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Problem 6: Tracking and Analyzing Money Flows
Online Conference – July 25th, 2017

What data and tactics are needed to secure effective records of money flows? Which tools and methods are needed to effectively analyze money flows to spot and prevent instances of corruption in public procurement? Which instruments can governments and civil society employ to support truthful records of money flows and effective forensic analyses?

Review full set of guiding questions here.

SUMMARY OF THE PROBLEM

Public procurement is one of the largest areas of public spending globally, and gives public officials the incentives and opportunities to behave in a discretionary manner. At the same time, the importance of public procurement cannot be overestimated - as it is the main instrument for achieving educational and healthcare objectives, stimulating innovation and supporting a healthy business climate.[1] Driven by a growing popular discontent,[2] Mexico has recently enacted sweeping legislative and institutional reforms in order to eradicate systemic corruption across local, state and federal governments. As public procurement is considered one of the tasks of the government that is most vulnerable to corruption, important pillars of the new National Anti-Corruption System have been the National Audit System - a control and oversight mechanism mandated to monitor public servant's performance and federal finances (income, expenditures, debt) -, and the Law of Administrative Responsibilities - which establishes the obligation of public

[1] Rose-Ackerman, Susan. "The challenge of poor governance and corruption." *Especial 1 DIREITO GV Law Review* (2005), pp. 207-266, available here.
[2] Mass marches took place across Mexico in 2014.

servants to openly disclose their wealth and creates a public open database to allow for their verification.[3]

Crucial to the success of Mexico's National Audit System is the availability of real-time comprehensive information that allow for the identification of the ultimate beneficial owners that control this money and that allows for the detailed understanding of the procurement process. Nevertheless, even when data exists, it is often not easy to aggregate across state and federal institutions, sanitize and standardize, and share in a user friendly and machine readable format. Moreover, watchdogs inside and outside of government frequently lack the tools, methods, and training to identify the red flags of corruption, meaningfully address instances of corruption, and prevent such behavior in the future. Finally, strategies to track and analyze money flows have yet to undergo periodic review and improvement to account for purposefully incorrect data entries, the ever growing complexity of corruption schemes and the flexibility of white-collar criminals.

BACKGROUND

In recent years, a series of major scandals has demonstrated the pervasive nature of corruption in Mexico at local, state, and federal levels.[4] According to the World Bank, inefficiencies accounted for between 10 and 14 percent of procurement budgets in Mexico in 2009, while in infrastructure projects, a report by Americas Market Intelligence, estimates that procurement abuse can range between 15% and 30% of the total project value. Simultaneously, recent polling suggests that Mexicans perceive government's

[3] IMCO and Transparencia Mexicana. (2016). "The Road towards ending Corruption: Mexico's National Anti-corruption System", available here.

[4] President Peña Nieto has come under scrutiny for his involvement in several controversial real estate transactions in both Miami and Mexico City. According to a report by the New York Times, local governments in Mexico are complicit in corruption schemes with drug cartels.The former Governor of the state of Veracruz, Javier Duarte, was recently arrested in Guatemala, after fleeing the country to avoid prosecution for allegedly embezzling hundreds of millions of dollars.

actions against corruption as ineffective.[5] In reaction to the faltering institutional and political response, they have taken to the streets in protest and have signed petitions by the thousands to demand reform.[6]

One of the outcomes of this civic engagement has been Mexico's new National Anti-Corruption System, which has resulted in several reforms. First, the Administrative Responsibilities Law mandates every government official to publicly disclose assets, interests and tax declarations. Secondly, the Federal Oversight and Accountability Law and the Organic Law of the Federal Public Administration have been amended to empower and increase the effectiveness of two Mexican oversight bodies - the Supreme Audit Office (Auditoría Superior de la Federación), and the Ministry of the Public Administration (Secretaría de la Función Pública).

Additionally, in January 2011, Mexico's Competition Commission became the first public agency in Mexico (and in the world) to commit to adopting and implementing the OECD Competition Committee's Guidelines for Fighting Bid Rigging in Public Procurement.[7] Mexico's Public Procurement Act (PPA) regulates the process that enables public institutions to acquire goods, services, and leasing arrangements with private businesses. In theory, the goal is to ensure competitive tenders to lower prices and drive costs down. Such practices are also intended to encourage innovation and the development of more effective solutions to public problems.

Mexico has also made significant commitments through the Open Contracting Partnership, including to explore open contracting in the health procurement and energy sectors, updating its broader procurement regulatory framework to promote principles of open contracting, and committing to implement the Open Contracting Data Standard for

[5] Transparency International, Global Corruption Barometer (2013).
[6] Mass marches took place across Mexico in 2014.
[7] See http://www.oecd.org/competition/guidelinesforfightingbidriggininpublicprocurement.htm

the construction of Mexico City's new international airport.[8] In 2016, Mexico launched a new Open Contracting Platform, created with the technical support of the Open Contracting Partnership, Gobierno Facil, and El Instituto Mexicano para la Competitividad. The platform is designed to shine further light on the contracting process in an effort to reduce fraud, waste, and abuse in public procurement practices by enabling greater public scrutiny. Mexico City became the first municipality in the world to publish contracting information on the planning, tendering, awarding, and the implementation stages in standard data formats. Now people in Mexico City and around the world can review contracts signed in three major Mexican cities – with information made accessible on the substance of the contract, the private sector participants, and the current status of the agreed upon work.[9]

Finally, in 2014 the Financial Action Task Force considered that Mexico had made significant progress in setting-up customer due-diligence requirements to prevent anonymous or pseudonymous usage of the financial sector by businesses and natural persons. Anonymous corporations are otherwise considered to be the main vehicle through which money illicitly flows back to the public servant from the bidding company - in the form of kickbacks. The international community also believes that the quality and the quantity of reports on suspicion of money laundering sent by the obliged financial institutions to the Mexican Financial Intelligence Unit for further analysis and investigation have increased.[10] Suspicion reports are considered the main mechanism through which financial entities can report their suspicion or knowledge of a client engaging or facilitating money laundering.

[8] http://www.open-contracting.org/why-open-contracting/worldwide/mexico/
[9] Tamara Velasquez (July 10, 2017) *"Open Contracting Challenge CDMX 2017",* Open Contracting Partnership, available here.
[10] The 7th Follow-up on the Mutual Evaluation Report of the Financial Action Task Force, available here.

In spite of these successes, the measures undertaken in Mexico thus far are not enough. Preventing abuses in public finances, in Mexico and elsewhere, requires a more comprehensive and flexible approach to tracking and analyzing money flows. Going forward, it is important to realize that corruption schemes are often complex and that the perpetrators constantly adapt their strategies in order to dissimulate their financial activities as legal money flows.[11] Uncovering white-collar crime requires linking the money, to the predicate offence and the ultimate beneficial owner.[12] Preventing and countering white-collar crime requires uncovering these links in real-time and in a way that allows the confiscation of the illicitly obtained funds and the remedy of the public good. Often these links are not noticeable to the bare eye, even to experts, and require advanced data-driven detection and prediction tools. New data-intensive methods of tracking and analyzing money flows are often used to complement the effort of law enforcement experts and cannot be avoided if Mexico is to credibly and effectively engage in countering corruption in public procurement.

PROBLEM OVERVIEW

White-collar crime often relies on complex schemes and numerous participants that play a role in the separation of the money from the predicate offence and the beneficiaries. Corrupt and fraudulent businesses and individuals often try to conceal their activities and to disguise themselves and the money flows related to them as those of legitimate

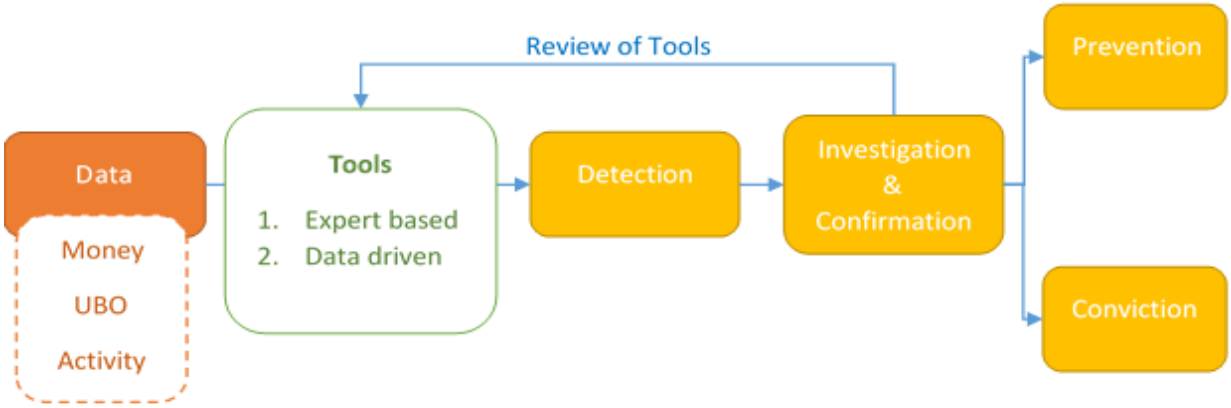
[11] A typical money laundering scenario involving a politician includes one or more anonymous corporations and intermediary that is willing to manage the funds of liquidity rich criminals (e.g. drug dealers) and the funds of the politician. The politician receives the kickback on the accounts of anonymous corporation managed by the intermediary. Never touching this money, or the shell corporation, the politician asks the intermediary to provide her with cash or goods and services in exchange for checks written against the anonymous account. This shows that tracking money flows is not simple and money laundering does not always take the shape of bank transfers, but also luxury goods, services, traveller cheques etc. (Platt, 2015)

[12] Platt, Stephen. (2015). *Criminal capital: How the finance industry facilitates crime*. Springer.

businesses.[13] Moreover, corruption schemes evolve over time to avoid detection and to increase returns from crime.[14]

Setting-up a process that streamlines tracking and analysing money flows to detect and prevent corruption in public procurement (see Figure 1), is a difficult endeavor. Conducted correctly, it can help address fraud, bribery, collusion and corruption before they take place, as well as, help law enforcement spot opportunities for legal prosecution, and government officials disqualify entities and remedy vulnerabilities in the process of public procurement or tax collection that could be remedied.

Figure 1: Tracking and analyzing money flows to detect, prevent and suppress corruption in public procurement



Tracking and analyzing money flows can detect, prevent and curb corruption in public procurement, and requires overcoming the following challenges:

- **The lack of a comprehensive open data environment that records public expenditure in real-time and improves the understanding of the public procurement process.**

[13] In 70% of the cases of grand corruption surveyed by the World Bank, corrupt politicians used secret companies to obscure their identity.
[14] Unger, Brigitte, and Johan Den Hertog. (2012) "Water always finds its way: Identifying new forms of money laundering." *Crime, law and social change*, Vol. 57 (3), pp. 287-304.

The Open Contracting portal for Mexico City demonstrates the potential that comes from collecting and publishing clean, reliable data about government contracting. Nevertheless, it does not provide real-time transparency throughout the duration of the procurement process. This gives scope to several problems - e.g ineligible companies being able to apply for bids and collusion among bidders. Even when a company has been disqualified, there need to be ways before, rather than after, the fact of spotting that company as ineligible, especially if an entity has changed its name or formed a special purpose vehicle to bid but still has the same beneficial owners as the disqualified company.[15] Similarly, there needs to be a way to spot companies that bid independently while they are controlled by the same ultimate beneficial owner. The challenge is to understand how timely is the data recorded and published. Who is putting out the cleanest, most comprehensive and user friendly data sets? Which data sets can be trusted?[16] Finally what if the real problem is the absence of open data? If so, which agencies do not publish the necessary data?

- **The lack of innovative data-intensive analytics to aid forensic analysts to detect and visualize patterns of corruption.**

Even where there is available data, there needs to be those with analytical capacity – whether inside or outside of government – with the ability to make sense of it and spot patterns of fraud, waste and abuse. The website Mejora tu Escuela, created by El Instituto Mexicano para la Competitividad (IMCO) using open government data, did not simply publish data about school spending, it created the ecosystem and environment in which that data would be scrutinized, allowing for the discovery that 1512 teachers on the payroll all had the same birthdays and all earned higher salaries than the President of

[15] As part of a global transparency push, in 2012, the G20 committed to implementing rules requiring the disclosure of beneficial ownership of legal persons, and put in place a Global Legal Entity Identifier System that provides unique identification of legal entities participating in financial transactions across the globe.
[16] In the United States, in April 2017, Steve Ballmer, the former CEO of Microsoft unveiled USAFacts.org, a philanthropically funded project to make sense of open data about government spending – but questions remain whether this effort builds on and meshes with existing efforts to leverage open data, or if it represents redundant, siloed work.

Mexico. Often, however, the default mode for detecting corruption in public finances is to rely on a case-by-case expert analysis. While expert knowledge is needed to understand and unravel the patterns of financial crime, employing **data-intensive methods and tools to track and analyze money flows** in public procurement is critical in order to (1) **scale-up the efforts of forensic analysts** to detect and prevent corruption, and (2) **reveal (new) corruption patterns that are not easily noticeable to the bare eye**. The challenge is to find the tools that could best be employed to analyze money flows and uncover corruption in public procurement. How can these tools be made available to government watchdogs, journalists and the public?

- **The lack of incentives to open-up financial data and fear of speculations.**

When presidential candidate Donald J. Trump refused to publish his tax returns in the autumn of 2016, he unleashed a wave of criticism and speculation of financial wrongdoing. What was unprecedented for a US president is often the norm for businesses. Strategies that open up financial data and create incentives for businesses to shed light on their tax payments, company structures and ultimate beneficial owners are therefore crucial. In this context, how can governments create incentives for true disclosures from the private sector and how can governments and civil society audit the disclosures for accuracy and consistency? Finally, although open and transparent data are essential, even more important is enabling those with the ability to review it and to make sense of it. What kind of public-private partnerships might we set with insurers, banks, business intelligence companies and others to be able to leverage greater computing power to make sense of how government spends money?

GUIDING QUESTIONS

What data and tactics are needed to secure effective records of money flows?

- **Ownership.** What data can show who is who and who owns whom in public finances?
- **Disclosure.** How can data on money flows be gathered and shared without breaching privacy laws?

Which tools and methods are needed to effectively analyze money flows to spot and prevent instances of corruption in public procurement?

- **Big data mining algorithms.** Which big data mining tools (e.g. machine learning algorithms, predictive analytics) can be used to effectively supplement the work of forensic analysts?
- **From openness to use.** How can government watchdogs, journalists and the public use the latest forensic algorithms to analyze records of money flows?

Which instruments can governments and civil society employ to support truthful records of money flows and effective forensic analysis thereof?

- **Incentives.** How can natural and legal persons working in public finances be persuaded to truthfully disclose information on the money they control?
- **Quality Check.** How can government agencies and civil society check that money flows are truthfully and accurately recorded and that analysis of money flows is faithfully executed to detect and prevent corruption in public procurement?

POTENTIAL SOLUTIONS

- **REGISTRATION OF MONEY FLOWS.** Correctly registering money flows permits a fast and accurate tracking and analysis that can help detect, prevent and counter corruption. **Civic blockchains** allow registration that cannot be fraudulently altered ex-post.[17] **Ultimate Beneficial Owner** registries help uncover the individuals who effectively control the money flows - by themselves or through complex intermediation schemes.[18] **Open Contracting** initiatives support the generation of machine readable public contracting information that give the context and the need for the money flows - e.g. payments for salaries and publicly purchased goods and services - as well as help develop a more competitive procurement market.[19]

- **ADVANCED TOOLS FOR ANALYSIS AND EVIDENCE GATHERING.** An efficient analysis of money flows requires a wide array of expertise - from law enforcement to information technology. **Forensic experts** know and can recognize money laundering, corruption and fraud patterns. Using their knowledge on white-collar crime typologies (e.g. kickback need to return to corrupt public officials, a public servant is known as “Mrs. 7%”, payments are effectuated to companies located in known fiscal paradises etc), forensic analysts can recognize suspicious transactions and trigger criminal investigations, push for asset seizures and the freezing of bank accounts. In a time when the costs of specialized labor are rising and data gathering is more efficient, **algorithms** have increasingly been used to

[17] Several governments (the UK, Georgia, and Sweden) are experimenting with blockchain-based land registries in order to enhance the reliability of property transactions, the speed with which these are effectuated and in order to make property titles tamper-proof.
[18] GLEIF promotes the implementation and use of the Legal Entity Identifier - unique code assigned to every corporation that provides the answer to the questions of ‘who is who?’ and ‘who owns whom?’. OpenCorporates delivers information on companies in an open, usable and user friendly way to the public, to tackle the use of companies for criminal or anti-social purposes. OpenOwnership has publicized a first draft (BETA version with data on 2 million corporations) of a future Global Beneficial Ownership Register with almost 2 million corporate records in an attempt to create a global registry that where corporate data will be global and linked across jurisdictions, industries, and linkable to other datasets too.
[19] Canada, Colombia, Mexico, Moldova, Paraguay, the UK, Ukraine, and the cities of Mexico City and Montreal are publishing procurement information using the Open Contracting Data Standard. For example, ColombiaCompraEficiente offers bidding companies an information system that allows them to make transactions online and responds to their needs and questions, thereby promoting healthy competition, transparency and an information level playing field. The platform also analyzes and reviews the application of policies and regulations relevant to the procurement market and looks for efficient ways to innovate.

duplicate the work of forensic experts and/ or aid them in their analyses. **Unsupervised learning algorithms** (e.g. Benford's law,[20] principal component analysis) are used to detect numerical anomalies and in datasets. Applying statistical tools on large datasets gives analysts more comprehensive visualizations of the data and helps uncover new patterns of crime, focus on particular datasets and assess available corruption patterns.[21] **Supervised learning algorithms** are instructed to detect suspicious transactions by using the white-collar crime patterns (e.g. benchmarks, red flags) developed by the forensic experts.[22] In essence these algorithms act as artificial forensic investigators,[23] which, when data is correctly registered, can analyze much larger datasets of money flows, faster and better than human experts.[24]

- **EFFECTIVE SUPPORT STRATEGIES.** Several strategies can be employed to ensure an effective registration of money flows and their analysis. **Reputation and reward mechanisms** have been employed to increase the likelihood that governments[25] and companies disclose their financial flows, corporate structure, and tax flows.[26] **Trainings** are periodically organized to share and promote understanding of known white-collar

[20] Benford's law has been used to detect irregularities in numerous settings - from the traditional financial accounting, to campaign finance, to government records of macroeconomic indicators. The technique has proven to be a robust wide to catch fraudulent behavior.
[21] ObservatorioFiscal uses Chilean open data on public finances, analyzes it and publishes, among others, infographics, reports and columns, revealing their most interesting or relevant findings. The infographics help visualize public spending and reveal intriguing patterns, such as "The December Spending Fever" and the increases in public spending when a new administrative region is created.
[22] BasicTechnology, SentinelVisualizer, CrimeTechSolutions and ForensicLogic are part of an array of software built for law enforcement agencies and other financial investigators to analyze, visualize and share relevant information. The tools have been used to monitor gang activity, create crime hot-maps, track money flows, detect criminal networks and fight corruption.
[23] The Australian Tax Office implemented a Smarter Data program - which allows the Tax Office to compare a person's declared income and expenses to their known assets and earnings, and relative to their peer groups, perform risk assessments and industry benchmarking, and predict behaviour such as a person's willingness to comply based on historical data - e.g. credit ratings.
[24] Johnson and Reitzel have used social network analysis to help the Richmond City Police Department understand the motivation of offenders and create hot-spots.
[25] OpenContracting does advocacy work for Governments to open public contracting data and for the adoption of the Open Contracting Data Standard - a global, non-proprietary standard structured to reflect the complete contracting cycle, that enables users and partners around the world to publish shareable, reusable, machine readable data, to add their own information, and to create tools to analyze or share it.
[26] Fair Tax Mark - a pioneer in the fair trade industry - is an independent accreditation scheme that rewards businesses that are good taxpayers. Companies that apply for the independent accreditation are assessed on *"paying the right amount of tax in the right place at the right time and applying the gold standard of tax transparency"*.

crime patterns.[27] These trainings are also allowing financial analysts to upgrade to more effective analytical tools, to customize their tools to serve a particular need (e.g. corporation, public sector), and to understand the implicit assumptions that the predictive analytics rely on.[28] Finally, **field experiments** have been used to independently test policies that were aimed at curbing illicit money flows, as well as, to reveal the accuracy of records on money flows.[29]

[27] UNODC's Global Programme against Money-Laundering, Proceeds of Crime and the Financing of Terrorism delivers assistance to national organizations in the form of trainings, eLearning and mentoring programs. The focus is on developing white-collar crime prosecution and confiscation policies, training in investigations, for prosecutions, asset forfeiture and recovery.

[28] ACAMS is the largest international membership organization dedicated to enhancing the knowledge, skills and expertise of financial crime detection and prevention professionals. ACAMS offer webinars, full-day seminars, international conferences and live chats to a wide array of professionals engaged in detecting, preventing and countering financial crime - e.g. members of financial institutions, regulatory bodies, law enforcement agencies and the industry.

[29] Posing as 21 different international consultants, researchers have approached nearly 4,000 incorporation services in over 180 countries to discover just how easy it is to form an untraceable company - an anonymous shell company. Their experiment tested the effectiveness of international rules which mandate that those selling shell companies must collect identity documents from their customers. They found that international rules are largely ineffective, that shell company providers were oblivious to blatant risks - e.g. terrorism financing, corruption - and that financial incentives helped avoid identification.