Corruption I: Measuring and Modeling Corruption

14.740x: Foundations of Development Policy

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Outline

- Do we care about corruption?
  - Magnitude and efficiency costs
- The corrupt official's decision problem
  - Balancing risks, rents, and incentives

Measurement

- 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 several 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

Poor countries are more corrupt

Perceptions-based measure from Mauro (1995)

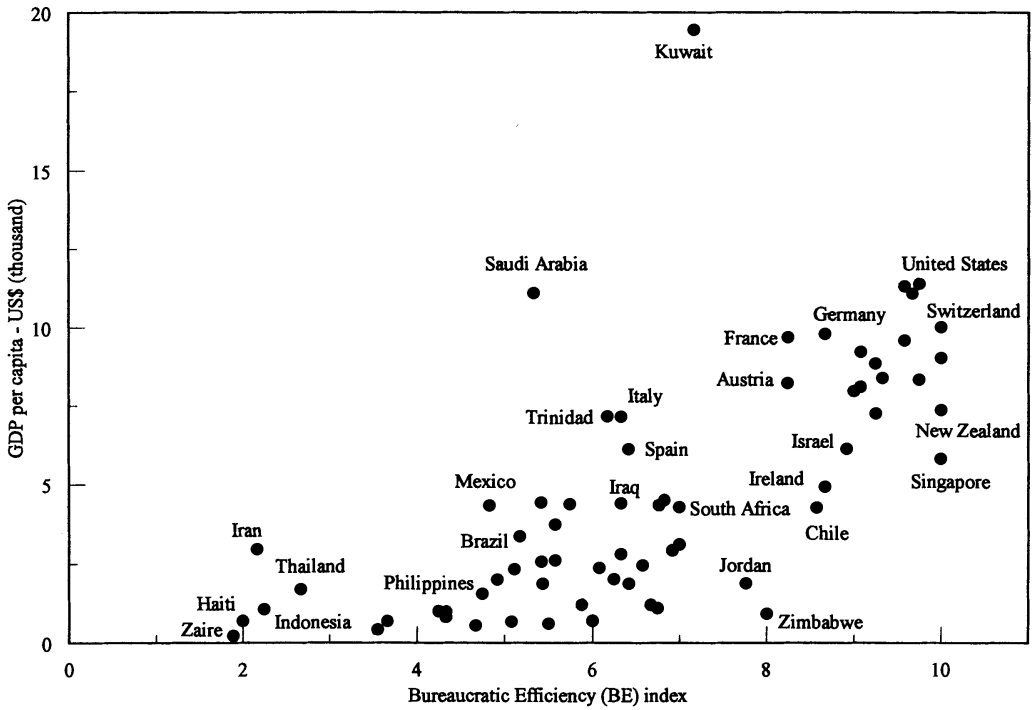


FIGURE I

Per Capita Income and Bureaucratic Efficiency

BE index is 1980–1983 average of BI indices of corruption, red tape, and judiciary.

Per capita GDP at PPP in 1980 is from Summers and Heston [1988].

67 countries, $r = 0.68$.

- What does this tell us? Is this useful?

Education

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

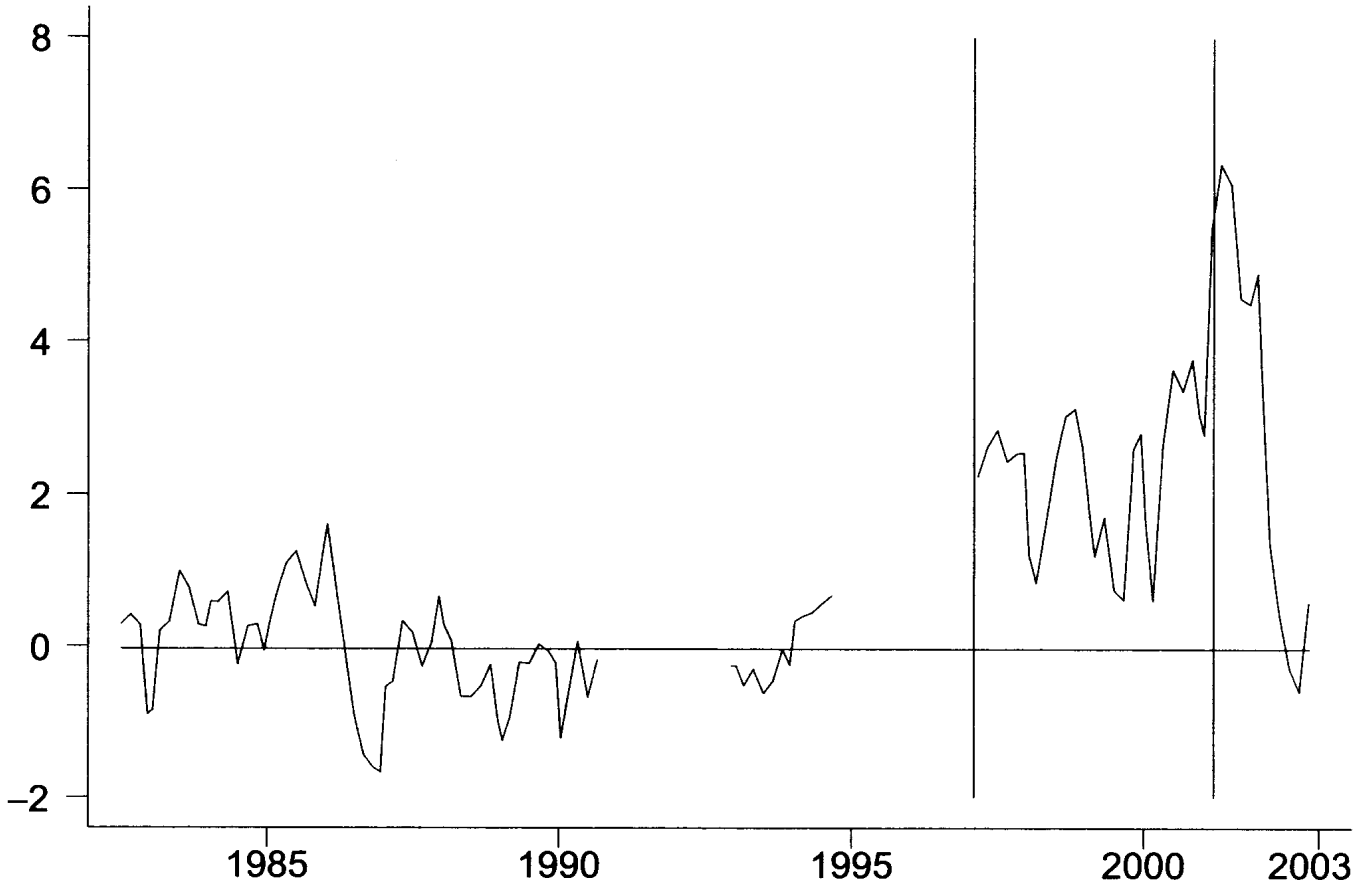
- Setting: Education in Uganda
- Empirical idea:
  - Each school receives a block grant from the central government
  - Sent surveyors to the schools to track how much block grant each school received
  - Compared the amount the schools received to the amount the central government sent to the schools
- 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.

Results



Difference between Arabian Light and Basrah

Magnitudes: Direct evidence

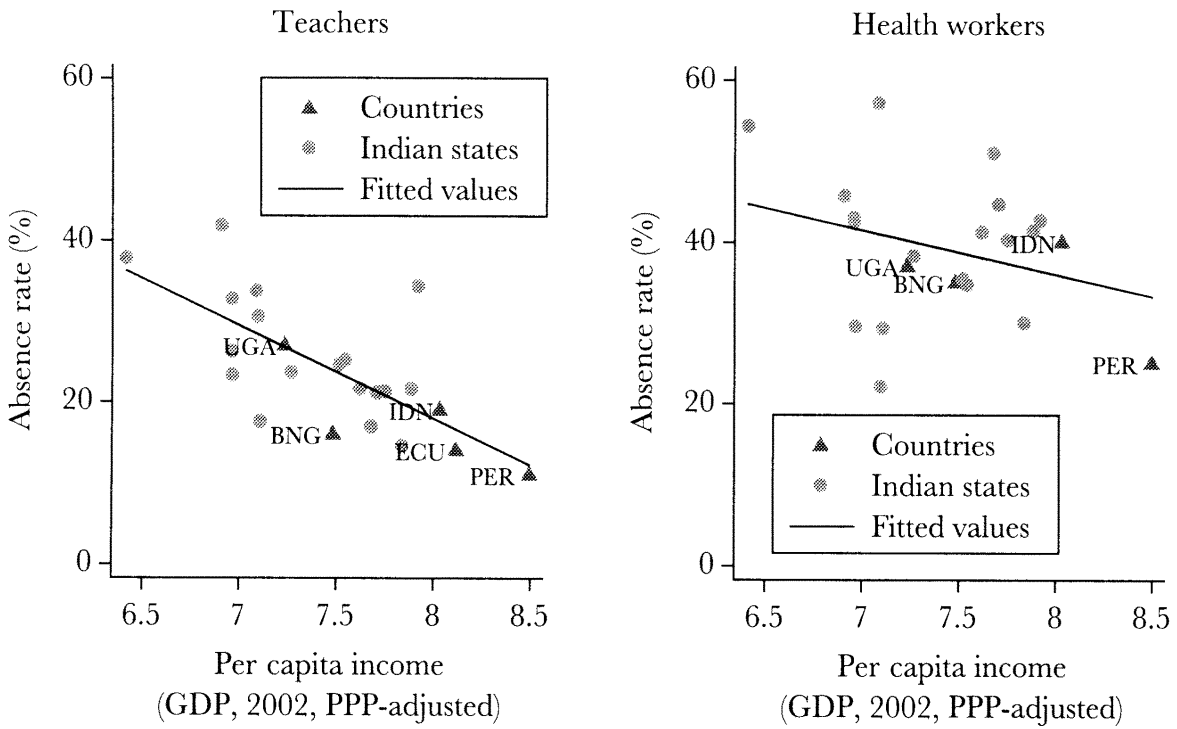
Chaudhury, Hammer, Kremer, Muralidharan, and Rogers: "Missing in Action: Teacher and Health Worker Absence in Developing Countries"

- 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

Figure 1

Absence Rate versus National/State Per Capita Income



Summary of Magnitudes

- Several main ways to measure corruption
  - Perceptions
  - Comparing two measures of the same thing
  - Direct measurement
- 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: $H = h > L = l > 0, y_H < y_L$.

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 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 $y_H < y_L = T_L$

Implications

- 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.