examine whether this comparison presents problems of identification in various ways. We first present our various empirical models, and subsequently discuss potential threats to validity.

To estimate the average effect of the program on the various municipal outcomes, we estimate the following reduced-form model:

$$Y_{m(t)} = \alpha + \theta A_{mt} + \beta X_{mt} + \gamma_t + \varepsilon_{m(t)}, \tag{1}$$

where $Y_{m(t)}$ denotes the incumbent politician or municipality outcome in municipality m at electoral term (t); for instance, C_{mt} denotes the number of corrupt violations per report around election year t; E_{mt}, the electoral outcome for the incumbent mayor at time t; or $C_{m,t+s}$, the number of corrupt violations per report in the next set of municipal audit reports at time $t+s$. A_{mt} is an indicator for whether or not the municipality audit report was published in the two-year period preceding election year t; X_{mt} is a vector of municipality and mayor characteristics that influence these outcomes; γ_t is an election fixed effect, and $\varepsilon_{m(t)}$ is the disturbance term for the municipality at election year (t). Under certain assumptions, the coefficient θ provides a consistent estimate of the average effect of the audit dissemination on municipal outcomes, capturing both the effect of being audited and the public release of this information.

The overall comparison of municipalities does not capture the possibility that the outcome of the audit being publicly released contains information about the corrupt behaviors of the incumbent mayor and other municipal government employees. For instance, it is possible that it is only in municipalities whose reported findings of corruption are unexpectedly high (from the voters' perspective) that we should observe significant responses in terms of incumbent mayors' re-election rates or systematic improvements in the administration of local affairs. To test for these possibly heterogeneous effects, we estimate models that include an interaction of the pre-election status of the audit report with the level of corruption reported in the audit:

$$Y_{m(t)} = \alpha + \theta_1 A_{mt} + \theta_2 A_{mt} * f(C_{mt}) + f(C_{mt}) + \beta X_{mt} + \gamma_t + \varepsilon_{m(t)}, \tag{2}$$

where C_{mt} denotes the number of corrupt violations per report around election year t; the function f(•) will be parameterized as a linear function of the reported findings, and the additional variables are defined as above. In this model, the parameter θ_2 estimates the impact of the pre-election audit, conditional on an additional finding of corruption.

We further decompose the effects of the pre-election audit by the identity of the agent – the mayor or vice-mayor, or another employee of the municipality – identified in the report as committing the corrupt violation. This distinction may be informative, as it allows us to assess whether voters respond differently to direct violations by mayors and those by other municipal employees. To test this hypothesis, we allow for mayor/vice-mayor-specific and other employee-specific measures of corruption (denoted C_{Mmt} and C_{Omt}, respectively) in an augmented version of equation (2):

$$Y_{m(t)} = \alpha + \theta_1 A_{mt} + \theta_2 A_{mt} * f_1(C_{Mmt}) + \theta_3 A_{mt} * f_2(C_{Mmt}) + f_1(C_{mt}) + f_2(C_{mt}) + \beta X_{mt} + \gamma_t + \varepsilon_{m(t)}, \tag{3}$$

In this model, the parameters θ_2 and θ_3 respectively estimate the impacts of the pre-election audit, conditional on each additional finding of corruption by the mayor/vice-mayor or another municipal employee.

VI. Results

VI.A. Short-Run Discipline and Electoral Accountability Effects

We first present evidence on the (reduced-form) short-run effects of the audit program on the corrupt behaviors of incumbent politicians and other municipal employees (Table II). Estimates of the average effects of the pre-election audit show a systematic reduction in the number of corrupt violations in the municipality, confirming the differences reported above. There are 0.685 (69 percent) fewer reported corrupt violations by the mayor/vice-mayor in the pre-election audit municipalities relative to those audited post-election (column 1; significant at 99 percent confidence). This relationship is stable and robust to the inclusion of the municipality and mayor predetermined characteristics controls, with a point estimate of 0.686 fewer corrupt violations (69 percent) (column 2; significant at 99 percent confidence). We also find 0.76 (60 percent) fewer corrupt violations per report by other municipality employees (significant at 99 percent confidence; not reported in the tables), which suggests that there is a very limited (if any) shift in the corrupt violations charges – in reality or by the auditors – between mayors and other municipality employees. More importantly, this estimate suggests that the disciplining effects are not concentrated just among elected officials of the municipality. In particular, the estimated reductions are of similar magnitude (in proportional terms) across top management, rank and file employees, and unidentified municipality employees – the estimates suggest reductions of 58, 76, and 51 percent among these groups, respectively (columns 3-5; significant at least at 95 percent confidence).

Decomposing the short-run effects of the audit program on the number of corrupt violations by type of government activity suggests an interesting pattern – mainly, that the reported levels of corruption are reduced mostly in areas of local governments in which there might be more leeway for corrupt activities. We find significant reductions in corrupt violations among infrastructure contracts and activities (0.22 findings, or 49 percent), municipal police activities (0.09 findings, or 63 percent), solid waste management services (0.33 findings, or 71 percent), as well as in activities or transactions related to resource transfers to individuals or municipality-level non-governmental organizations (0.09 findings, or 91 percent) (columns 6, 8-10; significant at least at the 95 percent confidence level). In contrast, we do not find evidence of reductions in corruption levels in areas related to municipal public health expenditures, possibly due to the fact that the level of corruption is already low, as measured by the 0.10 average corrupt violations among post-election audit municipalities (column 7).

We next present evidence on the reduced-form short-run effects of the audit program on electoral accountability at the municipality level – i.e., incumbent mayors' re-election rates. We start the discussion with a graphical analysis to shed light on the patterns in the data. Figure IV depicts incumbent mayors' re-election rates as a function of the reported corrupt violations (by the mayor or vice-mayor) per report in the municipality, distinguishing between municipalities whose audit reports were published in the two-year period prior to the election and those whose reports were published in the two-year period following each election (respectively represented by a solid line with diamonds and a dashed line with triangles).[8] The measure is based on an indicator variable for the mayor's successful re-election or otherwise (i.e. not run for re-election, or lose in primary or general election).

Incumbent mayors in municipalities whose reports were published pre-election exhibit a clear downward-sloping trend between successful re-election rates and the number of corrupt violations per report. Among the municipalities with no reported violations, re-election rates are approximately 50 percent, and reduce consistently to approximately 40 percent, 22 percent, and to an astonishing zero percent, among mayors charged with up to one violation, between one and two violations, and above two violations per report, respectively. In contrast, the relationship between mayors' re-election rates and the number of violations among municipalities whose reports were published following the election is much less stark; re-election rates vary between 43 and 50 percent in municipalities between no violations and up to two findings per report, and decrease to only 26 percent among mayors charged with more than two violations per report.[9] The contrast of these two relationships suggests that voters do care about corruption, and hold corrupt politicians accountable when informed. This evidence is particularly consistent with previous work on municipal audit programs and electoral accountability, as shown by Ferraz and Finan (2008).

Parametric linear probability estimates of the reduced-form relationship following empirical model (2) capture the results depicted above (see Table III). Although incumbent mayors' overall successful re-election rates are not significantly correlated with the number of corrupt violations among pre-election audit municipalities (column 1), the relationship is strongly negative among those incumbent mayors running for re-election in the general election. Consistent with Ferraz and Finan (2008), the point estimate indicates that the probability of a successful re-election is 6.6 percentage points (21 percent) lower for each additional finding per report (column 5). Moreover, the accountability effect is strongly correlated with the number of violations by other municipality employees – the point estimate indicates an 8.8 percentage point (28 percent) reduction in the re-election rate for each additional finding per report (column 6), although not so for the overall successful re-election rate (2.7 percentage point or 6 percent

[8] The reported differences between pre-election and post-election audit municipalities are regression-adjusted for election period fixed effects.
[9] The relationship among incumbent mayors who run for re-election in the general election is qualitatively similar.

effect; not significant at conventional confidence levels; column 2). Note that the relationship is imprecisely estimated when we restrict the measure to the number of violations per report attributed to mayors – the estimated effect is of 5.3 percentage points (17 percent), but is only significant at the 20 percent level (column 7). However, we cannot distinguish whether the effects are significantly different for these two categories of findings, based on estimates of empirical model (3): the estimated effect for violations attributed to other employees is 8.0 percentage points (significant at 90 percent confidence) whereas that for violations attributed to the mayor or vice-mayor is 4.5 percentage points (column 8). An F-test of equality of the slope coefficients fails to reject the null hypothesis (p-value = 0.55). Overall, these estimated relationships support the hypothesis that information about corrupt violations induces an improvement in electoral accountability.

VI.B. Effects of the Audits on Short-Run Municipality Outcomes

The observed reductions in the reported number of corrupt violations pair up with associated short-run improvements in municipalities' unemployment and crime rates – observable municipality-level outcomes of interest. We again start the discussion with a graphical analysis to shed light on the patterns in the data. Figure V depicts the estimated mean difference (and associated 95 percent confidence interval) in municipality-level unemployment rates between pre-election audit and post-election audit municipalities as a function of the years from the election of interest.

The figure clearly shows that there are no statistically or economically significant differences in unemployment rates across these municipalities in the three to six-year period preceding each election of interest. It is not until two years preceding the election that we observe a reduction in the unemployment rate of approximately 1.1 percentage points (6 percent). Moreover, we observe a sustained reduction in the unemployment rate of 1.1 to 1.4 percentage points (6-9 percent) until the two year period following the election, after which it reduces to 0.7 percentage points (4 percent) and becomes insignificantly different from zero. This evidence is consistent with municipal government carrying out activities that promote economic activity, perhaps as a result of incumbent mayors' more salient re-election incentives or due to patronage behavior to increase the incumbent's likelihood of getting re-elected (Nyblade and Reed 2008).

Estimates of the reduced-form short-run relationship following empirical model (1) capture the results depicted above (see Table IV). The point estimate from a parsimonious model which estimates the average effect for the three years preceding the election indicate that there is a 1.2 percentage points (7 percent) reduction in the municipality's unemployment rate (column 1; significant at 90 percent confidence). This estimate is robust to the inclusion of municipality and mayor predetermined characteristics controls, with an estimated reduction of 1.06 percentage points (6 percent) (column 2;

significant at 90 percent confidence). We also report alternative models which estimate the years from election-specific effects of the pre-election audit. Consistent with the graphical evidence presented above, the point estimates indicate that the unemployment rate decreases by 1.13 percentage points (6.3 percent) two years before the election, by 1.20 percentage points (6.9 percent) the year before the election, and by 1.28 percentage points (7.4 percent) on the year of the election (column 3; all significant at 90 percent confidence). These estimates are generally robust to the inclusion of municipality and mayor predetermined characteristics controls (column 4). Overall, these estimated relationships support the hypothesis that the audit program induces at least a temporary improvement in local economic activity.

Analogous estimates of the short-run effects of the audit program on municipality-level crime rates show similar patterns. Since the reported crime rates in the pre-election municipalities are significantly higher in the four-to-eight year period preceding the election, we estimate four-year first difference models to estimate the pre-election audit effects on crime rates. The point estimate from the average effect model indicates that there is a reduction of 98.9 crimes per thousand (22 percent) in the municipality, although the estimate is somewhat imprecisely estimated (at 85 percent confidence) (column 5). This estimate is also robust to the inclusion of municipality and mayor predetermined characteristics controls, with an estimated reduction of 117.2 crimes per thousand (26 percent) (column 6; significant at 85 percent confidence). The years from election-specific effects models are generally imprecisely estimated but suggest a 13-34 percent reduction in crime rates throughout the term (column 7). Finally, note that the estimated crime reduction effects are stronger and more precisely estimated among the sample of municipalities whose mayors run for re-election in the general election. The point estimate of the average effect indicates a reduction of 182.2 crimes per thousand (82 percent) (column 8; significant at 95 percent confidence), whereas the year-specific effects estimates suggest a consistent reduction two years preceding the election onwards (column 9; significant at least at 90 percent confidence). Again, these estimated relationships support the hypothesis that the audit program may have induced improvements in conditions (e.g., policing, economic conditions) that lead to an improvement in the criminal environment of the municipality.

VI.C. Political Selection and Post-Election Municipal Outcomes Effects

As mentioned above, the political agency models with information dissemination make clear predictions regarding the effects of providing voters with information about the politician's actions and the politician's type with respect to political selection and the quality of government in the future term – mainly, the honesty/congruence of the re-elected politicians should increase, and the quality of government should improve, unless the pool of potential candidates is composed of a substantial proportion of dissonant politicians (Besley 2006; Persson and Tabellini 2000). In this sub-section, we

present evidence that tests these predictions of the model with respect to the next electoral term's degree of political selection, reported level of corrupt violations, and long-term municipality outcomes.

Political Selection

We first present evidence on the reduced-form effects of the pre-election audits on the selection of mayors following the election (see Table V). Following the theoretical literature on politician's wages and politician selection, we use the (re-)elected mayor's household per capita earnings in the fourth year preceding the respective election year as a plausible measure of the competence of the politician elected into office. Estimates of the average effects of the pre-election audit show no systematic (positive or negative) selection of higher earnings politicians in the municipality, even among the subset of municipalities in which incumbent mayors ran for re-election (column 1). However, there is a positive earnings-selection effect among municipalities with non-zero levels of corruption, as captured by parametric estimates of the reduced-form relationship following empirical model (2). The point estimate indicates that those (re-)elected mayors have on average $4,390 USD per capita (22 percent) for each additional finding per report (column 2; significant at 90 percent confidence).

The pre-incumbency earnings-based selection is strongly correlated with the number of violations attributed to the mayor or vice-mayor in the municipality – the point estimate indicates that those elected have household per capita earnings of $9,660 USD (48 percent) on average given each additional mayor-attributed finding (column 3). The relationship is smaller in magnitude and imprecisely estimated when we restrict the measure to the number of violations per report attributed to other municipality employees – the estimated effect is of $3,510 USD per capita earnings (18 percent; insignificantly different from zero) (column 4). However, we cannot distinguish whether the effects are significantly different for these two categories of findings, based on estimates of empirical model (3): the estimated effect for violations attributed to other employees is $1,960 USD per capita earnings (not significant at conventional confidence levels) whereas that for violations attributed to the mayor or vice-mayor is $8,710 USD per capita earnings (44 percent; significant at 90 percent confidence) (column 8). An F-test of equality of the slope coefficients fails to reject the null hypothesis (p-value = 0.33). Finally, note that the estimated relationships are even stronger among the sub-sample of municipalities in which incumbent mayors ran for re-election (columns 7-10). Overall, the estimates support the hypothesis that information about corrupt violations induces a degree of pre-incumbency earnings-based selection. We thus study whether this selection process induces the selection of competent or honest politicians (or both).

Post-Election Municipality-Level Unemployment and Crime Rates

The observed reductions in re-election rates and related politician selection effects match associated longer-term improvements in the municipalities' unemployment and crime rates; estimates of the reduced-form longer-run relationships capture these (see Table VI). The point estimate from a parsimonious model which estimates the average effect for the three-year period following the election indicate that there is a 0.78 percentage points (4.8 percent) reduction in the municipality's unemployment rate (column 1; significant at 85 percent confidence). As shown above, the effect is stronger among municipalities with non-zero levels of corruption by the previous mayor or vice-mayor, as captured by the parametric estimates of the reduced-form relationship following empirical model (2). The point estimate indicates that the unemployment rate decreases on average by 0.82 percentage points (5.0 percent) for each additional finding per report (column 2; significant at 90 percent confidence). The response is also concentrated in those municipalities with pre-election audit findings attributed to the top management, as the associated effects of findings of corruption by other municipality employees is small and insignificantly different from zero (column 3). In this case, the F-test of equality of the slope coefficients reject the null hypothesis (p-value = 0.03). Finally, note again that the estimated relationships are even stronger among the sub-sample of municipalities in which incumbent mayors ran for re-election (columns 4-6).

The analogous estimates of the short-run effects of the audit program on municipality-level crime rates show similar patterns. Recalling that since the reported crime rates in the pre-election municipalities are significantly higher in the four-to-eight year period preceding the election, we estimate eight-year first difference models to estimate the pre-election audit effects on crime rates. The point estimate from the average effects model indicates that there is a reduction of 184.9 crimes per thousand (36 percent) in the municipality (column 7; significant at 99 percent confidence). The pre-election corrupt violations heterogeneous response models provide suggestive evidence of the same patterns, but the relationships are imprecisely estimated (columns 8-9). Note again that the estimated relationships are stronger and more precisely estimated among the sub-sample of municipalities in which incumbent mayors ran for re-election (columns 10-12). In sum, these estimates are supportive of the hypothesis that information about corrupt violations induces a degree of positive selection of more competent politicians which enhances the quality of local government. Whether this selection process also leads to the selection of honest politicians – those who perform their duties without requiring illegal payment – is a different question.

Post-Election Municipality-Level Reported Findings of Corrupt Violations

Although the previous results support the hypotheses that information about corrupt violations induces greater electoral accountability and a degree of political selection correlated with competence in the administration of municipal government affairs, we find no evidence that the (re-)elected politician

tend to be more honest types. Estimates of the reduced-form longer-run effects of the pre-election audits on the municipalities' subsequent audits number of corrupt violations allow us to test for these effects (see Table VII). The point estimate from the average effects model suggests that there are 0.186 (11.7 percent) fewer corrupt violations per report among the pre-election audit municipalities, but the estimate is not significantly different from zero at conventional confidence levels (Panel A, column 1). The relationship becomes slightly stronger with the inclusion of the municipality and mayor predetermined characteristics controls, with a point estimate of 0.388 fewer corrupt violations (24 percent) (Panel A, column 2; significant at 85 percent confidence).

Moreover, decomposing the subsequent audits' corrupt violation effects by the identity of the individual charged with committing the violation indicates that there are small reductions in reported corruption across all agents of the municipality. We find average reductions of 0.20 violations per report (28 percent) by the mayor or vice-mayor and of 0.19 violations per report (21 percent) by all other municipal employees; however, none of these estimates is statistically distinguishable from zero (Panel A, columns 3-4).[10] These estimates again suggest a very limited (if any) shift in the corrupt violations charges between mayors and other municipality employees, or that any potential selection effect would be concentrated among elected officials of the municipality.

In contrast with all the earlier results, the effect is not at all stronger among municipalities with non-zero reported levels of corruption in the previous audit (see Table VII, Panel B). The point estimate from a specification with no regression-adjustment indicates that the overall number of corrupt violations in the subsequent audit decrease by 0.071 (4.5 percent) for each additional finding per report in the previous audit (column 1; not significant at conventional confidence levels). This relationship is even weaker with the inclusion of municipality and mayor predetermined characteristics controls, with a point estimate of 0.004 fewer corrupt violations (0.3 percent) (column 2). There is also no clear differential effect in responses by elected and non-elected officials. The estimated interaction effect suggests that mayors or vice-mayors are attributed on average with 0.037 more violations per report in the subsequent audit, for each additional finding per report in the previous audit (column 3), whereas the estimated effect for other municipality employees is a reduction of 0.041 violations per report (column 4); none of these estimates is statistically distinguishable from zero at conventional confidence levels.[11] In sum, these pieces of evidence allow us to conclude that the information about corrupt violations induces a degree of positive selection of more competent politicians which enhances the quality of local government, but with

[10] The municipal employee-type specific effects are: an increase of 0.011 findings per report (8 percent; standard error = 0.057) for the municipality top management; a reduction of 0.112 findings per report (39 percent; standard error = 0.094) for rank and file employees; and a reduction of 0.084 findings per report (19 percent; standard error = 0.095) among unidentified individuals).

[11] We also do not find any evidence of (non-zero) heterogeneous responses based on the number of findings attributed to the mayor/vice-mayor in the previous audit, or those attributed to other municipality employees. Estimates are available from the authors upon request.

no associated reductions in the reported levels of rent-seeking behaviors by elected politicians or other members of the local government (i.e., corruption).

VII. Conclusion

This paper studies the effects of the disclosure of local government corruption practices on the longer-run performance of municipal governments. It overcomes previous limitations by using a unique setting to study this question: routine publicly-released audit reports of municipal government activities in Puerto Rico. The government of Puerto Rico established a systematic mechanism to routinely conduct municipal government audits, whose findings were then made publicly available and disseminated to media sources. Our research design exploits the ordering in which municipalities are routinely audited over time, a rule which helps us establish the effects of this auditing and information dissemination program on the municipalities' subsequent levels of corruption. Specifically, we employ a unique longitudinal dataset of corruption findings constructed from the audit reports for municipalities during the period 1987-2006 to compare incumbent governments levels of reported corruption of municipalities audited before versus after each election, as well as the subsequent term's levels of reported corruption and municipal unemployment and crime rates - outcomes influenced by local governments in Puerto Rico.

Our estimates show that the audits led to a significant positive selection of subsequent mayors and associated improvements in municipality-level unemployment rates and crime rates. In contrast, we find that observed municipal corruption levels in the subsequent term do not differ systematically across pre-election and post-election audit municipalities. Put together, this evidence allow us to conclude that the information about corrupt violations induces a degree of positive selection of more competent politicians which enhances the quality of local government, but with no associated reductions in the reported levels of rent-seeking behaviors by elected politicians or other members of the local government (i.e., corruption). The relative inability to contain rent-seeking activities in the longer-run may be the result of equilibrium outcomes in which there might be a trade-off between honesty and competence of elected officials, as highlighted in work by Caselli and Morelli (2004).

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FIGURE I: TIMING OF PUBLICATION OF AUDIT REPORTS, 1985-2005

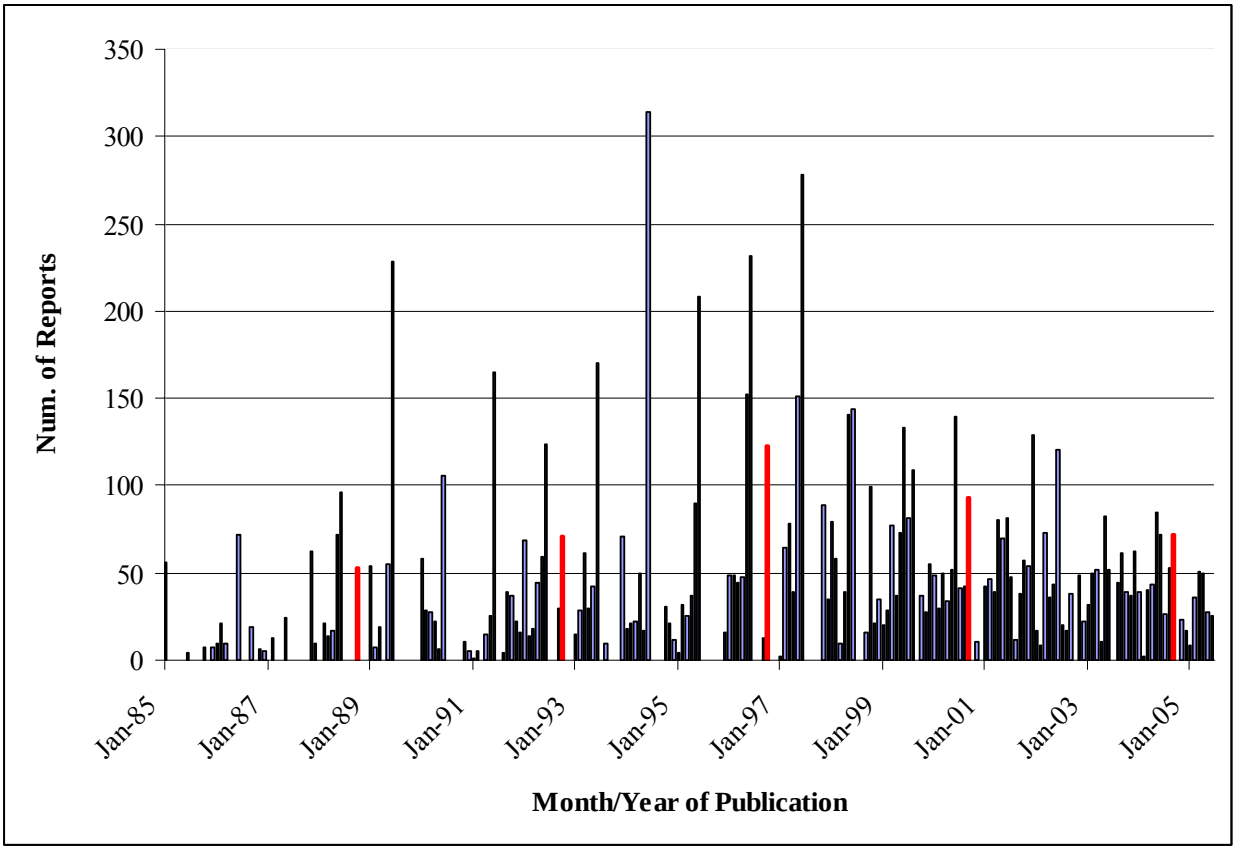
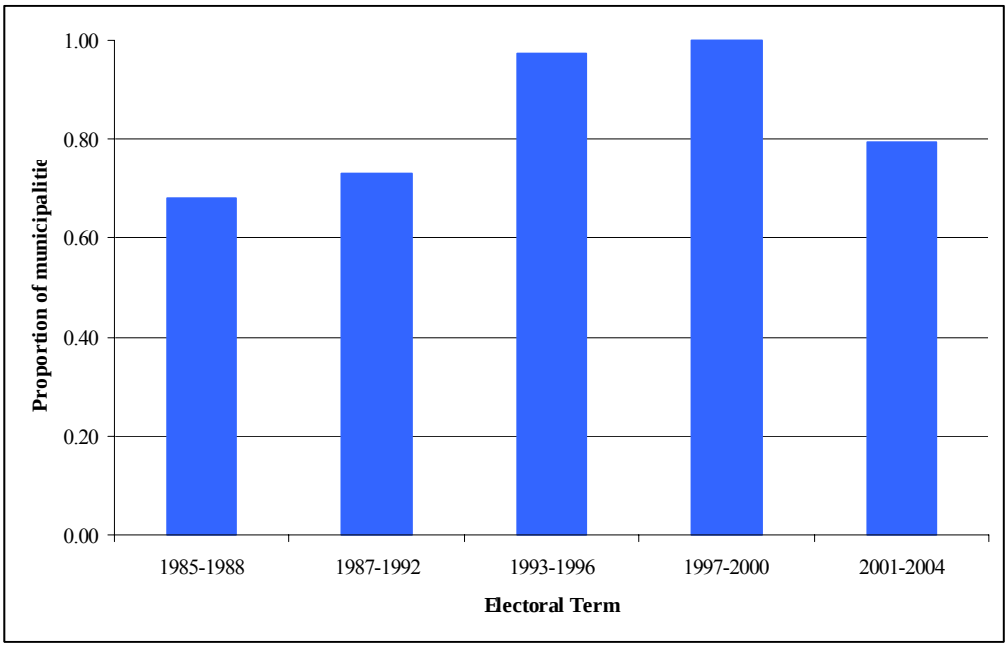


FIGURE II: AUDIT CHARACTERISTICS ACROSS ELECTORAL TERMS

PANEL A: SHARE OF MUNICIPALITIES AUDITED



PANEL B: NUMBER OF REPORTS PER AUDIT

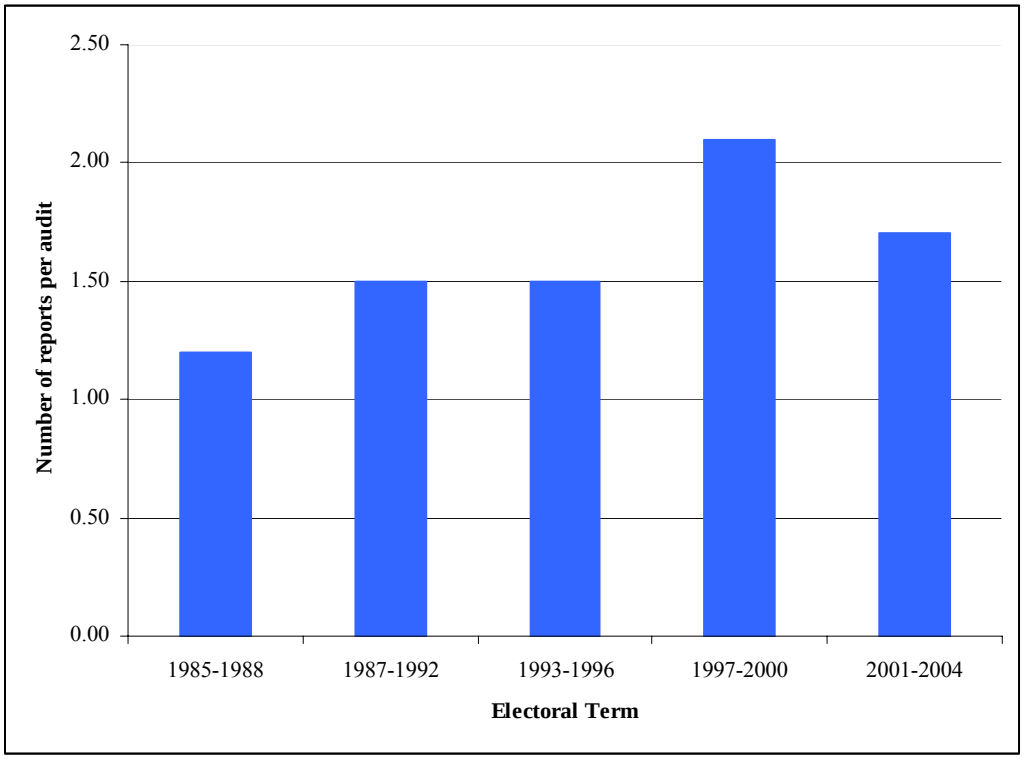


FIGURE IV:
RELATIONSHIP BETWEEN REPORTED CORRUPTION LEVELS AND ELECTORAL ACCOUNTABILITY FOR MUNICIPALITIES AUDITED BEFORE AND AFTER ELECTIONS

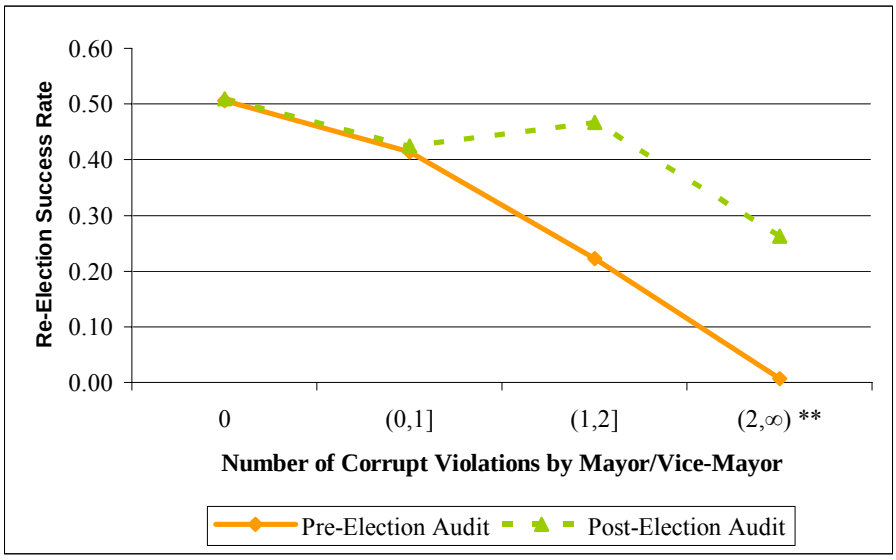


FIGURE V:
UNEMPLOYMENT RATE DIFFERENCES FOR MUNICIPALITIES AUDITED BEFORE AND AFTER ELECTIONS

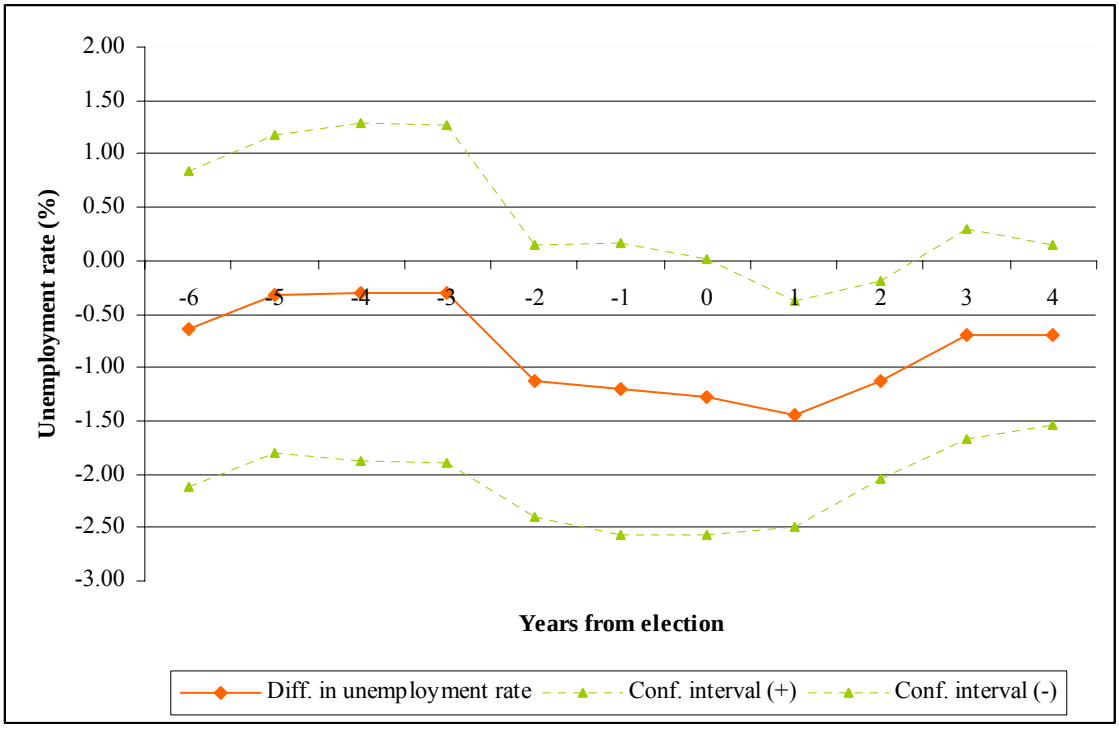


TABLE I: CHARACTERISTICS OF THE MUNICIPALITIES

	All (1)	Pre-election audit (2)	Post-election audit (3)	Difference (4)	Standard error (5)
Panel A: Number of corrupt violations per report (audit outcomes)					
Violations by mayor/vice-mayor	0.636	0.301	0.986	-0.685	(0.119)
Violations by unit director	0.177	0.138	0.239	-0.101	(0.057)
Violations by rank & file employee	0.235	0.063	0.391	-0.328	(0.086)
Violations by undetermined individual	0.480	0.350	0.629	-0.279	(0.079)
Panel B: Municipality outcomes					
Unemployment rate during electoral term (%)[a]	0.1679	0.1620	0.1740	-0.012	(0.0065)
Δ Crime rate during electoral term (per thousand)[b]	-503.8	-552.1	-453.2	-98.9	(67.4)
Panel C: Electoral outcomes					
Incumbent runs for re-election (1/0)	0.720	0.672	0.752	-0.079	(0.051)
Incumbent mayor wins (1/0)	0.314	0.335	0.318	0.017	(0.065)
Successful re-election (1/0)	0.436	0.434	0.442	-0.008	(0.070)
Panel D: Pre-audit political characteristics (N = 264)					
Mayor, member of PNP	0.527	0.507	0.488	0.019	(0.069)
Member of opposition party to governor	0.307	0.325	0.287	0.038	(0.054)
Mayor's margin of victory (previous election)	0.533	0.535	0.530	0.005	(0.007)
Δ Mayor's vote share (previous election)	0.105	0.107	0.103	0.004	(0.013)
Margin of victory - candidate for governor of incumbent's party (previous election)	0.059	0.059	0.062	-0.003	(0.011)
Panel E: Pre-audit municipal characteristics					
Schooling ≤ 8th grade (%)	40.4	40.2	40.7	-0.4	(1.0)
High school education or more (%)	44.0	44.2	43.8	0.4	(1.0)
College or more (%)	10.5	10.7	10.2	0.5	(0.5)
Household median income (USD)	8225.3	8267.2	8178.4	88.7	(219.9)
Poverty ratio (%)	61.3	60.9	61.7	-0.8	(1.2)
Unemployment rate pre-electoral term (%)[a]	17.2	17.2	17.6	-0.4	(0.8)
Crime rate pre-electoral term (per thousand)[b]	2182.2	2402.9	1918.5	484.4	(182.0)

TABLE II: THE AVERAGE EFFECTS OF THE TIMING OF THE AUDITS ON THE NUMBER OF CORRUPT VIOLATIONS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Number of corrupt violations (by actor)					Number of corrupt violations (by budget area)				
	Mayor / vice-mayor		Other top management	Rank & file employees	Undetermined	Infrastructure	Health	Transfers to individuals / groups	Municipal police	Solid waste management
Pre-election audit (1/0)	-0.685***	-0.686***	-0.141**	-0.298***	-0.322***	-0.224***	0.002	-0.091**	-0.094**	-0.328***
	(0.119)	(0.125)	(0.056)	(0.083)	(0.085)	(0.074)	(0.023)	(0.036)	(0.046)	(0.082)
Municipality Controls	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election Year Fixed Effe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	264	264	264	264	264	264	264	264	264	264
Post-election audits mear	0.99	0.99	0.24	0.39	0.63	0.46	0.03	0.10	0.15	0.46

Notes: Coefficient estimates and standard errors from OLS regressions are presented; disturbance terms are clustered at the municipality level. Coefficient estimates statistically significant at (+) 85%, (*) 90%; (**) 95%; (***) 99% confidence levels, respectively. Controls are the number of municipality government reports, the number of municipal public corporation or consortium reports; indicators for the incumbent in the opposition party to the state-level executive government and for the New Progressive Party membership; the proportion of individuals ages 25 and older with schooling attainment levels less than 9th grade, with high school diploma or higher, with college degree or more, as well as the households' median income and families' poverty ratio from the preceding population census. The sample is composed of all municipalities which have a first audit during the period 1987-2002 and a subsequent one in the 1991-2006 period.

TABLE III: THE EFFECTS OF THE RELEASE OF THE AUDITS ON ELECTORAL OUTCOMES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All incumbent mayors							
	Pr(Run re-election & Re-election)				Pr(Re-election)			
Pre-election Audit (1/0)	-0.027	0.001	-0.052	-0.026	0.140**	0.119**	0.091*	0.141**
	(0.074)	(0.070)	(0.072)	(0.074)	(0.060)	(0.055)	(0.053)	(0.061)
Pre-election Audit (1/0) * Num. of corrupt violations	0.003				-0.066**			
	(0.051)				(0.033)			
Pre-election Audit (1/0) * Num. violations by all others		-0.027		-0.037		-0.088**		-0.080*
		(0.076)		(0.077)		(0.044)		(0.044)
Pre-election Audit (1/0) * Num. violations by mayor			0.053	0.058			-0.053	-0.045
			(0.071)	(0.072)			(0.040)	(0.039)
Number of corrupt violations, overall or by type	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All violations pre-election audit coefs. [p-value]	[0.927]	[0.925]	[0.675]	[0.830]	[0.060]	[0.064]		[0.121]
Mayor = Other violations pre-election audit coefs. [p-value]				[0.410]				[0.546]
Observations	264	264	264	264	264	264	264	264
Mean of dep. variable among post-election municipalities	0.442	0.442	0.442	0.442	0.318	0.318	0.318	0.318

Notes: Coefficient estimates and standard errors from OLS regressions are presented; disturbance terms are clustered at the municipality level. Coefficient estimates statistically significant at (+) 85%, (*) 90%; (**) 95%; (***) 99% confidence levels, respectively. Controls are the number of municipality government reports, the number of municipal public corporation or consortium reports; the number of findings referred to the P.R. Department of Justice and those refereed to the Office of Gubernatorial Ethics; indicators for the incumbent in the opposition party to the state-level executive government and for the New Progressive Party membership; the proportion of individuals ages 25 and older with schooling attainment levels less than 9th grade, with high school diploma or higher, with college degree or more, as well as the households' median income and families' poverty ratio from the preceding population census.. The sample is composed of all municipalities which have a first audit during the period 1987-2002 and a subsequent one in the 1991-2006 period.

TABLE IV: THE AVERAGE EFFECTS OF THE TIMING OF THE AUDITS ON MUNICIPAL OUTCOMES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	All municipalities				All municipalities			Mayors run for re-election	
	Unemployment rate				Crime rate (t) - crime rate (t-4) (num. of crimes per thousand)				
Pre-election Audit (1/0)	-1.20*	-1.06*			-98.9^{+}	-117.2^{+}		-182.2**	
	(0.65)	(0.57)			(67.4)	(74.7)		(82.5)	
Pre-election Audit (1/0) - Year -3			-	-			-61.1		-66.9
							(58.6)		(74.0)
Pre-election Audit (1/0) - Year -2			-1.13*	-0.93^{+}			-155.7*		-281.8***
			(0.65)	(0.57)			(87.3)		(105.4)
Pre-election Audit (1/0) - Year -1			-1.20*	-1.02^{+}			-160.1		-204.6*
			(0.70)	(0.64)			(121.7)		(121.8)
Pre-election Audit (1/0) - Year 0			-1.28*	-1.24**			-91.8		-175.6*
			(0.66)	(0.58)			(99.0)		(104.7)
Municipality Controls	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Election Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	154	154	154	154	154	154	154	117	117
Mean of dep. variable, post-election	17.4	17.4	17.4	17.4	-453.2	-453.2	-453.2	-222.6	-222.6

Notes: Coefficient estimates and standard errors from OLS regressions are presented; disturbance terms are clustered at the municipality level. Coefficient estimates statistically significant at (+) 85%, (*) 90%; (**) 95%; (***) 99% confidence levels, respectively. For a list of controls see notes to Table II. The sample is composed of all municipalities which have a first audit during the period 1987-2002 and a subsequent one in the 1991-2006 period.

TABLE V: THE RELEASE OF THE AUDITS AND SELECTION OF MAYORS BASED ON PRE-INCUMBENCY EARNINGS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All municipalities					Mayors who run for re-election				
	Elected mayor's earnings per capita (4 years earlier) [in 000's], 2000 and 2004 elections									
Pre-election Audit (1/0)	-0.03	-5.53	-4.49	-2.67	-5.56	-2.97	-10.86	-7.39	-8.42	-10.63
	(5.10)	(6.99)	(6.06)	(6.74)	(7.13)	(7.07)	(9.42)	(8.05)	(9.35)	(9.70)
Pre-election Audit (1/0) * Num. of corrupt violations		4.39*					6.59**			
		(2.62)					(3.29)			
Pre-election Audit (1/0) * Num. violations by mayor			9.66*		8.71*			9.72*		8.16+
			(4.88)		(4.89)			(5.59)		(5.62)
Pre-election Audit (1/0) * Num. violations by all others				3.51	1.96				7.58+	5.40
				(3.68)	(3.64)				(4.94)	(5.06)
Number of corrupt violations, overall or by type	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Municipality Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violations pre-election audit coefs. [p-value]		[0.23]	[0.15]	[0.58]	[0.29]		[0.14]	[0.22]	[0.30]	[0.28]
Mayor = Other viol. pre-election audit coefs. [p-value]					[0.30]					[0.74]
Observations	120	120	120	120	120	93	93	93	93	93
Mean of dep. variable among post-election municipaliti	19.8	19.8	19.8	19.8	19.8	23.2	23.2	23.2	23.2	23.2

Notes: Coefficient estimates and standard errors from OLS regressions are presented; disturbance terms are clustered at the municipality level. Coefficient estimates statistically significant at (+) 85%, (*) 90%; (**) 95%; (***) 99% confidence levels, respectively. For a list of controls see notes to Table III. The sample is composed of all municipalities which have a first audit during the period 1987-2002 and a subsequent one in the 1991-2006 period.

TABLE VI: THE EFFECTS OF THE RELEASE OF THE AUDITS ON POST-ELECTION MUNICIPAL UNEMPLOYMENT AND CRIME RATES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All municipalities			Mayors run for re-election		All municipalities			Mayors run for re-election	
	Unemployment rate 2-4 years post-election (%)					Δ Mean (Post - Pre-election) crime rate (per thousand)				
Pre-election audit (1/0)	-0.78+	-0.49	-0.58	-1.18**	-0.87*	-184.9**	-172.2	-136.2	-252.5**	-142.4
	(0.50)	(0.49)	(0.54)	(0.46)	(0.50)	(89.0)	(106.9)	(116.9)	(105.9)	(125.2)
Pre-election audit * Num. violations by mayor		-0.82**	-0.82**		-1.05**		-174.2	-152.5		-186.7
		(0.32)	(0.32)		(0.49)		(136.9)	(132.1)		(155.0)
Pre-election audit * Num. violations by all others			0.21		0.22			-80.0		-188.4*
			(0.34)		(0.39)			(108.5)		(108.5)
Number of corrupt violations, overall or by type	No	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes
Municipality Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violations pre-election audit coefs. [p-value]		[0.02]	[0.06]		[0.02]		[0.03]	[0.08]		[0.01]
Mayor=Other viol. pre-election audit coefs. [p-value]			[0.03]		[0.05]			[0.70]		[0.99]
Observations	264	264	264	190	190	154	154	154	117	117
Mean of dep. variable among post-election mun.	16.1	16.1	16.1	16.1	16.1	-517.6	-517.6	-517.6	-546.2	-546.2

Notes: Coefficient estimates and standard errors from OLS regressions are presented; disturbance terms are clustered at the municipality level. Coefficient estimates statistically significant at (+) 85%, (*) 90%; (**) 95%; (***) 99% confidence levels, respectively. For a list of controls see notes to Table III. The sample is composed of all municipalities which have an audit during the period 1987-2002.

TABLE VII: THE EFFECTS OF THE AUDITS ON THE NUMBER OF CORRUPT VIOLATIONS IN THE SUBSEQUENT AUDIT (TERM)

	(1)	(2)	(3)	(4)
	Number of corrupt violations in subsequent audit (term)			
	All agents		Mayor / vice-mayor	All other agents
	Panel A: Average Effects			
Pre-election audit	-0.186	-0.388^{+}	-0.202	-0.186
	(0.215)	(0.265)	(0.145)	(0.175)
	Panel B : Effects by Num. of Corrupt Violations in Preceding Audit			
Pre-election audit	-0.149	-0.276	-0.238	-0.038
	(0.293)	(0.320)	(0.220)	(0.204)
Pre-election audit * Num. of corrupt violations	-0.071	-0.004	0.037	-0.041
	(0.147)	(0.175)	(0.106)	(0.118)
Municipality Controls	No	Yes	Yes	Yes
Election Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	232	232	232	232
Post-election audits mean	1.59	1.59	0.71	0.88

Notes: Coefficient estimates and standard errors from OLS regressions are presented; disturbance terms are clustered at the municipality level. Coefficient estimates statistically significant at (+) 85%, (*) 90%; (**) 95%; (***) 99% confidence levels, respectively. For a list of controls see notes to Table III. The sample is composed of all municipalities which have a first audit during the period 1987-2002 and a subsequent one in the 1991-2006 period.