Corruption, Intimidation, and Whistleblowing: Empirical Approach

Arieda Muço
Central European University
Audit

Whistleblowing

Corruption
Research Question

Do audits incentivize reports of wrongdoing?

- Providing plausible deniability to whistleblowers
- Increase the probability of being heard

⇒ Random Audits
Literature & Contribution

First paper to provide credible empirical evidence on whistleblowing

- Chassang, Gerard Padro i Miquel (2018); Dyck, Morse, and Zingales (2010)

Anti-corruption tools

- Audits as effective tools in the anti-corruption fight (Di Tella and Schargrodsky, 2003; Olken, 2009; Ferraz and Finan, 2008)

- Positive consequences which should also be taken into consideration for cost benefit analysis (Muço, 2019)
Institutional Background
The audit program
Timeline of the process
Whistleblower Protection Law

- Brazil has no specific whistleblower protection law

- Anti-corruption law was passed in 2013 with some provisions to encourage whistleblowers
  
  - Not very effective according to Transparency International
Filing a complaint

• Complaint: Communication of practice of an unlawful act
  – Try to describe the facts clearly, simply, and objectively
  – All the anonymous reports are evaluated as long as there are sufficient elements that relate to the described facts
Time-series of Complaints Filed

Complaints

Anonymous Complaints

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Corruption, Intimidation, and Whistleblowing
Data
Data

- Complaint Data (CGU) – dependent variable
  - Complaints, Anonymous complaints, Information Requests
  - Daily frequency (2000-2012)

- Audit Data (CGU) – main regressor
  - Date of announcement, publication of the audit report...
  - Audit Reports (arrival, departure, irregularities found)

- Municipal Characteristics (IBGE) – controls
Empirical Strategy
Empirical Strategy

I estimate the following linear model

\[ Y_{i,t,m} = \sum_{m=-12}^{-2} \beta_w \text{Audit}_{i,t,m} + \sum_{m=0}^{12} \beta_w \text{Audit}_{i,t,m} + \alpha_i + \lambda_{s,t} + \epsilon_{i,t,m} \]

- \( Y_{i,t,m} \) equals one if at least a complaint is filed from municipality \( i \) in month \( m \) of year \( t \)
- \( \text{Audit}_{i,t,m} \) are indicator variables tracking the months that immediately precede and follow that audit announcement in municipality \( i \)
- \( \alpha_i \) are municipality fixed effects
- \( \lambda_{s,t} \) year-state fixed effects
- \( \epsilon_{i,t,m} \) is the idiosyncratic error term
- Standard errors are clustered at the municipality level
Timeline of the process

Announcement

Pre-Audit

Investigation

Arrival

Publication

Post-Pub

Departure

Investigation
Main Findings

Complaints

Anonymous Complaints
Main Findings (weekly)

Complaints

Anonymous Complaints
Are complainants more likely to get audited?

No selection of municipalities in and out of treatment

\[ \text{Audit}_{i+t} = \beta_0 + \beta_1 C_i + \eta_c + \varepsilon_i \]

- \( \text{Audit}_{i+t} \) is a dummy taking value one if municipality \( i \) receives a future audit \( i + t \)
- \( C_i \) is a dummy variable taking value one if the municipality placed at least a complaint in the two years preceding the audit program
- \( \eta_c \) are state fixed effects, necessary as the lottery is stratified at the state level.
- \( \varepsilon_i \) is the error term
Are complainants more likely to get audited?

Complaint

Number of Complaints

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Heterogeneous Effects
Corruption Level

\[ Y_{i,t,m} = \beta_0 + \beta_1 \text{Audit}_{i,t,m} + \beta_2 \times C_{i,t} + \beta_3 \text{Audit}_{i,m} \times C_{i,t} + \alpha_i + \lambda_{s,t} + \varepsilon_{i,m} \]

- \( C_{i,t} \) is the underlying corruption in the municipality in the year \( t \) uncovered from an audit in the municipality during month \( m \) and varies at the yearly level
- \( \text{Audit}_{i,m} \) is an indicator variable taking value one within the first three months from the announcement
- \( \beta_3 \) estimates the causal impact of the audit announcement, conditional on the underlying corruption in the municipality
Corruption Measure
Summary of Findings

Ministério da Previdência Social:

1.1. Não alimentação da base do Sistema de Óbitos – SISOB/MPAS, adotado com base no Aplicativo SEO – Versão 2.0, oriundo do INSS, referente às certidões de óbitos emitidas pelo Cartório de Registro Civil/Comarca de Rialma – GO, Município Rianápolis-GO.
2.1. Falta de retenção e recolhimento da contribuição previdenciária de 11% sobre o valor de serviços contratados.

Ministério da Saúde


Different format across reports

41000 MINISTERIO DAS COMUNICACOES
4.1.1 CONSTATAÇÃO:
1.1) Inexistência de atendimento pessoal aos usuários.

49000 MINISTERIO DO DESENVOLVIMENTO AGRARIO
5.1.1 CONSTATAÇÃO:
Desvio de finalidade na aplicação dos recursos do financiamento.
5.1.2 CONSTATAÇÃO:
Desvio de recursos do PRONAF B para aquisição de bens não admitidos pelo programa.
Text Classification

- Words and combination of words (bigrams and n-grams)
  - words: fraud, collusion, fake
  - combination of words: procurement simulation

- Severe irregularities are related to Procurement Process, Over-invoicing, and Diversion of Resources
Classification Example

- Indication of fraud in procurement process [Severe Irregularity]
- Payments for non executed services [Severe Irregularity]
- Non actualization of pupil’s cadastral information
Corruption Measure

- Principal component of a series of variables
  - The number of irregularities, the number of severe irregularities, the number of pages, the number of lines, the number of images

- The *latent* component is the underlying corruption in the municipality
Procurement Simulation

Ao Sr.
Presidente da Comissão de Licitação
Prefeitura Municipal de Alvorada
De: A. de Lima Mireses

Assunto: Referente cotação de preços de gêneros alimentícios

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Ao Sr.
Presidente da Comissão de Licitação
Prefeitura Municipal de Alvorada
De: Mário Pinto Costa

Assunto: Referente cotação preços de gêneros alimentícios

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Há o mesmo erro em todas as propostas no qual há a citação da expressão “Gêneros Alimentícios” para uma licitação de material de expediente e limpeza.

Observa-se a mesma disposição no espaçamento entre os parágrafos, cabeçalhos e formatação de página, havendo somente mudanças no tipo de fonte.
Fake Firms and Procurement Simulation
Pairwise correlations
Retained Variance

![Graph showing retained variance]

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- **Corruption, Intimidation, and Whistleblowing**
Correlation with hand-coded measures
Corruption Measure

![Graph showing the distribution of corruption index]
### Silenced channels: Results

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_Arieda Muço_  
Corruption, Intimidation, and Whistleblowing  
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Social Capital

\[ Y_{i,t,m} = \beta_0 + \gamma_1 Audit_{i,t,m} + \gamma_2 (Audit_{i,t,m} \times x_i) + \alpha_i + \delta_{m,t} + \varepsilon_{i,t,m} \]

- \( x_i \) is an indicator variable that takes value one if literacy rate, the fraction of the urban population, income per capita, and the fraction of the female population is below the Brazilian mean.

- \( \gamma_2 \) is the parameter of interest.
# Social Capital: Results

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<td>Audit × 1(Urban population)</td>
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<td>Audit × 1(Income per capita)</td>
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<td>Audit × 1(Male population)</td>
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Alternative Interpretations
Punishment reduction

- Anticipating the investigation are more likely to report wrongdoing as a preventive measure to negotiate a fine reduction

- Clean Company Act – companies self-report corrupt practices hoping for a reduction in the severity of the punishment
Reminder about past corrupt practices

- People are reminded about corrupt practices, increases likelihood of reporting
  - If this is the case we expect the spike-decay pattern to occur after publication of the report
Timeline of the process

Pre-Audit  | Announcement  | Investigation  | Publication  | Post-Pub

Arrival  |  |  |  | Departure

Investigation
Publication of the audit reports
Conclusion
Conclusions

Audits have positive (unintended) consequences on whistleblowing

- As soon as an audit is announced, the likelihood of filing a complaint, anonymously or not, jumps and is 2-3 times higher than the pre-audit mean
  - Providing plausible deniability to whistleblowers
  - Increase the probability of being heard

- Areas with less social capital and more corruption are more likely to report if an audit is announced

Relevant for policy making