

14.75 : Corruption Lecture 1

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- Do we care about corruption?
 - Magnitude and efficiency costs
- The corrupt official's decision problem
 - Balancing risks, rents, and incentives
- Embedding corruption into larger structures
 - The IO of corruption: embedding the decision problem into a market structure
 - Corruption and politics
 - Corruption's general equilibrium effects on the economy

- A particular problem in empirical research on corruption is measurement: you can't just ask people how corrupt they are.
- So people take some combination of one of four basic approaches:
 - Perceptions of corruption
 - From surveys (usually cross-country data)
 - Comparing two measures of the same thing
 - Road building in Indonesia
 - Oil-for-food in Iraq
 - Education subsidies in Uganda
 - Direct measurement
 - Surveys of bribe-paying in Uganda
 - Observation of truck driver bribes in Indonesia
 - Audits of teacher attendance around the world
 - Use theory to distinguish between corruption and inefficiency
 - Taxes in Hong Kong vs. China

Poor countries are more corrupt

Perceptions based measure from Mauro (1995)

Image removed due to copyright restrictions. See: Mauro, Paolo. "Corruption and Growth." *Journal of Economic Perspectives* 110 no. 3 (1995): 681-712.
Figure I Per Capita Income and Bureaucratic Efficiency

- What does this tell us? Is this useful?

Education

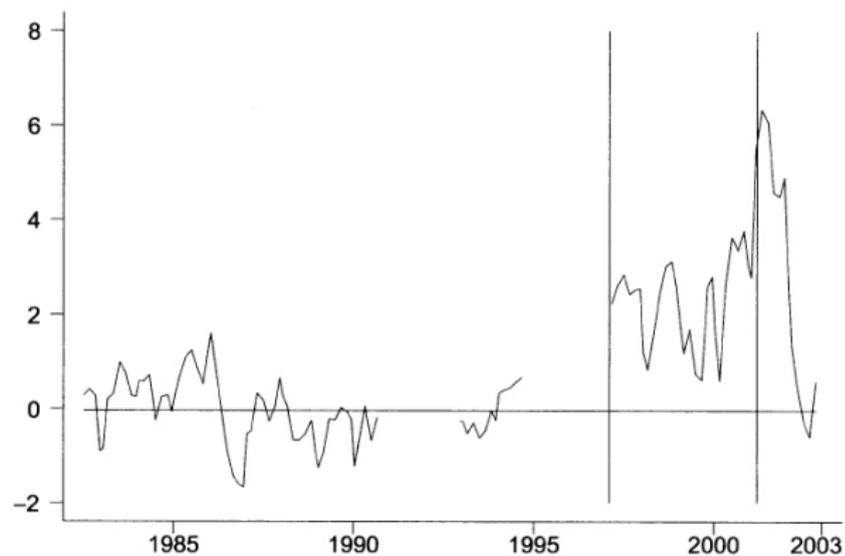
Reinikka and Svensson (2004): "Local Capture: Evidence from a Central Government Transfer Program in Uganda"

- Setting: Education in Uganda
- Empirical idea:
 - Each school receives a block grant from the central government
 - Sent surveyors to the schools to track how much block grant each school received
 - Compared the amount the schools received to the amount the central government sent to the schools
- Finding: schools reported receiving only 13 percent of what the central government sent out
- Follow-up work: after the results were published, they did the same exercise again and found 80 percent was being received
- Interpretation?

Iraqi Oil

Hsieh and Moretti 2006: "Did Iraq Cheat the United Nations? Underpricing, Bribes, and the Oil-for-Food Program"

- Setting: UN Oil-for-Food Program
- Empirical idea:
 - Saddam Hussein's regime was allowed to sell oil on the private market to pay for food
 - Examine the difference between Iraqi oil prices and comparable oil prices to measure 'underpricing' of oil – which they infer were likely used for kickbacks
 - Show that underpricing starts when Oil-for-Food program begins, and ends after UN eliminates Iraqi price discretion
 - Show that gap is higher when volatility in oil is higher (so harder for UN to monitor)
- Estimate total of \$3.5 billion in rents through underpricing, or about 6 percent of value of total oil sold. Standard markups in the industry imply 1/3 of this went to the Iraqis.



Difference between Arabian Light and Basrah

Courtesy of Chang-Tai Hsieh and Enrico Moretti. Used with permission.

Magnitudes: Direct evidence

Chaudhury, Hammer, Kremer, Muralidharan, and Rogers: "Missing in Action: Teacher and Health Worker Absence in Developing Countries"

- Setting: primary schools and health clinics in Bangladesh, Ecuador, India, Indonesia, Peru, and Uganda
- Empirical idea: surveyors randomly arrived and noted what percent of workers were present in the facility at the time of the spot check
- Results: on average, 19 percent of teachers and 35 percent of health workers weren't present
- Higher in poorer countries and poorer states in India
- Is this corruption?

Correlation with Income

Image removed due to copyright restrictions. See: Chaudhury, Nazmul, Jeffrey Hammer, et al. "Missing in Action: Teacher and Health Worker Absence in Developing Countries." *Journal of Health Economics* 20, no. 1 (2006): 91-116.

Does corruption respond the way we expect?

Fisman and Wei (2004): "Tax Rates and Tax Evasion: Evidence from 'Missing Imports' in China"

- Question: what is the 'elasticity' of tax evasion with respect to tax rates?
 - This is a key parameter in determining the optimal tax rate
- Empirical challenge: very hard to measure what the true tax assessment should be.
- Fisman and Wei's idea:
 - Comparing two measures: Look at both sides of the China - Hong Kong border, where China is the 'high evasion' side and Hong Kong is the 'low evasion side'
 - Denote the difference between what Hong Kong (low corruption) and China (high corruption) reports as evasion, i.e.,
$$gap_value = \log(\text{export_value}) - \log(\text{import_value})$$
- Use theory: theory says the gap should be higher when tax rates are higher.

- Key regressions:

$$gap_value_k = \alpha + \beta_1 tax_k + \varepsilon_k$$

$$gap_value_k = \alpha + \beta_1 tax_k + \beta_2 tax_o_k + \varepsilon_k$$

- Findings:
 - $\beta_1 = 3$: One percentage point increase in taxes on your product increases evasion gap by 3%
 - $\beta_1 = 6, \beta_2 = -3$: Less evasion when nearby products also have higher tax rates implies reclassification is an important mechanism
- Reasonable? Concerns?

Summary of Magnitudes

- Four main ways to measure corruption
 - Perceptions
 - Comparing two measures of the same thing
 - Direct measurement
 - Applying theory to the data
- Estimated magnitudes vary substantially – from 2% (Iraq Oil For Food) to 80% (Ugandan Education)
- Selection bias problems – we may be systematically over-estimating corruption by only measuring it in places where, a priori, we think it is high
- To the extent we believe these estimates there is substantial heterogeneity we need to understand

A framework

Banerjee, Hanna, and Mullainathan (2009): Corruption Handbook Chapter

- Idea: Mechanism design approach to corruption.
- Setting: two actors: supervisor (the bureaucrat) and participants in the economy (the agents).
- Setup:
 - Set of slots of size 1 that need to be allocated to a population of size N .
 - Two types of agents: Type H and type L , numbering N_H and N_L respectively. Types are private information.
 - For type H , the:
 - Social benefit of giving a slot to H is H .
 - Private benefit is h .
 - Ability to pay is $y_H \leq h$.
 - Define all variables similarly for L types.
 - Assume $H > L$, but ordering of (h, l) and (y_H, y_L) can be arbitrary.

Four cases

cases	$y_H > y_L$	$y_H \leq y_L$
$h > l$	I: Aligned	III: Partial Misalignment
$h \leq l$	II: Partial Misalignment	IV: Misaligned

- Examples of Case I ($y_H > y_L, h > l$)
 - Choosing efficient contractors for road construction: Type H are more efficient contractors. For the same contract, they make more money: $h > l$. Since they are the ones who will get paid, the price they pay on the contract is just a discount on how much they are getting paid. Plausibly therefore $y_H = h$ and $y_L = l$.
 - Allocating licenses to import: like road construction, but in this case there may be credit constraints

Four cases

cases	$y_H > y_L$	$y_H \leq y_L$
$h > l$	I: Aligned	III: Partial Misalignment
$h \leq l$	II: Partial Misalignment	IV: Misaligned

- Examples of Case II ($y_H > y_L, h \leq l$)
 - Merit goods like subsidized condoms against HIV infection: H are high risk-types. They like taking risks: $h < l$. But perhaps richer: $y_H > y_L$
- Examples of Case III ($y_H \leq y_L, h < l$)
 - Hospital beds: $H = h > L = l > 0, y_H = y_L = y$, i.e. no systematic relation between ability to pay and willingness to pay.
 - Public distribution system: $H = h > L = l > 0, y_H < y_L$.

cases	$y_H > y_L$	$y_H \leq y_L$
$h > l$	I: Aligned	III: Partial Misalignment
$h \leq l$	II: Partial Misalignment	IV: Misaligned

- Examples of Case IV ($y_H \leq y_L, h \leq l$)
 - Law enforcement: $H > 0 > L, y_H = y_L = y, h = l$: the slot is not going to jail.
 - Driving Licenses: $H > 0 > L, y_H = y_L = y, h < l$.
 - Speeding tickets: $H > 0 > L, y_H = y_L = y = h = l$: the slot is not getting a ticket.
 - Let the slot be a "does not need to pay taxes" certificate. Suppose H types are those who should not pay taxes and type L 's are those who should pay an amount T_L .
 - In other words, $h = l = T_L$.
 - Finally assume that $y_H < y_L = T_L$

- Suppose corruption means that bureaucrat can allocate slots to the highest bidder
 - What are the efficiency allocations? How does it depend on what case we're in?
- Some implications
 - Case I: Government and bureaucrat incentives are aligned: give it to the highest willingness to pay. Bureaucrat may introduce screening (red tape) to further increase revenue. Efficiency losses come from the red tape.
 - Case IV: Government and bureaucrat incentives are opposed: suggests corruption pressure will be great.

Efficiency costs

Bertrand, Djankov, Hanna, and Mullainathan 2007: "Obtaining a Driver's License in India: An Experimental Approach to Studying Corruption"

- Setting: Obtaining driver's license in India
- Question: Does corruption merely 'grease the wheels' or does it actually create inefficiency?
- Experiment: Experimentally create three groups of people:
 - "Bonus group" offered a large financial reward to obtain license in 32 days
 - "Lesson group" offered free driving lessons
 - Control
- For each group, measure driving ability with driving tests, find out about bribe paying process, whether obtained license.
- What would "efficient corruption" predict? What would "inefficient corruption" predict?

Images removed due to copyright restrictions. See: Bartrand, Marianne, Simeon Djankov, Rema Hanna, and Sendhil Mullainathan. "Obtaining a Driver's License in India: An Experimental Approach to Studying Corruption."

Journal of Law and Economics 122 no. 4 (2007): 1639-76.

Table II Summary Statistics on the Bureaucratic Process for the Comparison Group

Table III Obtaining a License

Table IV Payments and Process

Table VI Audity Study

Summary of results

- Bonus group was:
 - 25 pct. points more likely to obtain a license
 - 42 pct. points more likely to obtain a license quickly
 - 13 pct. points more likely to obtain a license without taking an exam
 - 18 pct. points more likely to obtain license without being able to drive
 - Paid about 50% more
- Lesson group was:
 - 15 pct. points more likely to obtain a license
 - 0 pct. points more likely to obtain a license quickly
 - 0 pct. points more likely to obtain a license without taking an exam
 - 22 pct. points less likely to obtain license without being able to drive
 - Paid no more than control
- So what do we conclude? Is corruption efficient or inefficient?

- One important result is that almost all of the change in the bonus group comes from using agents
- To study what agent can and cannot do, author conducted an "audit study":
 - Hired actors to approach agents to request assistance obtaining a drivers' license
 - Varied their situation (can drive, can't drive, etc), and measured whether agent states he can produce a license and, if so, the price

Another example: trucking

Barron and Olken (2009): "The Simple Economics of Extortion: Evidence from Trucking in Aceh"

- Setting: long-distance trucking in Aceh, Indonesia
- Investigate corruption at weigh stations:
 - Engineers in the 1950s figured out that road damage rises to the 4th power of a truck's weight per axle
 - Thus weight limits on trucks are required to equate private marginal cost of additional weight with social marginal cost
 - In Indonesia, the legal rule is that all trucks more than 5% overweight supposed to be ticketed, unload excess, and appear in court
- What happens with corruption?
 - Among our 300 trips, only 3% ticketed, though 84% over weight limit (and 42% of trucks more than 50% over weight limit!)
 - The rest paid bribes
 - What do we need to know to think about efficiency?

Images removed due to copyright restrictions. See: Olken, Benjamin A., and Patrick Barron. "The Simple Economics of Extortion: Evidence from Trucking in Aceh." NBER Working Paper No. 13145 (2009).

Summary of findings

- Payments at weigh stations increasing function of truck weight
 - Note that the intercept is greater than 0 – so some extortion
 - On average, Rp. 3,400 (US \$0.3) for each ton overweight
 - Much more concave than official fine schedule
- Interesting question: how should the government design the rules, knowing they will be used as the threat point in a corrupt bargaining game?

- Four main ways to measure corruption
 - Perceptions
 - Comparing two measures of the same thing
 - Direct measurement
 - Inference from theory
- Efficiency implications
 - Depends on whether the government's interests are aligned with or against private interests
 - Efficiency costs likely to be higher when government interests are against private willingness to pay
 - Examples from trucking and drivers' licenses suggest that this may be the case
 - But understanding efficiency costs of corruption is an area for more research

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