Definition: Corruption is an act in which the power of public office is used for personal gain in a manner that contravenes the rules of the game.

From this definition, it is clear that at least three conditions are necessary for corruption to arise and persist:

1. Discretionary power: the relevant public official must possess the authority to design or administer regulations and policies in a discretionary manner.

2. Economic rents: the discretionary power must allow extraction of (existing) rents or creations of rents that can be extracted.

3. 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.

Four different analytic approaches to corruption that highlight two important considerations in the theoretical analysis of corruption: the degree of benevolence of the government official in charge of implementing policies and designing institutions ('the principal') and the role of institutions versus history as a determinant of corruption levels. These are:

1. Efficient corruption: corruption arises to facilitate beneficial trade between agents that would not otherwise have been possible. It promotes allocative efficiency by allowing agents in the private sector to correct pre-existing government failures.

2. Corruption with a benevolent principal: corruption arises when a benevolent principal delegates decision making power to a non-benevolent agent. The level of corruption depends on the costs and benefits of designing optimal institutions.

3. Corruption with a non-benevolent principal: corruption arises because non-benevolent government officials introduce inefficient policies in order to extract rents from the private sector. The level of corruption depends on the incentives embodied in existing institutions.

4. Self-reinforcing corruption: the reward to corruption depends on the incidence of corruption due to strategic complementarity. The level of corruption depends, for given institutions, on history.

1. Efficient corruption

The notion of efficient corruption is based on a number of problematic assumptions that makes it unsatisfactory from a theoretical point of view and reduces its empirical relevance. For starters, corrupt officials can often adjust both the quantity and quality of
the services they provide and would have an incentive to supply the bribe maximising quantity (or quality) rather than the (constrained) efficient one. Another critical issue is that real resources are often wasted in order to keep corrupt deals secret and in searching for 'partners'. (Secrecy creates problems also because it might introduce distortions. Example from Sh&V: Country can import either green or red cars. Border price of each car is 5. Consumers value red cars at 15 and green cars at 10. Total demand is 10 cars. Without corruption, only red cars are imported and consumer surplus is $10 \times (15-5)$=100. Or the government can impose a tariff of 10 per car and appropriate all the surplus. Suppose though that only green cars can be imported in a corrupt manner without detection. Then the corrupt ministry would ban the import of red cars and charge a bribe of 5 for each green car. Then consumer surplus is 0 and total bribes are 50. Social surplus falls to 50. Similar things can take place with respect to government budget, where construction and military expenditures might be emphasized, because of corruption opportunities.) A third critical issue is that corrupt contracts cannot be enforced by courts. The resulting insecurity of property rights along with problems of asymmetric information is likely to prevent corruption from playing the role envisaged by the Coase Theorem. The most fundamental weakness, however, is the implicit assumption that the government failure that corruption is supposed to correct is exogenous and in itself unrelated to corruption, when, in fact, it may well be put in place and maintained by corrupt politicians precisely because of its corruption potential.

2. Corruption With a Benevolent Principal

Here, corruption can be viewed as an integrated part of an optimally designed institution. The natural starting point for thinking about this type of corruption is a principal-agent model.

Suppose tax collection is delegated to a tax collector (an agent -- TC). Tax liability of a firm arises if it earns a profit, \( \pi > 0 \). This happens with probability \( \theta > 0 \). If the firm is liable and this is reported to the government by the tax collector, the government levies a 100% profit tax \( t(=\pi) \) and the firm has no choice but to pay. TC may, however, agree not to report the firm in exchange for a bribe. In this case, the firm avoids the tax but must pay the bribe. The government (the principal) discovers corrupt acts with probability \( p \). A discovery results in dismissal of TC involved. In addition, he pays a penalty \( f \geq 0 \). Likewise, the firm pays a penalty \( g \geq 0 \) if caught offering a bribe. TC earns the wage \( w \) and can get the wage \( w_0 > 0 \) in the private sector. Some TCs are more honest than others, i.e., a fraction \( (\gamma) \) of all potential TCs are honest, while the rest \( (1 - \gamma) \) are willing to misinform the government in return for a bribe. A bribe is paid with transaction cost, so that only \( k \in (0,1] \) share of the bribe paid by the firm is received by TC. TC has all bargaining power. All parties are risk neutral.

**TC’s payoffs:**

- **with a bribe:** \( (1-p)(w+b) + p(w_0-f) \);
- **w/o bribe:** \( w \)

**Firm’s payoffs (if \( \pi > 0 \)):**

- **with bribe:** \( \pi - pg - b/k \);
- **w/o bribe:** \( 0 \)

where bribe received by TC is \( b=\max\{k(\pi - pg), 0\} \);
TC accepts the bribe only if $(1 - p)b + p(w_0 - w - f) > 0$ \hspace{1cm} (1)

Assuming $f=0$, efficiency wage deters corruption if $w^e = w_0 + (1 - p)b/p$ \hspace{1cm} (2)

Efficiency wages prevent corruption, but it might be that capitulation wages maximize government revenue net of officials’ wages. (In this case, government gets revenue only when officials are honest or when corruption is discovered.)

Note that the mark-up, $w^e - w_0$, is negatively related to $p$ (the efficiency of monitoring). But monitoring is costly and there is a problem with monitoring the monitors. Sometimes, the cost of monitoring can be reduced if the “victims” have incentives to report corruption.

Increased punishment ($f$) can reduce or eliminate corruption, but large $f$ makes monitoring more problematic and if expected punishment is concave in the size of the bribe, it can even increase corruption.

**Tax policy design and corruption**

Let $p=g=0$ and let $w_0=0$. What tax rate $t(.)$ and wage $w(.)$ would maximize social welfare defined as $u_p = t - w + \alpha(u_f + u_t)$, where $u_f$ is the firm’s payoff and $u_t = w + b$ is TC’s payoff and $\alpha \in (0,1)$.

Let $u_f = \pi - t$ if $\pi > 0$ and $u_f = -at$ otherwise, with $a > 1$. The parameter $a$ captures the notion that it is more costly for the firm to pay taxes if it has no retained profits to spend on the purpose. The assumption is introduced to make the government reluctant to tax the firm and for $a > [(1 - h\alpha)/(\alpha - h\alpha)]$ the government would not, without additional information from the tax collector, want to collect any taxes. This condition is assumed to be satisfied in what follows.

Assume that TC observes $\pi > 0$ only if the firm earns profit and then only with probability $\varepsilon$. TC observes nothing, $\emptyset$, with probability $1 - \varepsilon$. If TC reports $r=\pi > 0$, the government can verify this. If, however, TC reports $r=\emptyset$, the government doesn’t know if that’s because of the bribe or if $\pi \leq 0$. (Recall that $b = k\pi$.)

If the government observes profit signal directly, then $t(\pi) = \pi$ and $t(\emptyset) = 0$ (The profit is worth more as tax revenue than as profit, because $\alpha < 1$. Social welfare in this case is $u_p^* = h(\varepsilon\pi + (1 - \varepsilon)\alpha\pi) = h(\alpha\pi + (1 - \alpha)\varepsilon\pi)$. If, however, tax collection is delegated to TC who is corruptible (with probability $1 - \gamma$) incentives are needed for truthful reporting.

1. High powered incentives for no corruption: TC is paid 0 if $r=\emptyset$, but $w(\pi) = k\pi$. Then $t(\pi) = \pi$ and $t(\emptyset) = 0$. In this case, the payoff is:

   $$u_p^{NC} = u_p^* - \varepsilon h(1 - \alpha)k\pi.$$ (Payoff is $< u_p^*$, because of the need to pay TC.)
2. Corruption. Here, only the non-corruptible TC’s would report firm’s profit. Then \( w(r) = 0 \) for all \( r \) and the tax is \( t(\pi) = \pi \) and \( t(\emptyset) = 0 \). Then expected welfare is:

\[
up^C = up^* - (1 - \gamma)\epsilon h(1 - k\alpha)\pi
\]

The tradeoff between allowing corruption and eliminating it is as follows. On the one hand, it is costly to eliminate corruption because high powered incentive contracts are expensive. On the other hand, it is costly to allow corruption to persist, because (i) tax revenues that could have been spent productively by the government are not collected and, (ii) the transaction cost \((1-k)\) associated with each corrupt act represents a social loss. Allowing corruption is optimal when \( k \geq \frac{(1-\gamma)(1-\alpha\gamma)}{1-\gamma} \). When \( k \) is high (i.e., transaction costs of getting bribes is low) it is too expensive to fight corruption via efficiency wages.

We will have more on this when we go over Acemoglu and Verdier’s AER 2000 paper.

3. Corruption with non-benevolent principal

Let regulations exist in order to make it possible to collect bribes. In particular, suppose licenses are required that are not needed from any socially useful point of view. Let \( b(\lambda) \) denote the value to a would-be entrepreneur of obtaining a license if \( \lambda \) licenses are already issued. Assume that \( b' = \partial b / \partial \lambda < 0 \). Also, \( b(\lambda_H) = 0 \), where \( \lambda_H \) is the number of firms under free entry. Then, an official maximizing bribe revenue, \( \lambda b(\lambda) \), would issue \( \lambda_L = -b/b' < \lambda_H \) licenses. That is, the corrupt official would restrict entry, generating rents that he then expropriates.

Interestingly, as Shleifer and Vishny (1993) argued, the degree of inefficiency of corruption depends on its “industrial organization.” Suppose each business requires two licenses and the licenses are complements, \( \partial b_i / \partial \lambda_i > 0 \). If both licenses are issued by the same official, the maximization of bribe revenue implies \( \lambda_i b'_i + b_i + \lambda_j \partial b_j / \partial \lambda_i = 0 \), (where \( b'_i = \partial b_i / \partial \lambda_i \)) for \( i \) and similarly for \( j \). If, however, two independent officials issue each license, then each would issue licenses until \( \lambda_i b'_i + b_i = 0 \), resulting in fewer licenses issued and higher bribes (for two licenses combined) but lower overall bribe revenue than if the officials colluded. This happens because each independent official does not internalize the effect of his bribe on the demand for licenses from the other official. (And mathematically, this is because \( \lambda_j \partial b_j / \partial \lambda_i > 0 \).)

Note that the ability to collect bribes from a given official position implies that this position would probably be sold for bribes too. This increases corruption (because the person allocating positions takes bribes) and selects only bribe takers into the lucrative positions. As Shleifer and Vishny point out, competition among candidates for the position will result in those most skilled at bribe taking getting the position.

This phenomenon can be counteracted, however, if licenses are not required or if they can be obtained from lots of different officials.
But corruption may also spread via competition among buyers. If an importer can get the goods inside the country paying less than the official customs fee, he gains an advantage over those importers who pay the official fees. So, competition forces everybody to pay bribes. (This works best in the case of “cost-reducing” corruption or corruption with theft. Without theft, those firms that do not pay bribes may have their costs raised by red tape or be prohibited from doing business altogether. Therefore, competition would force them either to pay bribes or go out of business, although they might also complain. Note that in the case without theft, the buyer has no incentive to complain. Some of these issues are addressed in Bliss and DiTella’s paper as the literature that followed.)

Democracy and corruption

Democracy does not eliminate corruption, but it may reduce it. Suppose corruption (in the form of selling licenses) is observable to the voters and suppose the politician has to issue \( \lambda^* \) licenses to get reelected. Then, he could either collect \( \lambda_L \) licenses and forgo reelection or collect \( \lambda^*>\lambda_L \) licenses and get reelected, implying a payoff of \( \lambda^* b(\lambda^*)/(1–\beta) \), where \( \beta \) is the discount factor. The efficient \( \lambda^* \) is such that \( \lambda^* b(\lambda^*)=(1–\beta) \lambda_L b(\lambda_L) \). It makes the politician indifferent between grabbing everything he can in one period or grabbing it gradually over time. This implies that the socially optimal bribe is positive \( \lambda^* b(\lambda^*)=(1–\beta) \lambda_L b(\lambda_L)/\lambda^* \). That is, zero tolerance on the part of voters is not optimal, because that would induce every politician to set \( \lambda=\lambda_L \) and forgo reelection.

4. Self-reinforcing corruption

Clearly corruption is more difficult to fight if the country is more corrupt to start with. (The reasoning is similar to the law enforcement models with multiple equilibria that we looked at before, particularly Roland and Verdier’s paper.)

Suppose in the tax collection example from earlier TC is fired only if he is caught by an honest auditor. If he is caught by a corrupt auditor, he can get away by relinquishing the bribe, \( b \), to the auditor. Let the proportion of corrupt auditors be the same as corrupt TC’s: \( 1–\gamma \). Assume that there is a continuum of officials with measure one. Suppose that all TC’s are corruptible, but face different costs, \( c \), of withholding information about firm’s profit. Let \( c \sim F(.) \) and let \( f=g=w_0=0 \). Then, the expected benefit of accepting a bribe is \( (1–p)(w+b)+p(1–\gamma)w–c \). Not accepting the bribe has a payoff of \( w \). The proportion of bribe-taking TC’s, \( 1–\gamma \), is found from solving \( (1–p)(w+b)+p(1–\gamma)w–c > w \) or \( c<(1–p)b–p\gamma w \):

\[
1–\gamma = F[(1–p)b–p\gamma w]
\]

If a lot of officials are corrupt (\( \gamma \) low), then the expected benefit of accepting a bribe is high because the chance of losing the job, if caught, is low and so most officials agree to accept bribes. Thus, a fall in \( \gamma \) can be self-sustained and multiple equilibria may arise. In the figure below, this is illustrated by the bold S-shaped curve, there exist three equilibria: a stable low-corruption equilibrium (L); a stable high-corruption equilibrium...
(H), and an unstable equilibrium in between (M). Thus, societies with otherwise similar institutions can experience very different levels of corruption. Moreover, in order to eliminate a high corruption equilibrium, a significant shift down in the distribution function of corruption costs may be required.

Fig. 2. Corruption and Multiple Equilibria