Law, Regulation and Rent Seeking
Political Economics: Week 8

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26th February and 1st March 2010
Externalities

- An externality is present whenever an agent’s action impacts the welfare of another directly, without the mediation of the price system.

- The traditional approach is Pigovian: activities that generate externalities should be regulated.
  1. Taxes on activities that generate negative externalities; subsidies for activities that generate positive externalities.
  2. Liability for damages caused by negative externalities.
  3. Permits, quotas, requirements and prohibitions restricting who can (or must) engage in externality-inducing activities.

- Regulation sets or changes the price of externality-inducing activities.
  1. Directly and openly via taxes and subsidies.
  2. Ex post with the state-contingent court determination of damages under a liability rule.
  3. Indirectly with fines for failing to comply with quantity regulations.
The Problem of Social Cost

- Coase (1960) is a tremendously influential article, one of the foundations of law and economics.
- Emphasis on the reciprocal nature of the problem.
  - E.g., a business $A$ generates noise that disturbs a nearby resident $B$.

1. The social benefit and cost depend on the activities of all parties.
   - $A$ can soundproof its plant, or $B$ can soundproof his home.
   - $A$ can relocate to an industrial park, or $B$ to a residential district.

2. The problem can be framed in terms of the allocation of relevant rights, albeit precisely defined with potentially great complexity.
   - $A$’s exercise of a right to make noise affects $B$ by reducing his utility.
   - $B$’s exercise of a right to enjoy quiet affects $A$ by reducing its profits.
Law, Regulation and Rent Seeking

The Coase Theorem

Tradable Rights

- The problem of externalities has a market solution if private parties can bargain efficiently over the allocation of the right to engage in, or forbid, the externality-inducing activity.
- Legal institutions are required to enable such bargaining:
  1. Definition of the initial endowment of the right.
  2. Enforcement of any contract reallocating the right.
- The Coase theorem is the insight the initial endowment does not matter in a world with “no transaction costs”.
- In a free, frictionless, perfect market, resources flow to whoever values them the most, regardless of the initial allocation.
The Coasian Insight

- $A$ earns a profit $\pi_A$ from the noise-making activity.
- $B$ derives utility $u_B$ from enjoying quiet.

1. If $B$ has a right to quiet, then $A$ will buy permission to make noise if $\pi_A > u_B$.
2. If $A$ has a right to make noise, then $B$ will pay him to keep quiet if $u_B > \pi_A$.

$\Rightarrow$ In either case, noise prevails if $\pi_A > u_B$ and quiet if $u_B > \pi_A$.

- The first case is classically Pigovian: $A$ has to compensate $B$ for the externality caused.
- In the second case, the uncompensated externality is a mirage: when making noise, $A$ faces the opportunity cost of not selling quiet to $B$. 
No Transaction Costs

1. All affected parties participate in bargaining.
   - No difficulty identifying and reaching every party.

2. Complete and perfect public information.
   - No asymmetric information about private costs and benefits.
   - Well defined outside options (common priors).
   - Common knowledge of rationality.

3. Bargaining leads to a Pareto efficient outcome.
   - No free-rider problem due to public goods.
   - No hold-out problem due to sequential coalition formation.
   - No hold-up problem due to incomplete contracts.
   - Typically, the problem has a core and the solution is in the core.

4. Costless bargaining and costless enforcement.
   - Everything can be costlessly and verifiably measured.
   - Courts are perfectly capable and incorruptible.
The Coase Theorem, Version I

Theorem (Pareto efficiency)

*If there are “no transaction costs”, then bargaining leads to a Pareto efficient outcome regardless of the initial endowments.*

- This is a tautology, because the hypothesis of “no transaction costs” includes by definition the thesis that bargaining is Pareto efficient.

- The theorem does point out that many forms of bargaining can lead to the internalization of an apparent externality.
  - No dichotomy between perfectly competitive price-taking or regulatory intervention.

- If the market fails to reach a Pareto optimum it must be because of transaction costs.
  - The optimal intervention could identify and remove the transaction costs, enabling the market, rather than replacing it and having a planner set prices.
The Coase Theorem, Version II

**Theorem (Surplus maximization)**

*If there are “no transaction costs” and the bargaining game has transferable utility, then the outcome maximizes total surplus and initial endowments only influence its division among the parties.*

- The bargaining game has transferable utility when parties can exchange cash payments and have no income effects.
- This is also known as the *invariance version*, presuming that surplus maximization identifies a unique outcome, up to cash transfers.
- Surely the most common version of the Coase theorem.
  - Most models assume away income effects, so efficiency can be defined irrespective of distributional considerations.
  - When is the assumption of constant marginal utility of money justified?
Transaction Costs

- The pure costs of convening all parties are prohibitive for many mundane activities that affect large numbers of people that may not be clearly identified ex ante.
  - E.g., driving and traffic accidents, air pollution.
  - A tort is defined as the breach of a duty imposed by law *erga omnes* (in particular a general duty of care), by opposition to the breach of a contractual obligation, which is binding *inter partes*.

- Large numbers of parties also tend to imply free-riding and the potential for hold-outs.

⇒ Regulation as the solution to the problem of large numbers: the government is the citizens’ representative at the bargaining table.

  - Frictions prevent perfect markets but also benevolent planning.
  - Myerson–Satterthwaite: asymmetric information rules out both efficient bilateral bargaining and an efficient mechanism.
Coase v. Pigou

- Without efficient bargaining, the problem of optimal institutional design becomes very difficult.
- In theory, the same optimal institutions can be designed in two ways.
  1. Pigovian approach: all externalities should be internalized.
  2. Coasian approach: rights and duties should be parcelled out as they would be if efficient bargain were possible.
- Naive Pigovianism risks obscuring the reciprocal nature of the problem, which implies that simple rules that assign an entire non-tradeable bundle of rights to one party are rarely optimal.
  - If the “offender” must compensate the “victim” for the actual harm suffered, then the latter has no incentives to limit the harm.
  - Pigovian compensation is limited to the amount of harm that the victim would suffer after taking optimal precautions.
- The optimal mechanism can be too complex to be realistically implementable.
Pigovian Compensation v. Pigovian Taxation

- Pigovian taxes can become distortionary if the income is not used to compensate the victims of an externality, but bargaining is possible.

1. **No regulation**: $A$ can operate the noisy factory at will.
   - *Inefficient* without bargaining. $A$ always operates the factory.
   - *Efficient* with bargaining. Distributionally, $A$ is favoured.

2. **Compensation**: $A$ must pay $B$ a compensation $u_B$ for operating the noisy factory.
   - Efficient without bargaining. $A$ operates the factory if $\pi_A > u_B$.
   - Efficient with bargaining. Distributionally, $B$ is favoured.

3. **Taxation**: $A$ must pay a tax $u_B$ for making noise, but $B$ gets no compensation.
   - Efficient without bargaining. Distributionally, the treasury is favoured.
   - *Inefficient* with bargaining. $A$ faces a double cost: the direct cost $u_B$ of the tax, and the opportunity cost $u_B$ of selling quiet to $B$. Thus he operates the factory only if $\pi_A \geq 2u_B$. 
Imperfect Courts

- The Coase theorem states that efficient bargaining leads to efficient outcomes, if contracts are perfectly enforced.
- Even with transaction costs, the Coasian tradition in law and economics typically favours liability rules administered by courts.
- Courts must be able and willing to verify private actions, understand complex rules (contractual or statutory), and apply them impartially. Are they?
- Comparative institutional failure: imperfect courts or imperfect regulators?

2. Glaeser and Shleifer (2003): regulation is less prone to private subversion.
Incentives for Enforcement

- An adjudicator must investigate and punish breaches of a legal obligation, which occur in a fraction $p$ of suspect cases.
- Three-fold private incentives:
  1. A cost $c > 0$ of discovering the true facts of the case.
     - Personal effort and opportunity cost of time.
  2. A payoff $b > 0$ from adjudicating correctly.
     - Long-run reputation and self-esteem.
  3. A payoff $a ≥ 0$ from punishing a suspect.
     - Short-run career incentives and political expediency.

The adjudicator has the following payoffs:

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<th>Probability</th>
<th>Not Punish</th>
<th>Punish</th>
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<tr>
<td>Innocent</td>
<td>$1 − p$</td>
<td>$b$</td>
<td>$a$</td>
</tr>
<tr>
<td>Guilty</td>
<td>$p$</td>
<td>0</td>
<td>$a + b$</td>
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Adjudicating Strategies

Leniency: Acquit everyone without investigating.
⇒ Expected payoff: $(1 - p) b$

Abuse: Convict everyone without investigating.
⇒ Expected payoff: $a + pb$

Search: Investigate and adjudicate correctly.
⇒ Expected payoff: $b + pa - c$

- Since $b > 0$, it never pays to acquire information but misuse it.
- The equilibrium involves efficient search if and only if
  
  \[ c \leq (a + b) p \quad \text{and} \quad c \leq (b - a)(1 - p) \]

- Leniency is only possible for $p < 1/2$. 
Equilibrium Strategies

- Leniency
- Abuse
- Search

Incentive for Enforcement (a)
Search Cost (c)
Leniency Abuse
Search
Comparative Statics

1. $c$ is an inverse measure of judicial efficiency.
   - Lower $c$ makes it cheaper for adjudicators to acquire information.
   - Thus lower $c$ makes adjudicators more likely to make the right decision.
   - If the legal system is not efficient enough, it is impossible to have nuanced regulation: either everybody or nobody must be punished.

2. $b$ is a measure of judicial professionalism.
   - Higher $b$ makes adjudicators more likely to search.
   - For prohibitive values of $c$, higher $b$ extends leniency at the expense of abuse.

3. $p$ is the rational presumption of guilt.
   - For $p < 1/2$, higher $p$ extends search at the expense of leniency.
   - Higher $p$ always extends abuse at the expense of both leniency and search.
Endogenous Violations

- Atomistic adjudicators, so each adjudicator’s choice does not affect the equilibrium.
- Atomistic potential violators with heterogeneous benefits from a violation.
- If no adjudicator searches, the fraction of actual violators is $P$.
  - Identical under leniency or abuse, since marginal incentive are nil in both cases.
- If all adjudicators search, the fraction is $Q < P$.
- Mixed-strategy equilibria ($X, Y, Z$): adjudicators are indifferent between searching or not and leniency, and $p \in (Q, P)$.
- Multiple rational expectations equilibria ($Y, Z$), always including pure abuse.
- The qualitative results are unchanged.
Rational Expectations Equilibria

\[ a = (1 - 2P)b \]

\[ c = (a + b)P \]

\[ c = (a + b)Q \]

\[ c = (b - a)(1 - Q) \]

\[ c = (b - a)(1 - P) \]
Optimal Adjudicators

- The ideal independent judge has \( a = 0 \).
- High values of \( a \) are appropriate for regulators and prosecutors whose careers are a function of bringing violators to justice, or appearing to do so.
- Intermediate values of \( a \) may correspond to civil-law judges, who are career civil servants but do not depend from the government.
- A government lacking high-quality judges (high \( b \), low \( c \)) must raise \( a \) to induce search.
- If abuse is very costly (e.g., criminal justice), rely on less than independent judges.
- In civil situations, it is best to rely on a regulator with more aggressive, albeit never excessive, incentives.
Securities Market Regulation

- Landis (1938), architect of U.S. regulation and one of the first SEC commissioners.
  - Skeptical that courts were motivated enough to punish dishonesty in security issuance and trading.
  - He thought an independent and highly motivated SEC could do this better.
  - He argued that regulators are better because they face lower costs of investigation.

- A more motivated regulator has a higher $a$.

- Greater disclosure by securities issuers and intermediaries corresponds to a lower $c$. 
Poland v. the Czech Republic

A comparison of two very similar transition economies:

- Similar histories from 1945 to 1990: former communist countries.
- Similar economies: industrialized countries bordering with Germany.
- Similar policies: liberalization and privatization in the early 1990s.
- Similar overall legal development:
  - Excellent for ex-communist countries.
  - The quality of courts lagged behind rich market economies.
- Polish company law protects minority shareholders somewhat more.
Comparative Securities Law

Hands-off approach in the Czech Republic, stringent regulation in Poland.

1. Securities markets supervised by an independent Securities Commission in Poland; by an office within the Ministry of Finance in the Czech Republic.
   - The Czech minister of finance and then prime minister advocated a laissez-faire approach.

2. Poland had stricter licensing and regulation of intermediaries: brokers, investment advisors, mutual funds, custodian banks.

3. The Polish regulator had greater ability to discipline market participants without recourse to the judicial system.
   - Appeals possible, but the burden of going to court is shifted.
   - Neither country had a corrupt judiciary.

4. Poland mandated more disclosure by securities issuers.
   - Disclosure of financial results and of ownership structure.
Stock Listings

Number of stocks in the IFC Investable Index

Giacomo Ponzetto (CREI)
Stockmarket Capitalization

Market capitalization of stocks in the IFC Investable Index
The Rise of the Regulatory State

- Before 1900 significant commercial disputes in the U.S. were generally resolved through private litigation.
  - Corporate liability, anti-competitive practices, product safety.
- Between 1887 and 1917 regulatory agencies at both the state and the federal level took over.
  - Competition, anti-trust, railroad pricing, food and drug safety.
  - Also a general expansion of government: the Federal Reserve and the federal income tax.

Why did these changes occur at the turn of the century?

1. Individuals will seek to subvert any law enforcement strategy for their own benefit.
2. The efficiency of alternative institutional arrangements depends on their vulnerability to private subversion.
3. The increase in the scale of entreprise at the end of the XIX century made courts more susceptible to corporate subversion and prompted a switch to regulation.
Efficient Accident Avoidance

- A firm can take a level of precaution $Q_1$ or $Q_2$ to avoid an accident.
- $Q_1$ is costless, while $Q_2 > Q_1$ has a cost $C \times S$
  - $C$ is the cost of precaution per unit of output.
  - $S$ is the scale of the firm.
- Two types of firm, $\alpha$ and $\beta$. The probability of an accident as a function of precaution is:
  - $P(Q_1; \alpha) = P(Q_2; \alpha) \equiv P_\alpha$ for firms of type $\alpha$.
  - $P(Q_1; \beta) \equiv P_1 > P(Q_2; \beta) \equiv P_2$ for firms of type $\beta$.
- The social cost of accidents is $D \times S$.
  - $D$ is the harm inflicted per unit of output.
  - It is irrelevant whether $D$ is concentrated or widely shared.
- In the first best, $\alpha$ firms set $Q_1$ and $\beta$ firms $Q_2$: $(P_1 - P_2)D > C$.
  - Implicitly, it is efficient for all firms to operate.
Liability Rules

1. **Strict Liability**: The firm must pay damages $F$ whenever an accident occurs.
   - With no subversion, the first best is achieved if
     \[ F \geq \frac{CS}{P_1 - P_2}. \]

2. **Negligence**: The firm must pay damages $F$ when an accident occurs and the level of precaution is $Q_1$.
   - With no subversion, the first best is achieved if
     \[ P_1 \geq P_\alpha \text{ and } \frac{CS}{P_1} \leq F \leq \frac{CS}{P_\alpha}. \]

- Strict liability requires a larger punishment.
Regulation

- A regulatory agency can verify the level of precaution with exogenous probability $p > P_1$.
  - Regulations can be designed so that insufficient precautions $Q_1$ are relatively easy and inexpensive to detect.
- The firm must pay a fine $F$ whenever it is caught using precautions $Q_1$ and not $Q_2$.
  - All firms are induced to set $Q_2$ if
  $$F \geq \frac{CS}{p}.$$ 

- Regulation cannot achieve the first best, because it cannot distinguish firm types.
- Regulation induces precaution with lower fines than liability for negligence, and a fortiori strict liability.
Subversion

- When a firm is sued after an accident, or caught violating regulation, it can pay $X$ to escape the punishment $F$.
  - Legal means: lobbying, hiring good lawyers.
  - Illegal means: bribery, intimidation.

- The cost of subversion $X$ is the maximum punishment that can be imposed, and measures the quality of the institutional environment.

- First-best institutions can function only in a supportive environment that protects them from subversion.

- When subversion is rampant, laissez faire is the best policy.
  - Government intervention cannot solve market failures.
  - The subversion of government intervention adds another waste.
Appropriate Institutions

1. If \( X/S < C/p \), any enforcement scheme is subverted: laissez faire is optimal.

2. If \( P_1 \geq P_\alpha \) and \( C/p \leq X/S < C/P_1 \), or \( P_1 < P_\alpha \) and \( C/p \leq X/S < C/(P_1 - P_2) \), then the optimal enforcement scheme is regulation if and only if

\[
D > \frac{C}{(1 - \pi_\alpha)(P_1 - P_2)}.
\]

Otherwise, laissez faire is optimal.

3. If \( P_1 \geq P_\alpha \) and \( X/S \geq C/P_1 \), negligence achieves the first best.

4. If \( X/S \geq C/(P_1 - P_2) \), strict liability achieves the first best.

- As firm size increases, subversion becomes more severe.
  - Inequality can undermine the functioning of law enforcement.
Optimal Enforcement Schemes

\[ \frac{C}{p} \quad \frac{C}{P_1} \quad \frac{C}{P_1-P_2} \quad \frac{X}{S} \]

- Nothing
- Regulation
- Negligence
- Strict liability
Combining Regulation and Litigation

- A regulator can impose a fine $R$ for failure to comply with regulation, and in addition courts can impose liability for damages $F$ when an accident occurs.

- The combination of the two mechanisms can deter subversion, because its cost must then be incurred twice.

1. If $P_1 \geq P_\alpha$ and $X/S \geq C/(p + P_1)$, a combination of regulation and negligence achieves the first best.

2. If $X/S \geq C/(p + P_1 - P_2)$, a combination of regulation and strict liability achieves the first best.

- The regulatory fine is low enough that $\alpha$ firms are in efficient non-compliance.

- Regulation reduces the judicial punishment whose threat induces $\beta$ firms to take precautions.
Regulatory Screening of Entrepreneurs

- The regulation of entry of start-up firms differs enormously across countries.

- Government requirements for starting to operate a business:
  
  - **Canada**: 2 procedures, 2 business days, 280 USD.
  - **USA**: 4 procedures, 4 business days, 149 USD.
  - **Spain**: 11 procedures, 82 business days, 2,422 USD.
  - **Italy**: 16 procedures, 62 business days, 3,946 USD.
  - **Mozambique**: 19 procedures, 149 business days, 256 USD.

- Regulation mostly takes the form of screening procedures.

- Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2002) measure the official requirements in 85 countries.
  
  - Not taking into account corruption and unexpected bureaucratic delays

- Use the data to evaluate different economic theories of regulation.
Theories of Regulation

1. *Public interest theory*: the helping hand (Pigou 1938). Regulation increases social welfare by correcting market failures.


   - *Capture view*: Stigler (1971) Regulation creates barriers to entry to increase the profits of industry incumbents.

   - *Tollbooth view*: De Soto (1990) Regulation is used by politicians and bureaucrats to control patronage and collect bribes.
Public Interest Theory

- Unregulated markets are prone to market failures
  - Monopoly power, externalities.
- The government pursues social efficiency by countering those failures through regulation.
- The regulation of entry screens entrants to ensure that consumers buy from “desirable” sellers.
  - Reduces market failures: low-quality products from fly-by-night firms.
  - Reduces externalities: pollution.
- Stricter regulation is associated with socially superior outcomes.

1. Who gets the rents? Consumers.
2. Which governments regulate? Representative, limited governments.
Public Choice Theory: The Capture View

Stigler (1971):

*Regulation is acquired by the industry and is designed and operated primarily for its benefits.*

- Industry incumbents face lower information and organization costs than dispersed consumers and potential entrants.
- They use the incumbency advantage to acquire regulations that create rents for themselves.
- The regulation of entry keeps out competitors and raises incumbents’ profits at the expense of consumers.

2. Which governments regulate? *Governments without public oversight.*
Public Choice Theory: The Tollbooth View

- Regulation is pursued for the benefit of politicians and bureaucrats.
  - Favoured constituencies provide campaign contributions and votes.
  - Officials can deny permits and collect bribes for providing them.

- In principle, the collection of bribes could be efficient.
  - The government becomes and equity holder in the regulated firm.

- In practice, the creation and extraction of rents is typically inefficient.
  - Regulators are disorganized.
  - Distortionary policies are pursued to increase the rents from corruption.

- The tollbooth analogy:
  - Every town wants to put a tollbooth on the highway.
  - Toll collectors may also block alternative routes.

1. Who gets the rents? *Politicians and bureaucrats.*
2. Which governments regulate? *Unaccountable governments.*
Start-up Procedures in New Zealand

1. Check name for uniqueness
2. Apply for registration
3. Register for taxes
Start-up Procedures in France

1. Check name for uniqueness
2. Obtain Mayor’s authorization for home office
3. Obtain proof of no criminal record
4. Obtain a certificate of marriage
5. Obtain power of attorney and sign it
6. Open a bank account
7. Draw articles of incorporation
8. Publish a business location notice
9. Register copies of articles of association
10. File a request for a company’s registration
11. Designate a bondsman
12. Inform the post office of address
13. Unblock capital
14. Have all ledgers initialed
15. Send a recruiting declaration

Cost (right axis)

Time (left axis)

Cost/GDP per Capita (%)

Time (business days)

0 2 4 6 8 10 12 14 16

0 2 4 6 8 10 12 14 16

0 2 4 6 8 10 12 14 16

0 2 4 6 8 10 12 14 16
## Regulation and Producer Quality

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<th>Dependent variable</th>
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<th>( \text{Ln GDP/POP}_{1999} )</th>
<th>Constant</th>
<th>( R^2 )</th>
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<td>Quality standards (ISO Certifications)</td>
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<td>Water pollution</td>
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<td>Deaths from accidental poisoning</td>
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<td>Deaths from intestinal infection</td>
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## Regulation and Market Outcomes

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<td>Size of the unofficial economy\textsuperscript{d}</td>
<td>14.7553\textsuperscript{a}</td>
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Regulation and Corruption

The diagram illustrates the relationship between a corruption index and the natural logarithm of the number of procedures required for entry into a country. The countries are plotted on the graph, with the corruption index on the y-axis and the natural logarithm of the number of procedures on the x-axis. The scatter plot shows a trend line indicating the correlation between these two variables.
Regulation and Socioeconomic Outcomes

- Richer countries regulate entry relatively less.
  - Market failures may be more pervasive in the poorest countries.
  - Income level may proxy for political accountability.
- Stricter regulation is associated with worse social outcomes:
  - Lower product quality, more intestinal infection, higher employment in the unofficial economy, more corruption.
- Not necessarily inconsistent with the public interest theory.

1. Egregious market failures coupled with the failure of alternative enforcement mechanisms, such as courts or the press.
   - Yet robust to controlling for freedom of the press and efficiency of the judiciary.

2. Unintended consequences of benevolent regulation.
   - Benign politicians in emerging markets imitate rich-country regulation and are frustrated by corruption and enforcement failures.
   - It may be impossible to screen bad entrants without facilitating corruption.
### Political Attributes and Regulation

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Log of the number of procedures as the dependent variable.
Autocracy and Regulation

The diagram shows a scatter plot with the logarithm of the number of procedures (Ln(Number of Procedures)) on the y-axis and the autocracy score on the x-axis. The graph includes points for various countries, indicated by their respective abbreviations. The data suggests a positive correlation between the number of procedures and the autocracy score.
Cross-Country Regulatory Patterns

- The regulation of entry is very costly and time-consuming.
  - On average 10 procedures, 47 business days, 47% of GDP per person.
- More regulation is not associated with better quality of public or private goods.
- More regulation is associated with more corruption and a larger unofficial economy.
- Heavier regulation is adopted by governments that are less constrained by checks and balances, less democratic and more interventionist.
  - Controlling for the level of economic development.
- Exactly the correlations predicted by the public choice theory.
  - More obvious support for the tollbooth than the capture view.
  - No identification strategy to test and reject the public interest theory.
The Simple Economics of Corruption

- Shleifer and Vishny (1993) define corruption as the sale by government officials of government property for personal gain.
- The state-owned goods are mostly requirements for pursuing economic activities.
  - Permits and licences, passports and visas, passage through customs, ...
- Corruption is particularly pervasive in (some) developing countries, but it is significant around the world.
  - Defence contracts, local zoning boards, ...
- Corruption is a huge problem, and clearly perceived as such—although the empirical evidence on corruption and growth is no more than tentative.
- Why is corruption more distortionary than taxation?
- How does the social cost vary with the structure of the corruption network?
Basic Model

- A homogeneous government-produced good with demand $D(p)$.
- The official government price is $p$.
- A government official acts as a monopolist, restricting supply of the good and extracting bribes.

   - The effective price is always above $p$.

2. Corruption *with theft*: the marginal cost is nil.
   - The effective price can be lower than $p$: e.g., customs duties.

$\Rightarrow$ Buyers always prefer corruption with theft.
Corruption without Theft
Corruption with Theft
Competition and the Spread of Corruption

- Competition between the officials: if government jobs are (implicitly) auctioned to the highest bidders, then only the maximal bribe-takers will be able to get them.
- With theft, competition between the buyers: if \( b < p \), no entrepreneur can afford not to pay bribes when his competitors are doing so.
- With theft, the buyers’ incentives are aligned with the corrupt official’s. Without theft, they are aligned with the government’s.

\( \Rightarrow \) The first step to reduce corruption is to prevent theft of government revenues.

- Penalizing the official for corruption does not remove the problem.
  - If the penalty is increasing in the level of the bribe, he may decrease it and expand supply.
  - If the penalty is increasing in the number of bribes received, he may reduce supply and raise the bribe.
Complementary Government Goods

- Private agents need several complementary government goods.
- Effective prices $p_1$ and $p_2$, quantities $x_1$ and $x_2$
- Bribes $b_i = p_i - MC_i$, where $MC_i$ is either the official price or 0.
- A single official is the monopolist supplier of all government goods.
  - Absolute monarchy, a single mafia, old-time Communism.
  - Always clear whom to bribe and how much.

- Joint revenue maximization

$$MR_1 + MR_2 \frac{dx_2}{dx_1} = MC_1,$$

$$MR_2 + MR_1 \frac{dx_1}{dx_2} = MC_2.$$ 

- Since the goods are complements

$$MR_1 < MC_1 \text{ and } MR_2 < MC_2.$$
Industrial Organization of Corruption

- The monopolist keeps the bribe on one good low to increase demand for the other good.
  - Redistribution of bribes within the government or party.
- Enforcement problem: can increases in bribes be detected?
  - Small oligarchies, police states, homogeneous communities.
- The leadership may not be able control rent extractions: independent (non-colluding) monopolists.
  - African countries, Indian licence Raj, post-Soviet Russia.
  - Everyone wants to maximize his own bribe revenue.
- Non-collusive solution:
  \[ MR_1 = MC_1 \text{ and } MR_2 = MC_2. \]
- Higher bribes and lower supply.
  - Political modernization is accompanied by increases in corruption.
Modes of Competition

- Free entry into the collection of bribes maximizes the problem.
  - New organizations and officials can demand more bribes.
  - The same bribe-takers may come back for more.
  - If entry is completely free, bribe revenues must go to zero because total supply goes to zero due to prohibitive bribes.

- The tollbooth problem: complementary good can be created at will.
  - In the middle ages there were 60 independent tolls on the Rhine.
  - In developing countries it is still quite common for every village to levy a toll on the road between two towns.

- Opposite results for substitute goods.
  - If several officials can provide the good, Bertrand competition eliminates bribes.
  - Potential competition is all that is needed.
  - A good explanation of why the U.S. has low government corruption, and most of it probably in defence procurement.
  - With theft, this would also reduce government revenues to zero.
Corruption and Secrecy

In the case of a centralized bribe-collecting monopoly, corruption is similar to revenue-maximizing taxation.

- The parallel can also be drawn between competing corrupt officials and competing tax agencies or levels of government.

Revenue-maximizing taxes are already distortionary. Bribes can be much worse.

Classic rent-seeking (Tullock 1967): the bribe revenues are dissipated in a race to occupy the bribe-taking positions.

Further distortions are involved in extracting bribes because they are illegal and must be kept secret.

1. Distort private activity towards areas where it is easier to hide bribes.
2. Resources are spent to avoid detection and punishment.

Example from developing countries: needlessly advanced technological imports to hide overinvoicing and kickbacks.

- Defence and infrastructure projects over education and health.
Rent Seeking and Growth

- Murphy, Shleifer, and Vishny (1993) explore the reasons why rent-seeking is not merely redistributive, but also detrimental to growth.
- Each person can engage in one of three activities:
  1. Market production, with output $\alpha$.
  2. Subsistence production, with output $\gamma < \alpha$.
  3. Rent-seeking, which expropriates $\beta$ from market producers, but nothing from subsistence producers.
- An equilibrium is an allocation of the population to production and rent-seeking.
  - $n$ is the ratio of rent-seekers to producers.
  - $y$ is income per capita.
Increasing Returns to Rent-Seeking

1. When the number of rent seekers is sufficiently low, they are only constrained by their own capacity to expropriate:
   - the returns to rent-seeking are $\beta$;
   - the returns to market production are $\alpha - n\beta > \gamma$.

2. Competition between rent seekers rent-seeking becomes binding at

   $$n' = \frac{\alpha - \gamma}{\beta}.$$ 

Then rent extraction is limited by producers’ ability to shift into subsistence production:
   - returns to production are $\gamma$;
   - returns to rent-seeking are $(\alpha - \gamma) / n < \beta$.

$\Rightarrow$ The relative returns to rent-seeking are increasing in the prevalence of rent seekers in the interval $n \in (0, n')$. 
Full Protection of Property Rights

- If $\beta < \gamma$, property rights are perfectly protected.
  1. Nobody engages in rent-seeking.
  2. Income per capita equals the maximum $\alpha$. 

\begin{align*}
\text{Payoff} \\
\alpha \\
\chi \\
\beta \\
\end{align*}

\begin{axis}[ 
  xlabel={Rent-seekers},
  ylabel={Producers},
  xmin=0, xmax=\textwidth,
  ymin=0, ymax=\textheight,
]
\addplot[domain=0:1] {\alpha};
\addplot[domain=0:1] {\chi - \beta};
\addplot[domain=0:1] {\beta};
\end{axis}
No Protection of Property Rights

- If $\beta > \alpha$, property rights are not protected by institutions.
  1. The prevalence of rent-seeking is $n'' = \alpha / \gamma - 1$.
  2. Income per capita equals the subsistence level $\gamma$. 

![Graph showing Payoff vs. n']
Multiple Equilibria

- If $\gamma < \beta < \alpha$, both outcomes are possible in equilibrium.
  - There is a third equilibrium with income per capita $\beta$, but it is unstable.
Comparative Statics

- The productivity of rent-seeking $\beta$ captures the quality of legal protection of property rights.
  - It does not affect the value of output in either stable equilibrium.
  - It does affect equilibrium selection.

- Higher $\alpha$ increases the value of property rights.
  - In the good equilibrium (with strong protection) it increases income per capita.
  - In the bad equilibrium (with weak protection) it increases rent-seeking instead.

- The productivity of subsistence production $\gamma$ measures the ability to self-protect.
  - It directly increases income in the bad equilibrium (weak legal protection).

- Reform mostly acts through shifts in equilibrium selection
  - Discontinuous response to changes in $\beta$.
  - Protection of subsistence production also plays a role.