Political Economy - Economics 410/510

February 14, 2014

- Outline

- Outline
  - Corruption

- Outline
  - Corruption
  - Political Agency

- Outline
  - Corruption
  - Political Agency
  - Voting and Lobbying in a Democracy

- Outline
  - Corruption
  - Political Agency
  - Voting and Lobbying in a Democracy
  - Origins of Democracy

- Outline
  - Corruption
  - Political Agency
  - Voting and Lobbying in a Democracy
  - Origins of Democracy
  - Size and Number of Nations

Motivation for Course

- Conventional public economics concernes itself with *economic failures*, situations where the economy fails to produce a good outcome. It implicitly assumes that the government and it's agents are *benevolent*, that they seek to promote *pareto efficiency* and maximize *social welfare*.

Motivation for Course

- Conventional public economics concernes itself with *economic failures*, situations where the economy fails to produce a good outcome. It implicitly assumes that the government and it's agents are *benevolent*, that they seek to promote *pareto efficiency* and maximize *social welfare*.
- Here we consider *political failures*, what happens when the government and/or it's agents are self-interested.

Corruption

- Definition: Corruption is an act whereby a public office is used illegally for personal gain.

Corruption

- Definition: Corruption is an act whereby a public office is used illegally for personal gain.
- Preconditions

Corruption

- Definition: Corruption is an act whereby a public office is used illegally for personal gain.
- Preconditions
  - Discretionary power: A public official must possess the authority to design or administer regulations and policies in a discretionary manner - Ability.

Corruption

- Definition: Corruption is an act whereby a public office is used illegally for personal gain.
- Preconditions
  - Discretionary power: A public official must possess the authority to design or administer regulations and policies in a discretionary manner - Ability.
  - Economic rents: the discretionary power must allow extraction of (existing) rents or creations of rents that can be extracted - Opportunity.

Corruption

- Definition: Corruption is an act whereby a public office is used illegally for personal gain.
- Preconditions
  - Discretionary power: A public official must possess the authority to design or administer regulations and policies in a discretionary manner - Ability.
  - Economic rents: the discretionary power must allow extraction of (existing) rents or creations of rents that can be extracted - Opportunity.
  - Weak institutions: the incentives embodied in political, administrative, and legal institutions must be such that officials are left with an incentive to exploit their discretionary power to extract or create rents - Incentive.

Corruption

- Examples - Corruption without Theft

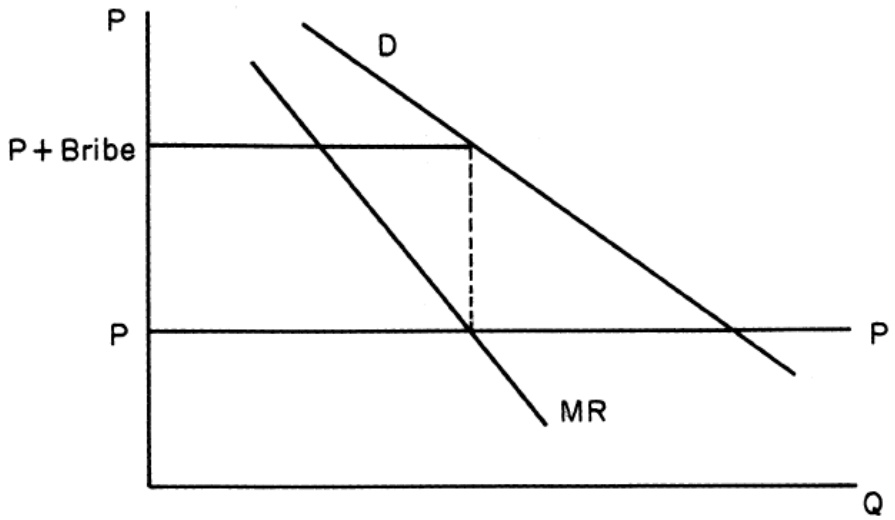


FIGURE Ia
Corruption without Theft

Source: Schleifer and Vishny, QJE 1993

Corruption

- Examples - Corruption without Theft
  - Official price P

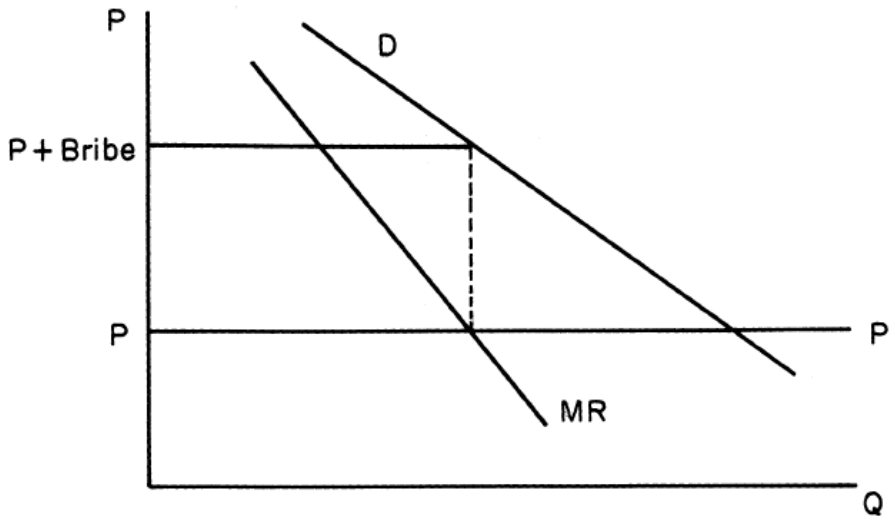


FIGURE Ia
Corruption without Theft

Source: Schleifer and Vishny, QJE 1993

Corruption

- Examples - Corruption without Theft
  - Official price P
  - Official pays government P - which is his marginal cost

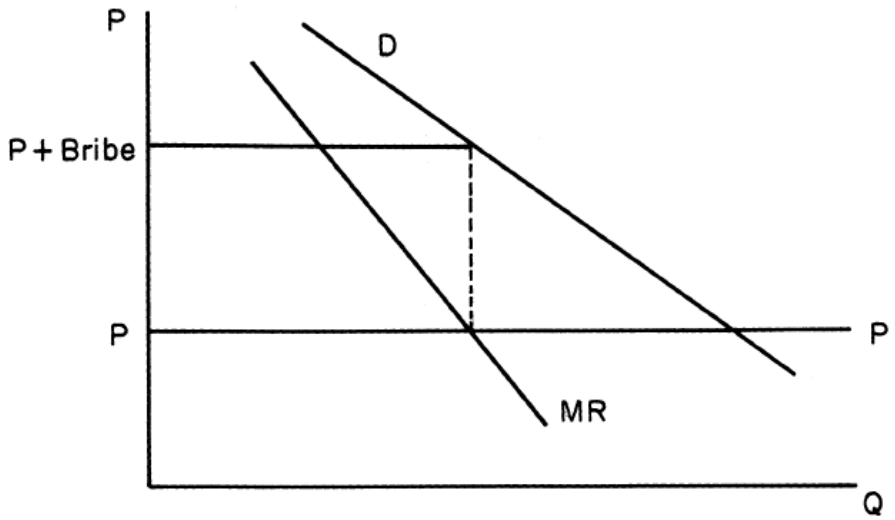


FIGURE Ia
Corruption without Theft

Source: Schleifer and Vishny, QJE 1993

Corruption

- Examples - Corruption without Theft
  - Official price P
  - Official pays government P - which is his marginal cost
  - Sets MC=MR

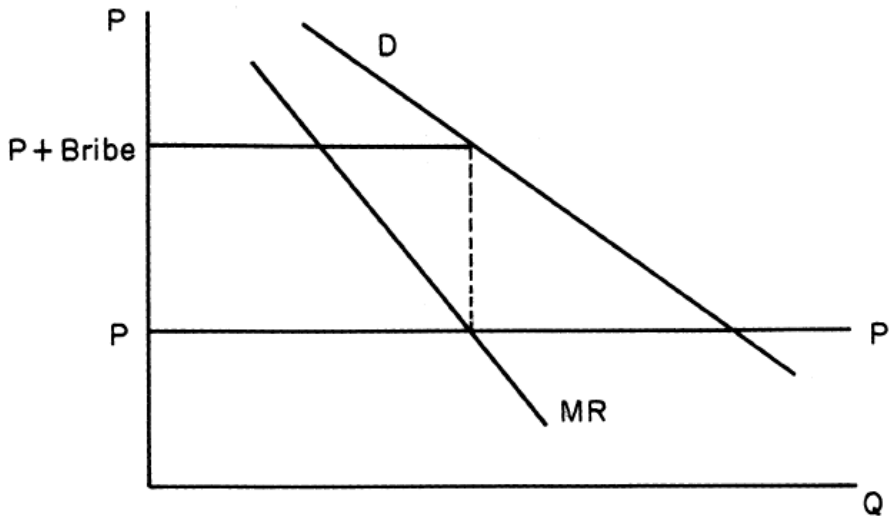


FIGURE Ia
Corruption without Theft

Source: Schleifer and Vishny, QJE 1993

Corruption

- Examples - Corruption without Theft
  - Official price P
  - Official pays government P - which is his marginal cost
  - Sets MC=MR
  - Sets bribe as the maximum the demander will pay

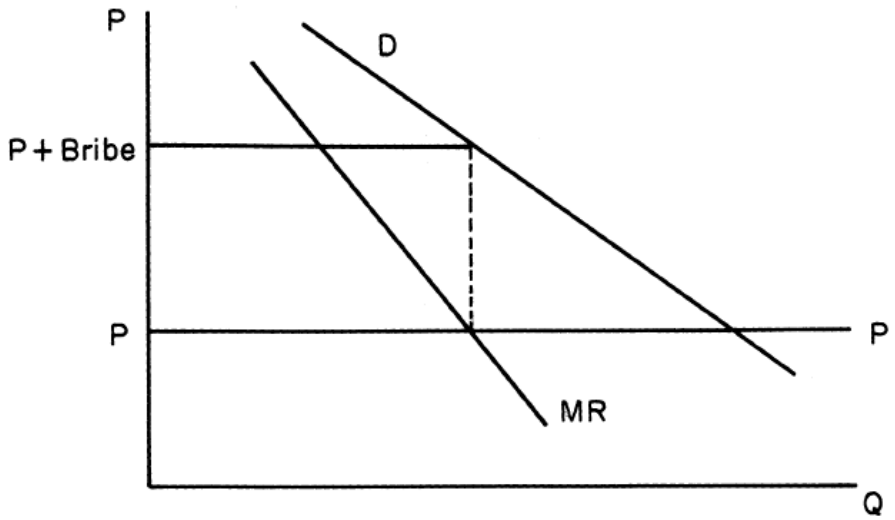


FIGURE Ia
Corruption without Theft

Source: Schleifer and Vishny, QJE 1993

Corruption

- Examples - Corruption with Theft

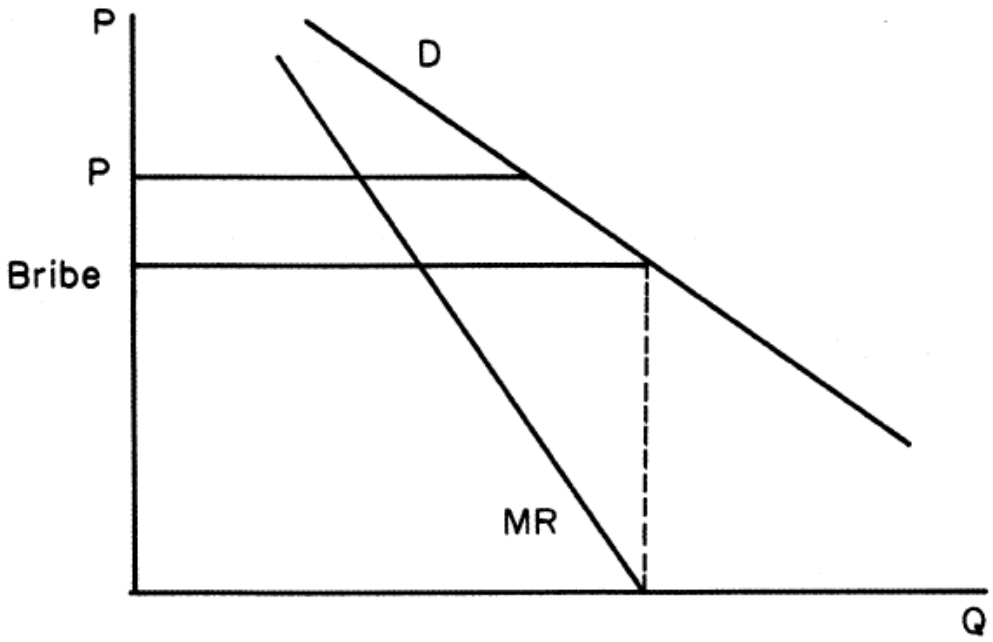


FIGURE Ib
Corruption with Theft

Source: Schleifer and Vishny, QJE 1993

Corruption

- Examples - Corruption with Theft
  - Official price P

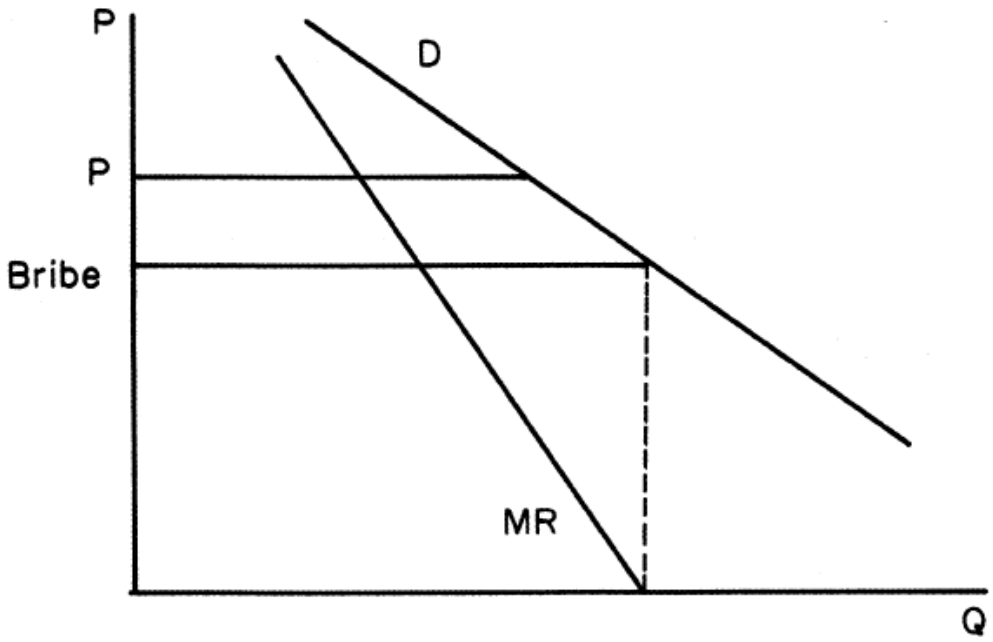


FIGURE Ib
Corruption with Theft

Source: Schleifer and Vishny, QJE 1993

Corruption

- Examples - Corruption with Theft
  - Official price P
  - Official pays government 0 - which is his marginal cost

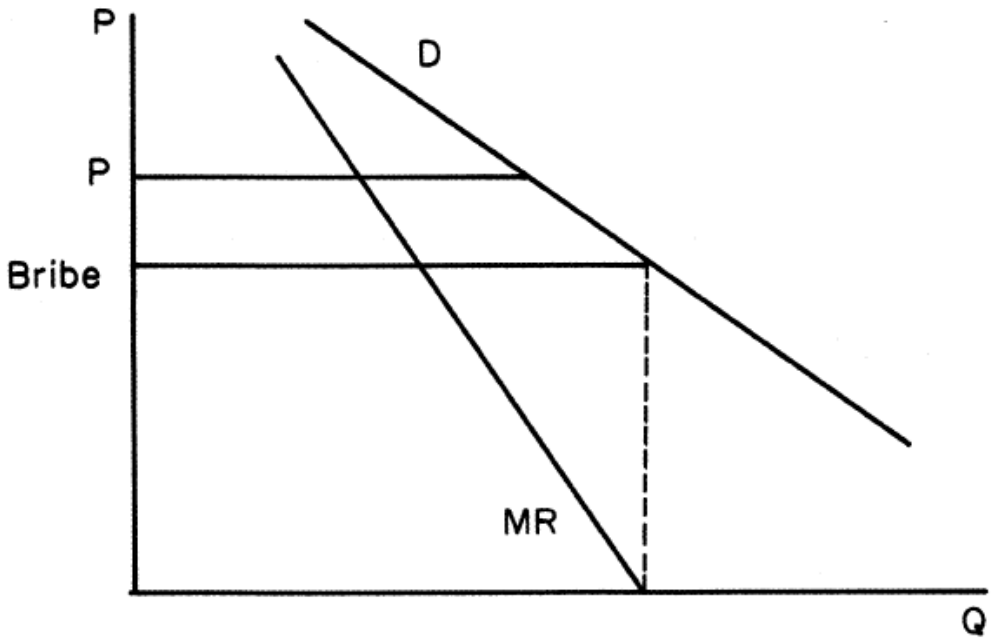


FIGURE Ib
Corruption with Theft

Source: Schleifer and Vishny, QJE 1993

Corruption

- Examples - Corruption with Theft
  - Official price P
  - Official pays government 0 - which is his marginal cost
  - Sets MC=MR

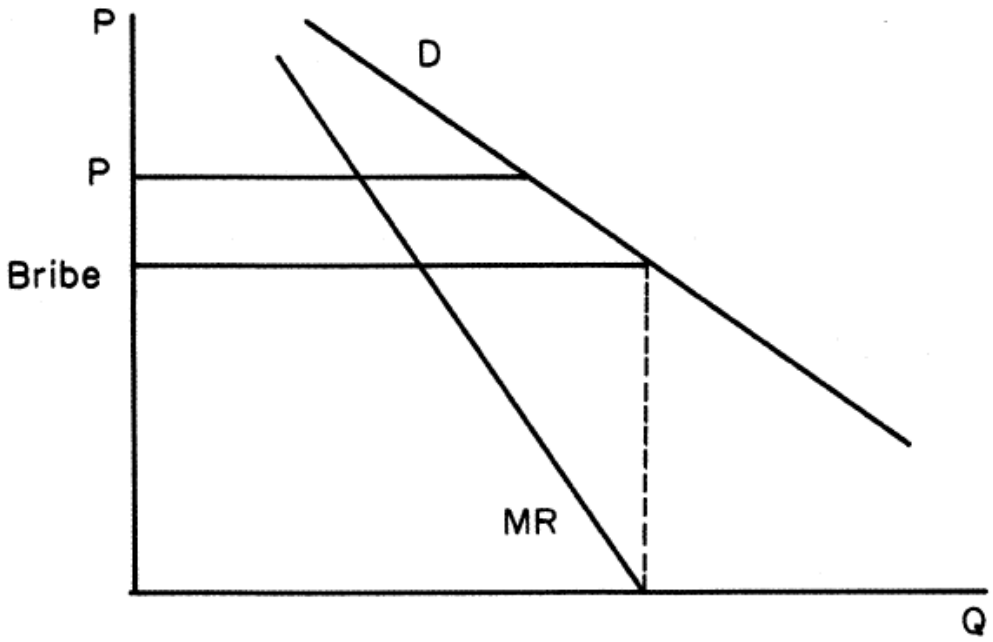


FIGURE Ib
Corruption with Theft

Source: Schleifer and Vishny, QJE 1993

Corruption

- Examples - Corruption with Theft
  - Official price P
  - Official pays government 0 - which is his marginal cost
  - Sets MC=MR
  - Sets bribe as the maximum the demander will pay

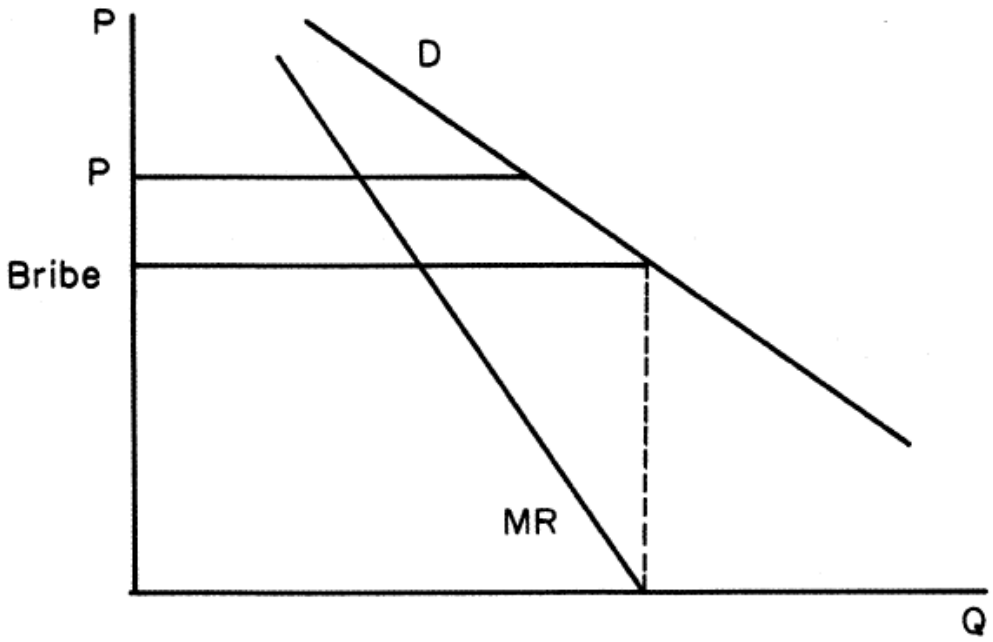


FIGURE Ib
Corruption with Theft

Source: Schleifer and Vishny, QJE 1993

Corruption

- Types of Corruption

Corruption

- Types of Corruption
  - Efficient corruption: Promotes efficiency by allowing agents in the private sector to correct pre-existing government failures.

Corruption

- Types of Corruption
  - Efficient corruption: Promotes efficiency by allowing agents in the private sector to correct pre-existing government failures.
  - Benevolent principal: A benevolent principal delegates decision making power to a non-benevolent agent.

Corruption

- Types of Corruption
  - Efficient corruption: Promotes efficiency by allowing agents in the private sector to correct pre-existing government failures.
  - Benevolent principal: A benevolent principal delegates decision making power to a non-benevolent agent.
  - Corruption with a non-benevolent principal: Non-benevolent government officials introduce inefficient policies in order to extract rents from the private sector.

Corruption

- Types of Corruption
  - Efficient corruption: Promotes efficiency by allowing agents in the private sector to correct pre-existing government failures.
  - Benevolent principal: A benevolent principal delegates decision making power to a non-benevolent agent.
  - Corruption with a non-benevolent principal: Non-benevolent government officials introduce inefficient policies in order to extract rents from the private sector.
  - Self-reinforcing corruption: The rewards to corruption depend on the incidence of corruption due to strategic complementarity.

Corruption

- Efficient Corruption

Corruption

- Efficient Corruption
  - Idea of second-best - if there is something wrong in the economy introducing another problem may offset it!

Corruption

- Efficient Corruption
  - Idea of second-best - if there is something wrong in the economy introducing another problem may offset it!
  - Example: Suppose that the initial "distortion" is the introduction of a license to undertake some productive activity and suppose the return to this activity varies across individuals.

Corruption

- Efficient Corruption
  - Idea of second-best - if there is something wrong in the economy introducing another problem may offset it!
  - Example: Suppose that the initial "distortion" is the introduction of a license to undertake some productive activity and suppose the return to this activity varies across individuals.
    - Individuals must queue to get licenses

Corruption

- Efficient Corruption
  - Idea of second-best - if there is something wrong in the economy introducing another problem may offset it!
  - Example: Suppose that the initial "distortion" is the introduction of a license to undertake some productive activity and suppose the return to this activity varies across individuals.
    - Individuals must queue to get licenses
    - But may jump the queue by paying bribes

Corruption

- Efficient Corruption
  - Idea of second-best - if there is something wrong in the economy introducing another problem may offset it!
  - Example: Suppose that the initial "distortion" is the introduction of a license to undertake some productive activity and suppose the return to this activity varies across individuals.
    - Individuals must queue to get licenses
    - But may jump the queue by paying bribes
    - Those that can afford the highest bribes get served first

Corruption

- Efficient Corruption
  - Idea of second-best - if there is something wrong in the economy introducing another problem may offset it!
  - Example: Suppose that the initial "distortion" is the introduction of a license to undertake some productive activity and suppose the return to this activity varies across individuals.
    - Individuals must queue to get licenses
    - But may jump the queue by paying bribes
    - Those that can afford the highest bribes get served first
    - But they can afford the highest bribes because they use the licenses most productively

Corruption

- Efficient Corruption
  - Idea of second-best - if there is something wrong in the economy introducing another problem may offset it!
  - Example: Suppose that the initial "distortion" is the introduction of a license to undertake some productive activity and suppose the return to this activity varies across individuals.
    - Individuals must queue to get licenses
    - But may jump the queue by paying bribes
    - Those that can afford the highest bribes get served first
    - But they can afford the highest bribes because they use the licenses most productively
    - This is efficient

Corruption

- Efficient Corruption
  - Idea of second-best - if there is something wrong in the economy introducing another problem may offset it!
  - Example: Suppose that the initial "distortion" is the introduction of a license to undertake some productive activity and suppose the return to this activity varies across individuals.
    - Individuals must queue to get licenses
    - But may jump the queue by paying bribes
    - Those that can afford the highest bribes get served first
    - But they can afford the highest bribes because they use the licenses most productively
    - This is efficient
  - But the first-best is still to eliminate the licenses!

Corruption

- Benevolent principal

Corruption

- Benevolent principal
  - Political decision makers often delegate authority to a bureaucracy

Corruption

- Benevolent principal
  - Political decision makers often delegate authority to a bureaucracy
  - The politicians may be honest but the bureaucracy corrupt

Corruption

- Benevolent principal
  - Political decision makers often delegate authority to a bureaucracy
  - The politicians may be honest but the bureaucracy corrupt
  - The politicians then design institutions so as to give the correct incentives to self-interested bureaucrats

Corruption

- Benevolent principal
  - Political decision makers often delegate authority to a bureaucracy
  - The politicians may be honest but the bureaucracy corrupt
  - The politicians then design institutions so as to give the correct incentives to self-interested bureaucrats
  - Typically this won't involve zero corruption!

Corruption

- Benevolent principal - An Agency Model

Corruption

- Benevolent principal - An Agency Model
  - Model consists of

Corruption

- Benevolent principal - An Agency Model
  - Model consists of
    - Government - honest and benevolent

Corruption

- Benevolent principal - An Agency Model
  - Model consists of
    - Government - honest and benevolent
    - Tax collector - self interested and possibly corrupt

Corruption

- Benevolent principal - An Agency Model
  - Model consists of
    - Government - honest and benevolent
    - Tax collector - self interested and possibly corrupt
    - Firm - self interested and possibly corrupt

Corruption

- Benevolent principal - An Agency Model

Corruption

- Benevolent principal - An Agency Model
  - Firm

Corruption

- Benevolent principal - An Agency Model
  - Firm
    - Makes positive profit, $\pi > 0$ with probability h, otherwise earns $\pi = 0$ with probability $1 - h$

Corruption

- Benevolent principal - An Agency Model
  - Firm
    - Makes positive profit, $\pi > 0$ with probability h, otherwise earns $\pi = 0$ with probability $1 - h$
    - Is liable for taxes $t = \pi$ (100%) if $\pi > 0$

Corruption

- Benevolent principal - An Agency Model
  - Firm
    - Makes positive profit, $\pi > 0$ with probability h, otherwise earns $\pi = 0$ with probability $1 - h$
    - Is liable for taxes $t = \pi$ (100%) if $\pi > 0$
    - May pay a bribe of b to a tax collector to avoid paying taxes

Corruption

- Benevolent principal - An Agency Model
  - Firm
    - Makes positive profit, $\pi > 0$ with probability h, otherwise earns $\pi = 0$ with probability $1 - h$
    - Is liable for taxes $t = \pi$ (100%) if $\pi > 0$
    - May pay a bribe of b to a tax collector to avoid paying taxes
    - Gets detected paying a bribe by the government with probability p and then incurs a penalty of $g \geq 0$

Corruption

- Benevolent principal - An Agency Model

Corruption

- Benevolent principal - An Agency Model
  - Tax Collector

Corruption

- Benevolent principal - An Agency Model
  - Tax Collector
    - Observes whether or not the firm makes positive profit

Corruption

- Benevolent principal - An Agency Model
  - Tax Collector
    - Observes whether or not the firm makes positive profit
    - Decides whether or not to report the firm as liable for taxation

Corruption

- Benevolent principal - An Agency Model
  - Tax Collector
    - Observes whether or not the firm makes positive profit
    - Decides whether or not to report the firm as liable for taxation
    - May accept a bribe of kb from the firm to keep their tax liability secret

Corruption

- Benevolent principal - An Agency Model
  - Tax Collector
    - Observes whether or not the firm makes positive profit
    - Decides whether or not to report the firm as liable for taxation
    - May accept a bribe of kb from the firm to keep their tax liability secret
    - Where $k \in (0, 1]$ is the cost of secrecy (transactions cost)

Corruption

- Benevolent principal - An Agency Model
  - Tax Collector
    - Observes whether or not the firm makes positive profit
    - Decides whether or not to report the firm as liable for taxation
    - May accept a bribe of kb from the firm to keep their tax liability secret
    - Where $k \in (0, 1]$ is the cost of secrecy (transactions cost)
    - Gets detected accepting a bribe by the government with probability p and then loses his job and incurs a penalty of $f \geq 0$

Corruption

- Benevolent principal - An Agency Model
  - Tax Collector
    - Observes whether or not the firm makes positive profit
    - Decides whether or not to report the firm as liable for taxation
    - May accept a bribe of kb from the firm to keep their tax liability secret
    - Where $k \in (0, 1]$ is the cost of secrecy (transactions cost)
    - Gets detected accepting a bribe by the government with probability p and then loses his job and incurs a penalty of $f \geq 0$
    - Earns a wage of w as a tax collector and has an outside option of w_0

Corruption

- Benevolent principal - An Agency Model

Corruption

- Benevolent principal - An Agency Model
  - Government - designs the institutions by setting

Corruption

- Benevolent principal - An Agency Model
  - Government - designs the institutions by setting
    - The wage rate, w

Corruption

- Benevolent principal - An Agency Model
  - Government - designs the institutions by setting
    - The wage rate, w
    - The monitoring system, p

Corruption

- Benevolent principal - An Agency Model
  - Government - designs the institutions by setting
    - The wage rate, w
    - The monitoring system, p
    - The legal system, f and g

Corruption

- Benevolent principal - An Agency Model

Corruption

- Benevolent principal - An Agency Model
  - Firm's expected gain from corruption

$$\pi - pg \tag{1}$$

Corruption

- Benevolent principal - An Agency Model
  - Firm's expected gain from corruption

$$\pi - pg \tag{1}$$

  - If tax collector can extract all rent from the firm

$$b = max[k(\pi - pg), 0] \tag{2}$$

Corruption

- Benevolent principal - An Agency Model
  - Firm's expected gain from corruption

$$\pi - pg \tag{1}$$

  - If tax collector can extract all rent from the firm

$$b = max[k(\pi - pg), 0] \tag{2}$$

  - Tax collector accepts bribe if the expected gain exceeds the payoff from honesty

$$\begin{aligned} (1-p)(w+b) + p(w_0 - f) &> w \\ \implies (1-p)b + p(w_0 - w - f) &> 0 \end{aligned} \tag{3}$$

Corruption

- Benevolent principal - An Agency Model

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Efficiency Wages

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Efficiency Wages
    - Make the wage rate sufficiently high such that the tax collector will not risk losing his job

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Efficiency Wages
    - Make the wage rate sufficiently high such that the tax collector will not risk losing his job
    - From (3) with $f = 0$ we get

$$w^e = w_0 + \frac{(1-p)}{p} b \tag{4}$$

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Efficiency Wages
    - Make the wage rate sufficiently high such that the tax collector will not risk losing his job
    - From (3) with $f = 0$ we get

$$w^e = w_0 + \frac{(1-p)}{p} b \tag{4}$$

    - So the excess of the efficiency wage over the market wage is

$$w^e - w_0 = \frac{(1-p)}{p} b \tag{5}$$

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Efficiency Wages
    - Make the wage rate sufficiently high such that the tax collector will not risk losing his job
    - From (3) with $f = 0$ we get

$$w^e = w_0 + \frac{(1-p)}{p} b \tag{4}$$

    - So the excess of the efficiency wage over the market wage is

$$w^e - w_0 = \frac{(1-p)}{p} b \tag{5}$$

    - Which is the cost of using an efficiency wage, and is increasing in b and decreasing in p

Corruption

- Benevolent principal - An Agency Model

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Institutional Controls

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Institutional Controls
    - Make the probability of the tax collector being caught sufficiently high such that they will choose honesty

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Institutional Controls
    - Make the probability of the tax collector being caught sufficiently high such that they will choose honesty
    - From (3) we get

$$\begin{aligned} p^* &\geq \frac{b}{b+f+w-w_0} \\ \text{with} \quad b &= k(\pi - pg) \end{aligned} \tag{6}$$

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Institutional Controls
    - Make the probability of the tax collector being caught sufficiently high such that they will choose honesty
    - From (3) we get

$$\begin{aligned} p^* &\geq \frac{b}{b+f+w-w_0} \\ \text{with} \quad b &= k(\pi - pg) \end{aligned} \tag{6}$$

    - Which is increasing in b, and w_0 and decreasing in w and f

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Institutional Controls
    - Make the probability of the tax collector being caught sufficiently high such that they will choose honesty
    - From (3) we get

$$\begin{aligned} p^* &\geq \frac{b}{b+f+w-w_0} \\ \text{with} \quad b &= k(\pi - pg) \end{aligned} \tag{6}$$

    - Which is increasing in b, and w_0 and decreasing in w and f
    - The problem here may be that it is costly to detect corruption

Corruption

- Benevolent principal - An Agency Model

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Legal Penalties

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Legal Penalties
    - Make the fines sufficiently high such that the tax collector will choose honesty

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Legal Penalties
    - Make the fines sufficiently high such that the tax collector will choose honesty
    - From (3) we get

$$f^* \geq \frac{(1-p)}{p} b + w_0 - w \tag{7}$$

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Legal Penalties
    - Make the fines sufficiently high such that the tax collector will choose honesty
    - From (3) we get

$$f^* \geq \frac{(1-p)}{p} b + w_0 - w \tag{7}$$

    - Which is increasing in b, and w_0 and decreasing in w and p

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Legal Penalties
    - Make the fines sufficiently high such that the tax collector will choose honesty
    - From (3) we get

$$f^* \geq \frac{(1-p)}{p} b + w_0 - w \tag{7}$$

    - Which is increasing in b, and w_0 and decreasing in w and p
    - Or from (3) and using $b = k(\pi - pg)$

$$g^* \geq \frac{(1-p)k\pi + p(w_0 - w) - pf}{(1-p)kp} \tag{8}$$

Corruption

- Benevolent principal - An Agency Model
  - Preventing Corruption with Legal Penalties
    - Make the fines sufficiently high such that the tax collector will choose honesty
    - From (3) we get

$$f^* \geq \frac{(1-p)}{p} b + w_0 - w \tag{7}$$

    - Which is increasing in b, and w_0 and decreasing in w and p
    - Or from (3) and using $b = k(\pi - pg)$

$$g^* \geq \frac{(1-p)k\pi + p(w_0 - w) - pf}{(1-p)kp} \tag{8}$$

    - This works well provided that there is no possibility of errors, and provided that the agent cannot adjust their degree of corruption.

Corruption

- Benevolent principal - Optimal institutional design

Corruption

- Benevolent principal - Optimal institutional design
  - If institutions were designed optimally would corruption persist

Corruption

- Benevolent principal - Optimal institutional design
  - If institutions were designed optimally would corruption persist
  - Yes! - at least in many circumstances

Corruption

- Benevolent principal - Optimal institutional design
  - If institutions were designed optimally would corruption persist
  - Yes! - at least in many circumstances
  - There is a trade off between the benefits of reducing corruption and the costs of designing the institutions to eliminate it

Corruption

- Non-benevolent principal - "The Grabbing Hand"

Corruption

- Non-benevolent principal - "The Grabbing Hand"
  - Both the government and bureaucracy are potentially corrupt

Corruption

- Non-benevolent principal - "The Grabbing Hand"
  - Both the government and bureaucracy are potentially corrupt
  - Corruption is only constrained by existent economic and political institutions

Corruption

- Non-benevolent principal - "The Grabbing Hand"
  - Both the government and bureaucracy are potentially corrupt
  - Corruption is only constrained by existent economic and political institutions
  - Examples: Marcos in the Philippines, Amin in Uganda, Ghadaffi in Libya, Russia after the fall off communism

Corruption

- Non-benevolent principal

Corruption

- Non-benevolent principal
  - Key Point: When both the government and bureaucracy are potentially corrupt, distortions are introduced into the economy to create opportunities for corruption

Corruption

- Non-benevolent principal
  - Key Point: When both the government and bureaucracy are potentially corrupt, distortions are introduced into the economy to create opportunities for corruption
  - Individuals higher in the hierarchy will potentially be directly corrupt and attempt to extract the corruption rents from those lower in the hierarchy

Corruption

- Non-benevolent principal - A model of corrupt licensing

Corruption

- Non-benevolent principal - A model of corrupt licensing
  - Suppose that there are no distortions in the economy except those induced by the government

Corruption

- Non-benevolent principal - A model of corrupt licensing
  - Suppose that there are no distortions in the economy except those induced by the government
  - Government then requires that a license is needed to set up a new firm

Corruption

- Non-benevolent principal - A model of corrupt licensing

Corruption

- Non-benevolent principal - A model of corrupt licensing
  - λ - number of licenses issued

Corruption

- Non-benevolent principal - A model of corrupt licensing
  - λ - number of licenses issued
  - $b(\lambda)$ - value of a license if λ have already been issued

Corruption

- Non-benevolent principal - A model of corrupt licensing
  - λ - number of licenses issued
  - $b(\lambda)$ - value of a license if λ have already been issued
  - $b' = \frac{\partial b}{\partial \lambda} < 0$ - the value of licenses is diminishing

Corruption

- Non-benevolent principal - A model of corrupt licensing
  - λ - number of licenses issued
  - $b(\lambda)$ - value of a license if λ have already been issued
  - $b' = \frac{\partial b}{\partial \lambda} < 0$ - the value of licenses is diminishing
  - λ_H - number of firms that would enter under perfect competition

Corruption

- Non-benevolent principal - A model of corrupt licensing
  - λ - number of licenses issued
  - $b(\lambda)$ - value of a license if λ have already been issued
  - $b' = \frac{\partial b}{\partial \lambda} < 0$ - the value of licenses is diminishing
  - λ_H - number of firms that would enter under perfect competition
  - $b(\lambda_H) = 0$

Corruption

- Non-benevolent principal - A model of corrupt licensing

Corruption

- Non-benevolent principal - A model of corrupt licensing
  - Corrupt monopolistic official wishes to maximize bribe income

$$Max \quad \lambda b(\lambda) \tag{9}$$

Corruption

- Non-benevolent principal - A model of corrupt licensing
  - Corrupt monopolistic official wishes to maximize bribe income

$$Max \quad \lambda b(\lambda) \tag{9}$$

  - First order condition

$$b(\lambda) + \lambda b'(\lambda) = 0$$

$$\begin{array}{ll} \text{Hence} & b(\lambda) + \lambda b'(\lambda) = 0 \\ \text{So} & b(\lambda) = -\lambda b'(\lambda) > 0 = b(\lambda_H) \\ \Longrightarrow & \lambda < \lambda_H \end{array}$$

Corruption

- Non-benevolent principal - A model of corrupt licensing
  - Corrupt monopolistic official wishes to maximize bribe income

$$Max \quad \lambda b(\lambda) \tag{9}$$

  - First order condition

$$b(\lambda) + \lambda b'(\lambda) = 0$$

$$\begin{array}{ll} \text{Hence} & b(\lambda) + \lambda b'(\lambda) = 0 \\ \text{So} & b(\lambda) = -\lambda b'(\lambda) > 0 = b(\lambda_H) \\ \Longrightarrow & \lambda < \lambda_H \end{array}$$

  - Licenses only have value if they restrict entry below the competitive level

Corruption

- Non-benevolent principal - Competition in corruption

Corruption

- Non-benevolent principal - Competition in corruption
  - We might ask if different corrupt government officials compete for corruption rents will the outcome be more efficient?

Corruption

- Non-benevolent principal - Competition in corruption
  - We might ask if different corrupt government officials compete for corruption rents will the outcome be more efficient?
  - The answer is "it depends"

Corruption

- Non-benevolent principal - Competition in corruption

Corruption

- Non-benevolent principal - Competition in corruption
  - Let there be two types of licenses $i = 1, 2$

Corruption

- Non-benevolent principal - Competition in corruption
  - Let there be two types of licenses $i = 1, 2$
  - The value of holding a license of type i is $b_i(\lambda_1, \lambda_2)$

Corruption

- Non-benevolent principal - Competition in corruption
  - Let there be two types of licenses $i = 1, 2$
  - The value of holding a license of type i is $b_i(\lambda_1, \lambda_2)$
  - For a comparison first assume both licenses are issued by *one official*, who maximizes the sum of the bribes they receive

$$Max \quad \sum_i {\lambda_i}^m b_i({\lambda_1}^m, {\lambda_2}^m) \tag{10}$$

$$\text{FOC's} \qquad {\lambda_1}^m \left(\frac{\partial b_1}{\partial {\lambda_1}^m}\right) + b_1({\lambda_1}^m, {\lambda_2}^m) + {\lambda_2}^m \left(\frac{\partial b_2}{\partial {\lambda_1}^m}\right) = 0$$

$${\lambda_1}^m \left(\frac{\partial b_1}{\partial {\lambda_2}^m}\right) + b_2({\lambda_1}^m, {\lambda_2}^m) + {\lambda_2}^m \left(\frac{\partial b_2}{\partial {\lambda_2}^m}\right) = 0$$

Corruption

- Non-benevolent principal - Competition in corruption

Corruption

- Non-benevolent principal - Competition in corruption
  - Now suppose the licenses are issued by *separate competing officials* who each maximize the bribe they receive

$$Max \quad {\lambda_i}^c b_i({\lambda_1}^c, {\lambda_2}^c) \tag{11}$$

FOC's

$${\lambda_1}^c \left(\frac{\partial b_1}{\partial {\lambda_1}^c}\right) + b_1({\lambda_1}^c, {\lambda_2}^c) = 0$$

$${\lambda_2}^c \left(\frac{\partial b_2}{\partial \lambda_2^c}\right) + b_2({\lambda_1}^c, {\lambda_2}^c) = 0$$

Corruption

- Non-benevolent principal - Competition in corruption

Corruption

- Non-benevolent principal - Competition in corruption
  - From the FOC's

$$\begin{aligned} {\lambda_1}^m \left(\frac{\partial b_1}{\partial {\lambda_1}^m} \right) + b_1({\lambda_1}^m, {\lambda_2}^m) \quad &+ \quad {\lambda_2}^m \left(\frac{\partial b_2}{\partial {\lambda_1}^m} \right) = 0 \\ {\lambda_1}^c \left(\frac{\partial b_1}{\partial {\lambda_1}^c} \right) + b_1({\lambda_1}^c, {\lambda_2}^c) \quad &= \quad 0 \end{aligned}$$

Corruption

- Non-benevolent principal - Competition in corruption
  - From the FOC's

$$\begin{aligned} {\lambda_1}^m \left(\frac{\partial b_1}{\partial {\lambda_1}^m} \right) + b_1({\lambda_1}^m, {\lambda_2}^m) \quad &+ \quad {\lambda_2}^m \left(\frac{\partial b_2}{\partial {\lambda_1}^m} \right) = 0 \\ {\lambda_1}^c \left(\frac{\partial b_1}{\partial {\lambda_1}^c} \right) + b_1({\lambda_1}^c, {\lambda_2}^c) \quad &= \quad 0 \end{aligned}$$

  - So if $\frac{\partial b_2}{\partial {\lambda_1}^m} > 0$, that is the licenses are complements

Corruption

- Non-benevolent principal - Competition in corruption
  - From the FOC's

$$\begin{aligned} {\lambda_1}^m \left(\frac{\partial b_1}{\partial {\lambda_1}^m} \right) + b_1({\lambda_1}^m, {\lambda_2}^m) \quad &+ \quad {\lambda_2}^m \left(\frac{\partial b_2}{\partial {\lambda_1}^m} \right) = 0 \\ {\lambda_1}^c \left(\frac{\partial b_1}{\partial {\lambda_1}^c} \right) + b_1({\lambda_1}^c, {\lambda_2}^c) \quad &= \quad 0 \end{aligned}$$

  - So if $\frac{\partial b_2}{\partial {\lambda_1}^m} > 0$, that is the licenses are complements
  - Then

$${\lambda_1}^m \left(\frac{\partial b_1}{\partial {\lambda_1}^m} \right) + b_1({\lambda_1}^m, {\lambda_2}^m) < {\lambda_1}^c \left(\frac{\partial b_1}{\partial {\lambda_1}^c} \right) + b_1({\lambda_1}^c, {\lambda_2}^c)$$

Corruption

- Non-benevolent principal - Competition in corruption
  - From the FOC's

$$\begin{aligned} {\lambda_1}^m \left(\frac{\partial b_1}{\partial {\lambda_1}^m} \right) + b_1({\lambda_1}^m, {\lambda_2}^m) \quad &+ \quad {\lambda_2}^m \left(\frac{\partial b_2}{\partial {\lambda_1}^m} \right) = 0 \\ {\lambda_1}^c \left(\frac{\partial b_1}{\partial {\lambda_1}^c} \right) + b_1({\lambda_1}^c, {\lambda_2}^c) \quad &= \quad 0 \end{aligned}$$

  - So if $\frac{\partial b_2}{\partial {\lambda_1}^m} > 0$, that is the licenses are complements
  - Then

$${\lambda_1}^m \left(\frac{\partial b_1}{\partial {\lambda_1}^m} \right) + b_1({\lambda_1}^m, {\lambda_2}^m) < {\lambda_1}^c \left(\frac{\partial b_1}{\partial {\lambda_1}^c} \right) + b_1({\lambda_1}^c, {\lambda_2}^c)$$

  - From which it can be shown ${\lambda_1}^c < {\lambda_1}^m$, competitive license issuers neglect the effects of the bribes of others, issue fewer licenses. Competition makes corruption worse

Corruption

- Non-benevolent principal - The effects of heirarchys

Corruption

- Non-benevolent principal - The effects of heirarchys
  - A corrupt official that can extract a bribe would be willing to pay to get the job

Corruption

- Non-benevolent principal - The effects of heirarchys
  - A corrupt official that can extract a bribe would be willing to pay to get the job
  - A more senior official will accept a bribe from the junior official to give them the job

Corruption

- Non-benevolent principal - The effects of heirarchys
  - A corrupt official that can extract a bribe would be willing to pay to get the job
  - A more senior official will accept a bribe from the junior official to give them the job
  - A long chain of corruption is created at each stage of which societies resources are wasted in attempting to capture some of the corruption rents

Corruption

- Non-benevolent principal - The effects of heirarchys
  - A corrupt official that can extract a bribe would be willing to pay to get the job
  - A more senior official will accept a bribe from the junior official to give them the job
  - A long chain of corruption is created at each stage of which societies resources are wasted in attempting to capture some of the corruption rents
  - The effects of corruption are then amplified

Corruption

- Political institutions and corruption

Corruption

- Political institutions and corruption
  - Democratic institutions may help combat corruption

Corruption

- Political institutions and corruption
  - Democratic institutions may help combat corruption
  - Competition for reelection may make politicians more accountable

Corruption

- Political institutions and corruption

Corruption

- Political institutions and corruption
  - License example again

Corruption

- Political institutions and corruption
  - License example again
  - λ_L - number of licenses politician wishes to issue

Corruption

- Political institutions and corruption
  - License example again
  - λ_L - number of licenses politician wishes to issue
  - λ_H - number of licenses electorate want issued

Corruption

- Political institutions and corruption
  - License example again
  - λ_L - number of licenses politician wishes to issue
  - λ_H - number of licenses electorate want issued
  - $\lambda_H > \lambda_L$

Corruption

- Political institutions and corruption
  - License example again
  - λ_L - number of licenses politician wishes to issue
  - λ_H - number of licenses electorate want issued
  - $\lambda_H > \lambda_L$
  - An election every period - in an infinite sequence

Corruption

- Political institutions and corruption
  - License example again
  - λ_L - number of licenses politician wishes to issue
  - λ_H - number of licenses electorate want issued
  - $\lambda_H > \lambda_L$
  - An election every period - in an infinite sequence
  - If $\lambda \geqq \bar{\lambda}$ the politician is reelected, otherwise they are not

Corruption

- Political institutions and corruption

Corruption

- Political institutions and corruption
  - If the politician decides to comply they receive

$$\frac{B(\bar{\lambda})}{1-\beta} \tag{12}$$

where $\beta \in (0,1)$ is the discount rate and $B(\bar{\lambda}) = \bar{\lambda} b(\bar{\lambda})$

Corruption

- Political institutions and corruption
  - If the politician decides to comply they receive

$$\frac{B(\bar{\lambda})}{1-\beta} \tag{12}$$

    where $\beta \in (0,1)$ is the discount rate and $B(\bar{\lambda}) = \bar{\lambda} b(\bar{\lambda})$
  - If the politician decides not to comply they receive the one-time payoff

$$B(\lambda_L) \tag{13}$$

Corruption

- Political institutions and corruption
  - If the politician decides to comply they receive

$$\frac{B(\bar{\lambda})}{1-\beta} \tag{12}$$

    where $\beta \in (0,1)$ is the discount rate and $B(\bar{\lambda}) = \bar{\lambda} b(\bar{\lambda})$
  - If the politician decides not to comply they receive the one-time payoff

$$B(\lambda_L) \tag{13}$$

  - So the highest $\bar{\lambda}$ that the politician will comply with, λ^*, is given by

$$B(\lambda^*) = (1-\beta) B(\lambda_L) \tag{14}$$

$$\implies \qquad \lambda^* b(\lambda^*) = B(\lambda^*) < \lambda_L b(\lambda_L) = B(\lambda_L)$$

Corruption

- Political institutions and corruption

Corruption

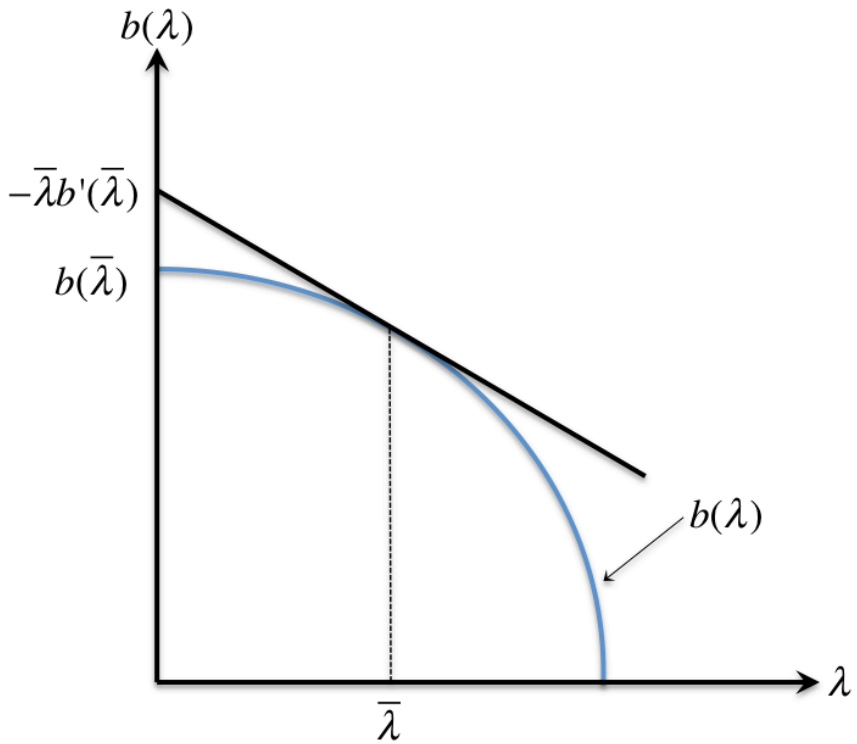
- Political institutions and corruption
  - So $\lambda^* > \lambda_L$ if $B(\lambda)$ is decreasing in λ

Corruption

- Political institutions and corruption
  - So $\lambda^* > \lambda_L$ if $B(\lambda)$ is decreasing in λ
  - Which requires $b(\lambda) + \lambda b'(\lambda) < 0$

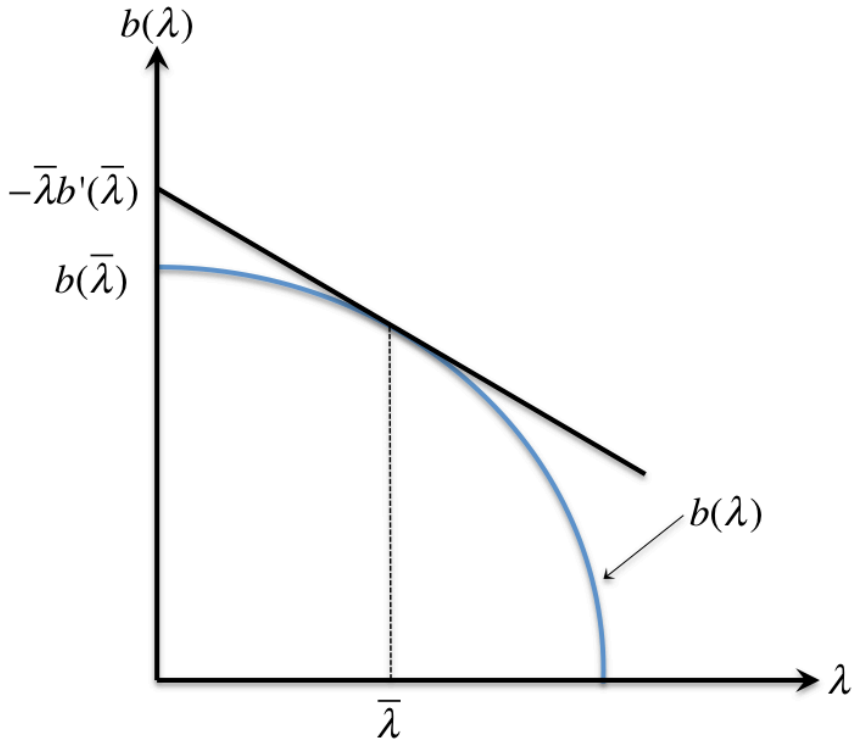
Corruption

- Political institutions and corruption
  - So $\lambda^* > \lambda_L$ if $B(\lambda)$ is decreasing in λ
  - Which requires $b(\lambda) + \lambda b'(\lambda) < 0$
  - Which requires $b(\lambda)$ be concave (not stated in Aidt's paper)



Corruption

- Political institutions and corruption
  - So $\lambda^* > \lambda_L$ if $B(\lambda)$ is decreasing in λ
  - Which requires $b(\lambda) + \lambda b'(\lambda) < 0$
  - Which requires $b(\lambda)$ be concave (not stated in Aidt's paper)



  - Then we can say that political competition reduces corruption

Corruption

- Political institutions and corruption

Corruption

- Political institutions and corruption
  - Separation of powers may help reduce corruption

Corruption

- Political institutions and corruption
  - Separation of powers may help reduce corruption
  - One politician chooses the number of licenses another divides the bribes

Corruption

- Political institutions and corruption
  - Separation of powers may help reduce corruption
  - One politician chooses the number of licenses another divides the bribes
    - Reduces the incentives of the first to restrict the number of licenses

Corruption

- Political institutions and corruption
  - Separation of powers may help reduce corruption
  - One politician chooses the number of licenses another divides the bribes
    - Reduces the incentives of the first to restrict the number of licenses
  - Decentralize some powers to regional governments

Corruption

- Political institutions and corruption
  - Separation of powers may help reduce corruption
  - One politician chooses the number of licenses another divides the bribes
    - Reduces the incentives of the first to restrict the number of licenses
  - Decentralize some powers to regional governments
    - Reduces the monopoly power of the central government

Corruption

- Self-reinforcing Corruption

Corruption

- Self-reinforcing Corruption
  - The expected returns to corruption may be higher when more individuals are corrupt

Corruption

- Self-reinforcing Corruption
  - The expected returns to corruption may be higher when more individuals are corrupt
  - Multiple equilibria are possible - some with high corruption and some with low corruption

Corruption

- Self-reinforcing Corruption
  - The expected returns to corruption may be higher when more individuals are corrupt
  - Multiple equilibria are possible - some with high corruption and some with low corruption
    - You are less likely to be caught the greater are the number of corrupt individuals

Corruption

- Self-reinforcing Corruption
  - The expected returns to corruption may be higher when more individuals are corrupt
  - Multiple equilibria are possible - some with high corruption and some with low corruption
    - You are less likely to be caught the greater are the number of corrupt individuals
    - You are more likely to get corruption opportunities the greater are the number of corrupt individuals

Corruption

- Self-reinforcing Corruption
  - The expected returns to corruption may be higher when more individuals are corrupt
  - Multiple equilibria are possible - some with high corruption and some with low corruption
    - You are less likely to be caught the greater are the number of corrupt individuals
    - You are more likely to get corruption opportunities the greater are the number of corrupt individuals
    - The alternatives to corrupt activity are less rewarding the greater are the number of corrupt individuals

Corruption

- Self-reinforcing Corruption
  - The expected returns to corruption may be higher when more individuals are corrupt
  - Multiple equilibria are possible - some with high corruption and some with low corruption
    - You are less likely to be caught the greater are the number of corrupt individuals
    - You are more likely to get corruption opportunities the greater are the number of corrupt individuals
    - The alternatives to corrupt activity are less rewarding the greater are the number of corrupt individuals
  - Countries can get stuck in high or low corruption equilibria dependent on history!

Corruption

- Self-reinforcing Corruption - Tax collection example

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Recall from our earlier model that a tax collector will be corrupt if

$$(1-p)(w+b)+p(w_0-f)>w$$

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Recall from our earlier model that a tax collector will be corrupt if
$$(1-p)(w+b)+p(w_0-f)>w$$
  - p - probability of being caught

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Recall from our earlier model that a tax collector will be corrupt if
$$(1-p)(w+b)+p(w_0-f)>w$$
  - p - probability of being caught
  - w - wage

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Recall from our earlier model that a tax collector will be corrupt if
$$(1-p)(w+b)+p(w_0-f)>w$$
  - p - probability of being caught
  - w - wage
  - b - bribe

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Recall from our earlier model that a tax collector will be corrupt if
$$(1-p)(w+b)+p(w_0-f)>w$$
  - p - probability of being caught
  - w - wage
  - b - bribe
  - w_0 - wage if caught and fired

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Recall from our earlier model that a tax collector will be corrupt if
$$(1-p)(w+b)+p(w_0-f)>w$$
  - p - probability of being caught
  - w - wage
  - b - bribe
  - w_0 - wage if caught and fired
  - f - fine if caught and fired

Corruption

- Self-reinforcing Corruption - Tax collection example

Corruption

- Self-reinforcing Corruption - Tax collection example
  - We now further assume

Corruption

- Self-reinforcing Corruption - Tax collection example
  - We now further assume
    - γ - is the proportion of tax collectors who are not corrupt

Corruption

- Self-reinforcing Corruption - Tax collection example
  - We now further assume
    - γ - is the proportion of tax collectors who are not corrupt
    - $p(\gamma)$ - the probability of being caught depends on how many tax collectors are corrupt

Corruption

- Self-reinforcing Corruption - Tax collection example
  - We now further assume
    - γ - is the proportion of tax collectors who are not corrupt
    - $p(\gamma)$ - the probability of being caught depends on how many tax collectors are corrupt
    - $\frac{\partial p}{\partial \gamma} > 0$ - corrupt tax collectors are more likely to be caught if there are fewer of them

Corruption

- Self-reinforcing Corruption - Tax collection example
  - We now further assume
    - γ - is the proportion of tax collectors who are not corrupt
    - $p(\gamma)$ - the probability of being caught depends on how many tax collectors are corrupt
    - $\frac{\partial p}{\partial \gamma} > 0$ - corrupt tax collectors are more likely to be caught if there are fewer of them
    - c - private cost of corruption

Corruption

- Self-reinforcing Corruption - Tax collection example
  - We now further assume
    - γ - is the proportion of tax collectors who are not corrupt
    - $p(\gamma)$ - the probability of being caught depends on how many tax collectors are corrupt
    - $\frac{\partial p}{\partial \gamma} > 0$ - corrupt tax collectors are more likely to be caught if there are fewer of them
    - c - private cost of corruption
  - So the corruption condition becomes

$$(1 - p(\gamma))(w + b) + p(\gamma)(w_0 - f) - c > w$$

Corruption

- Self-reinforcing Corruption - Tax collection example
  - We now further assume
    - γ - is the proportion of tax collectors who are not corrupt
    - $p(\gamma)$ - the probability of being caught depends on how many tax collectors are corrupt
    - $\frac{\partial p}{\partial \gamma} > 0$ - corrupt tax collectors are more likely to be caught if there are fewer of them
    - c - private cost of corruption
  - So the corruption condition becomes

$$(1 - p(\gamma))(w + b) + p(\gamma)(w_0 - f) - c > w$$

  - Now WOLOG let $w_0 = f = 0$ so

$$(1 - p(\gamma))(w + b) - c > w$$

Corruption

- Self-reinforcing Corruption - Tax collection example

Corruption

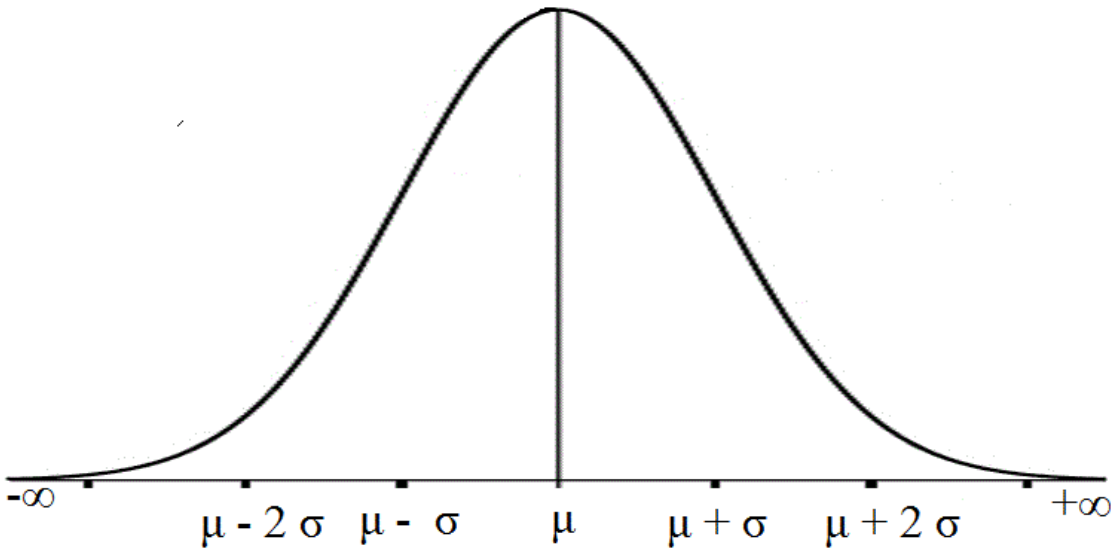
- Self-reinforcing Corruption - Tax collection example
  - We now further assume

Corruption

- Self-reinforcing Corruption - Tax collection example
  - We now further assume
  - c is distributed according the the cumulative density $F(c)$

Corruption

- Self-reinforcing Corruption - Tax collection example
  - We now further assume
  - c is distributed according the the cumulative density $F(c)$
  - The marginal density $f(c)$ has the usual bell shape curve



Corruption

- Self-reinforcing Corruption - Tax collection example

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Define c^* by

$$(1 - p(\gamma))(w + b) - c^* - w = 0$$

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Define c^* by

$$(1 - p(\gamma))(w + b) - c^* - w = 0$$

  - Now

$$\gamma = 1 - F(c^*)$$

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Define c^* by

$$(1 - p(\gamma))(w + b) - c^* - w = 0$$

  - Now

$$\gamma = 1 - F(c^*)$$

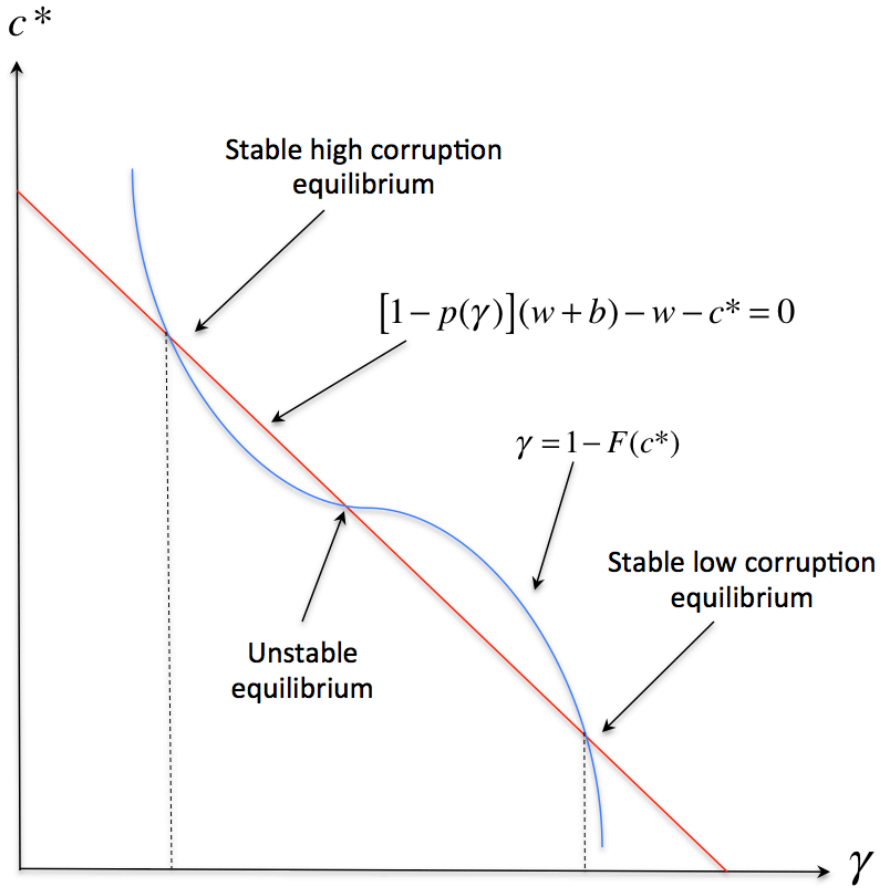
  - Given these equations and that $f(c)$ is bell shaped we can draw a diagram giving the equilibrium levels of corruption

Corruption

- Self-reinforcing Corruption - Tax collection example

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Multiple equilibria diagram



Corruption

- Self-reinforcing Corruption - Tax collection example

Corruption

- Self-reinforcing Corruption - Tax collection example
  - Eliminating the high corruption equilibrium