



UNDP Regional Workshop on Corruption in Public Procurement: Prevention, Detection, and Investigation Methods

Session 2: Introduction to methods of detecting corruption and fraud in public procurement

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Background: the major types of corruption and fraud in public procurement



- **CORRUPTION:** Bribes and kickbacks, conflicts of interest, illicit enrichment
- **BID RIGGING (the “influence” side of corruption):** Rigged specifications, unjustified sole source awards, etc.
- **COLLUSION and cartel activity:** Collusive bidding by contractors
- **FRAUD in tenders and implementation:** False statements and claims, forged bid documents, inflated invoices, poor quality works, product substitution, etc.

Different corruption and fraud schemes often are linked in a single case...



A **BRIBE** is offered or demanded in exchange for the promise of a contract award or other favor, which leads to...

Some form of **BID RIGGING** by the corrupt official and contractor to exclude other (often more qualified, less expensive) bidders, and finally...

FRAUD, including poor quality works and inflated invoices, to recover the cost of the bribe and exploit the corrupt relationship.

Fraud is often the most costly and damaging stage.

Corruption: Bribes and Kickbacks

Giving a “THING OF VALUE:

- Gifts, travel and entertainment
- **Cash payments**
- **Payments thru agents or subs, etc.**
- “Loans,” whether or not repaid
- Gifts of inventory and services
- Subsidized mortgages
- Sale of assets at below market value
- “Study tours”
- Job offers to relatives
- Payments for education
- Donations to “charities”
- **Delay penalties**
- Hidden interests

To INFLUENCE a contract award or contract execution:

The “SPQQD” formula:

S selection

P price

Q quantity

D delivery

...and finally

F fraud

Corruption **Red Flags**

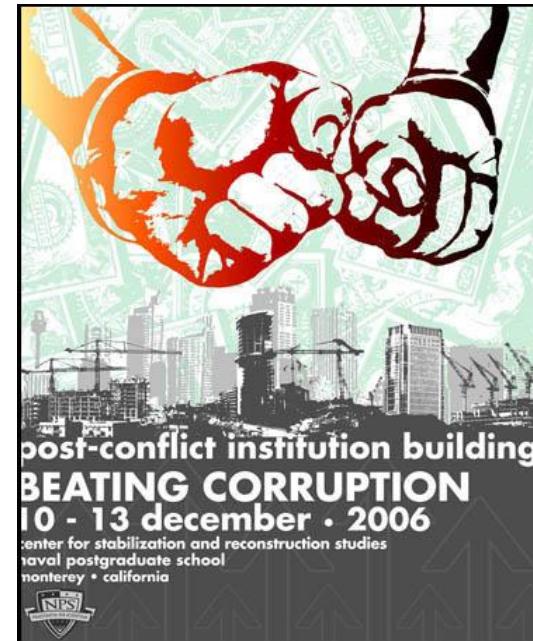
- Complaints from losing bidders or honest project officials
- “SPQQD” factors
- Multiple sole source awards to the same contractor
- Multiple awards just under procurement thresholds
- Procurement officials ignore procurement rules and regulations
- Selection of a previously unknown or unqualified contractor
- Questionable contract amendments and extensions
- Acceptance of poor quality works
- Payments to agents or subcontractors who provide little or no actual services
- Contractor or subcontractor is not found on the internet or listed in business or telephone directories
- Contractor or sub’s address is a residence, mail drop or shared business suite
- Project staff or officials display wealth or live beyond their means
- Project staff or officials fail to file financial disclosure forms

Bid Rigging: (the "influence side" of corruption)

Improper manipulation of the bidding or vendor selection process to favor certain companies and exclude others

- Change order abuse
- Excluding qualified bidders
- Leaking of bid information
- Manipulation of bids
- Rigged specifications
- Split purchases
- Unbalanced bidding
- Unjustified sole source awards

<https://guide.iacrc.org/potential-scheme-bid-rigging/>



Bid Rigging **Red flags**

- Repeat [sole source] awards to the same bidders
- Multiple awards just under procurement thresholds (followed by change orders or contract extensions)
- Bids just at or very close to budget or estimate
- Too narrow or too broad contract specifications
- Unclear, ambiguous contract specifications
- Unreasonable pre-qualification procedures
- Short or inadequate notice to bidders
- Fewer than the average or required number of bidders
- Unusually high or low line-item bids, followed by a change order extending or reducing quantities of items

Collusive Bidding by Contractors

“People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.”

Adam Smith,
The Wealth of Nations,
1776

Types of Collusive Bidding Schemes



- Complementary bids
- Bid rotation
- Market division
- Losing bidders become subcontractors
- Bid suppression

Collusive Bidding **Red Flags**

- Physical similarities in bids
- Other apparent connections between bidders, e.g., common addresses, fax numbers or personnel; same or similar typos, etc.
- Persistent unexplained high prices
- Unusual bid patterns; e.g., bids an exact % apart
- Low bid within 5% of reserve price
- Rotation of winning bidders
- Same bidders always bid; new bidders excluded
- Losing bidders become subcontractors
- Identical order of bidders and bid prices in later rounds
- Sequential bid securities

Common Procurement Fraud Schemes

- False statements and claims in bids, proposals and CVs
- Forged bid securities
- Fictitious bidders, vendors or subcontractors
- Poor quality works, failure to meet contract specs, product substitution
- False and inflated invoices





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Fraud Red Flags



Is this fraud?



Proving Knowledge and Intent

Knowledge and intent can be proven **DIRECTLY** or **CIRCUMSTANTIALLY**:

DIRECT EVIDENCE can include:

- Admissions by the subject
- The statements of witnesses that they informed the subject of the important facts, or
- Documentary evidence, such as emails to or from the subject

CIRCUMSTANTIAL EVIDENCE can include:

- The falsification of documents by the subject
- Knowing false statements by the subject to excuse his conduct, or
- A pattern of repeated misrepresentations
- False statements to investigators

Primary Methods to Detect Corruption and Fraud in Public Procurement

- Whistleblower reports
- Detection of a red flag
- Automated detection programs
- Self-reporting and amnesty programs
- Accident
- See interactive red flags lists:

<https://guide.iacrc.org/the-red-flags-of-corruption-bid-rigging-collusive-bidding-and-fraud/>



Whistleblower Reports

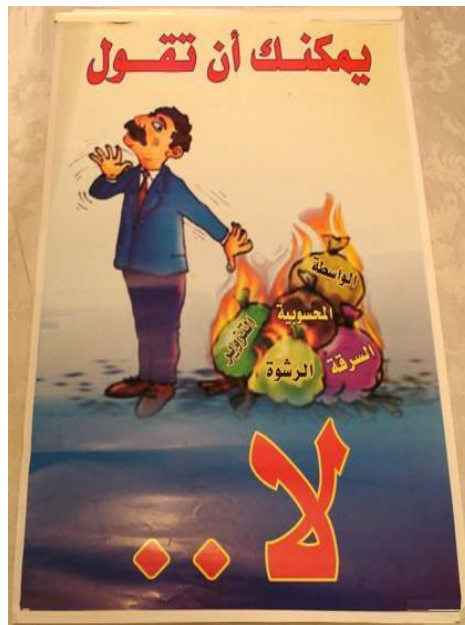
- Well managed, widely publicized systems to encourage and facilitate reports are essential to an effective fraud detection and prevention program:
 - Most serious procurement corruption and fraud cases are discovered by a report or complaint, and many significant cases can not be proven without such information
 - Many reports are ignored or improperly handled, resulting in the loss of important cases
- Promptly respond to credible reports or complaints; test them by looking for red flags or other evidence of their validity rather than speculating on their accuracy
- Whistleblower systems can be linked to computer programs to help automate the verification process
- Be concerned about how you present yourself to the witness
- Don't attack or demean the witness
- Be alert for losing bidders who complain about the procurement process but conceal knowledge of corruption
- See specific questions to ask and more information on how to proceed <https://guide.iacrc.org/how-to-respond-to-a-complaint>

Discovery of a red flag in an audit or operations



- In practice, red flags often are more useful to confirm or rebut reports or complaints than they are to detect fraud
- Most standard audits are not designed to detect fraud and seldom do; in many places more fraud cases are discovered by accident than by audits
- Forensic audits, specifically designed to detect fraud, conducted by trained forensic auditors, are required.
- Look for a pattern of red flags (indicators) rather than relying on an isolated occurrence; match the original red flag to the related scheme or schemes and look for other red flags of the suspect offense
- Computers can do this better than humans
- Remember that red flags are usually just indicators of possible fraud; further steps must be taken to convert the indicators to proof of an offense, including, e.g., evidence of knowledge and intent, etc.

Automated Fraud Detection Programs “Fraud Filters”



- Fraud Filters are algorithms that can be inserted in eProcurement systems to run continuously to identify and block potential corruption, bid rigging, collusion and fraud *ex ante*, *proactively*, before losses are incurred
- The Filters also can be applied *ex post* in after the fact in audits and investigations to identify red flags or evidence of fraud and corruption

Common Fraud and Corruption Schemes Detectable or Blocked by Integrity Filters



Collusive bidding
Bid rigging
Kickbacks
Conflicts of interest
False, inflated and duplicate invoices
Shell companies
Phantom vendors
Purchases for personal use or resale
Product substitution
Failure to meet contract specs

Bid Rigging

Sample indicators and data requirements



Indicators include:

- **Procurement official's contact info = bidder's contact**
- **Recommended award to debarred bidder**
- **Shorter notice to submit bids than the rules require**
- **Sole source awards > sole source limits**
- **Award to other than the low bidder**
- **Multiple purchases just < procurement threshold**
- **Split purchases to avoid competitive bidding**
- **Low bid award followed by change order increasing price**
- **Unusually high or low line-item bids in winning bid + change order extending or dropping line item**
- **"SPQQD" analysis (Selection, Price, Quantity, Quality and Delivery Indicators); e.g.,**
 - **high #, % of awards to one bidder**
 - **bid prices significantly > norm**
 - **quantities significantly > norm**

Primary data sources:

- Official and bidder contact info
- Bid notice and due date
- Procurement rules, e.g., competitive bid thresholds
- Winning and losing bids
- Debarment list

Other useful data sources:

- Line item bid prices
- Contract date and price
- Change orders and amounts
- Previous similar tender results
- Procurement plan info

Collusive Bidding

Sample indicators and data requirements



Indicators include:

- **Bids from the same IP address**
- **Bidders with same contact info**
- **Unusual bid patterns, e.g., bids an exact % apart**
- **Sequential bid securities**
- **Bidders bid in same order in later rounds**
- **Losing bidder becomes subcontractor**
- **High price bids; e.g., bids that exceed cost estimate by > 30%**
- **Pattern of rotation of winning bidders**
- **Bid patterns differ from prior bid patterns**
- **Losing bidders can't be located in corporate directories or on the internet**

Primary data sources:

- Bidder's contact info, IP address
- Winning and losing bids
- Bid securities
- Cost estimates
- Subcontracts

Other useful data sources:

- Bids in prior similar tenders

Simple Graphic Reports of Collusive Bidding Indicators

Blue and orange highlighted bids indicate potential collusion

Jobsite: East African Network Tollroad						
Bidder	Bid	Ratios of Bid to				
		Estimate	Winner	Prev Bid		
● Engineer Estimate	\$ 132.7M	-	-	-		
✓ Barrytron	\$ 130.9M	-1.4%	-	-		
✗ Tessier-Ashpool	\$ 135.8M	2.4%	3.8%	-		
✗ Stay Puft Corporation	\$ 136.6M	2.9%	4.3%	0.5%		
✗ Barrytron	\$ 138.5M	4.4%	5.8%	1.4%		
✗ Galaxy Corp	\$ 140.8M	6.1%	7.5%	1.6%		
✗ 123 Warehousing	\$ 144.1M	8.6%	10.1%	2.4%		
✗ Spade and Archer	\$ 157.1M	18.3%	20.0%	9.0%		

Jobsite: Rila motorway Development						
Bidder	Bid	Ratios of Bid to				
		Estimate	Winner	Prev Bid		
● Engineer Estimate	\$ 109.3M	-	-	-		
● Carrys Candles	\$ 102.0M	-6.7%	-22.2%	-		
● General Services Corporation	\$ 131.2M	20.0%	-	-		
✗ The Legitimate Businessmens Club	\$ 137.7M	26.0%	5.0%	5.0%		
✗ Flowers By Irene	\$ 140.3M	28.4%	7.0%	1.9%		
✗ Allied Biscuit	\$ 143.0M	30.8%	9.0%	1.9%		
✗ United Fried Chicken	\$ 145.6M	33.2%	11.0%	1.8%		
✗ Acme Corp	\$ 148.2M	35.6%	13.0%	1.8%		

Jobsite: I-85/West Point Interchange Project (Troup County)						
Bidder	Bid	Ratios of Bid to				
		Estimate	Winner	Prev Bid		
● Engineer Estimate	\$ 122.6M	-	-	-		
✓ LexCorp	\$ 137.8M	12.4%	-	-		
✗ Krustyco	\$ 141.3M	15.3%	2.6%	-		
✗ General Services Corporation	\$ 151.5M	23.6%	10.0%	7.2%		
✗ Sixty Second Avenue	\$ 166.7M	36.0%	21.0%	10.0%		
✗ Smith and Co.	\$ 183.3M	49.6%	33.1%	10.0%		
✗ LuthorCorp	\$ 201.7M	64.6%	46.4%	10.0%		

Phantom Vendors: Sample Indicators and Data Requirements



Sample indicators include:

- Vendor not listed in corporate registries, directories or on the internet
- Vendor located at non-business address
- Paid vendor not on Approved Vendor List
- HR/Vendor match
- “Fuzzy match” vendors with different bank account numbers
- High # or % of sequential invoice numbers
- Broken sequence invoice numbers
- Purchases just < competitive thresholds
- Split purchases
- **Small initial purchase**
- **Payment to inactive vendor account**
- **One time vendor payment**
- **Benford’s Law violations**
- **Vendor provides hard to verify goods, works or services (per product code)**
- **Incomplete PO, invoice or receiving info**

Primary data sources:

- Approved and paid vendor lists
- HR and vendor master files
- PO, invoice, receiving, payment info

Other useful data sources:

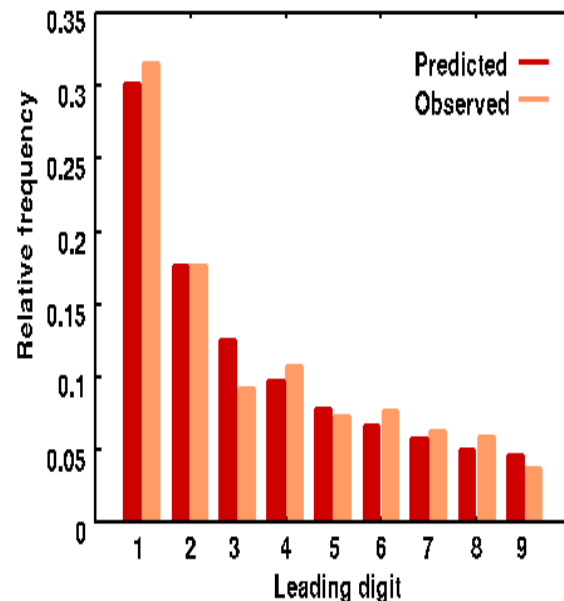
- Procurement rules, thresholds
- Vendor and product code lists
- Benford’s Law distributions

Benford's Law

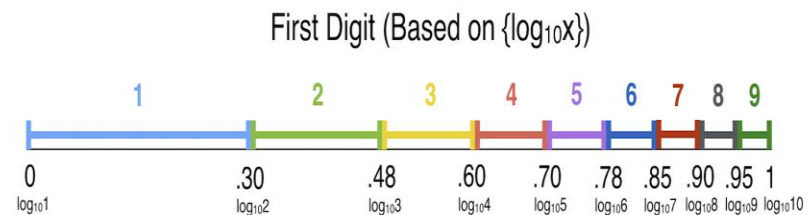
“Law of the first digit” used in Fraud Detection

In naturally generated numbers, the number 1 is the first digit 30.4 % of the time, with other numbers appearing as the first digit in descending order (as in the graph below left)

Prices in invoices, quantities in reports, etc. that do not follow this pattern can indicate fabricated numbers and fraud



$$P_D = \frac{\int_D^{D+1} P(x) dx}{\int_1^{10} P(x) dx} = \log_{10} \left(1 + \frac{1}{D} \right)$$



Self-Reporting and Amnesty Programs

US Department of Justice Antitrust Division “Leniency” policy

Leniency Before an Investigation Has Begun:

Leniency will be granted to a corporation reporting illegal activity before an investigation has begun, if the following six conditions are met:

1. At the time the corporation comes forward to report the illegal activity, the Division has not received information about the illegal activity being reported from any other source;
2. The corporation, upon its discovery of the illegal activity being reported, took prompt and effective action to terminate its part in the activity;
3. The corporation reports the wrongdoing with candor and completeness and provides full, continuing and complete cooperation to the Division throughout the investigation;
4. The confession of wrongdoing is truly a corporate act, as opposed to isolated confessions of individual executives or officials;
5. Where possible, the corporation makes restitution to injured parties; and
6. The corporation did not coerce another party to participate in the illegal activity and clearly was not the leader in, or originator of, the activity.

2022 updates:

Corporation must promptly report wrongdoing, make best efforts to remediate any harm caused, and improve compliance program to prevent further misconduct.