
Negative Effect on Growth via Human Capital Allocation

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Corruption is generally defined as the use of public position or a position of power for private gains (Bardhan, 1997). The incentive to abuse public power often stems from its financial benefits and the associated benefits (even more power) that come with larger finances. Corruption often involves the exchange of money by the briber in a bid to obtain power (or preferential treatment). It is a form of rent seeking that often leads to inefficiencies and the misallocation of resources meant to improve the public's welfare.¹ Bardhan (1997) gives instances of where corrupt government officials purchase more complex equipments than required in order to enable them to inflate costs against the public's discretion. Corruption also retards growth through various other means; it discourages investment (Mauro, 1995) and is a hindrance to the growth of local firms who have to constantly pay bribes to go through the rigid bureaucracies (Fissman and Svensson, 2000).

I propose that corruption negatively affects growth by changing how human capital is allocated between rent seeking and economically productive activities. The idea is that if corruption is rampant in an economy, it reduces the returns to entrepreneurship/innovation. Corruption acts as a "road block" to profitable economic activity by taking away the surpluses that would have accrued to suppliers or producers. As this road block increases over time, it becomes more beneficial for an individual to be the one collecting these

surpluses (engaging in rent seeking) as opposed to generating them for others. This diversion of human capital from economically productive activities to rent seeking serves as a hindrance to economic growth.

"On the Origins of Corruption: Irregular Incentives in Nigeria"

By Varda Eker

This paper lists out the necessary and sufficient conditions under which public corruption will arise and flourish. It helps answer questions as to why there is rampant corruption in certain countries and the conditions that helps it flourish. Different levels of corruption will occur whenever the sufficient conditions are present. Eker divides the sufficient conditions into moral codes and authority structures.

The moral code which serves as a sufficient condition for corruption has to do with showing favoritism to one's kindred. Even though many newer ideals have been adopted in these societies, they have done so in order to advance older ideals. One's allegiance to family weakens his allegiance to country, public service and profession. This makes him prone to corruption if it furthers his personal goals which include that of his family at the expense of the nation at large. Good moral conduct is often at odds with the drive to enrich one's self which also may lead to corruption.

Using Nigeria as a case study, the graph below shows a correspondence between changes in GDP during the oil

¹ Rent seeking is the use of government policies/public power to acquire income or benefits meant for the public for private gains.

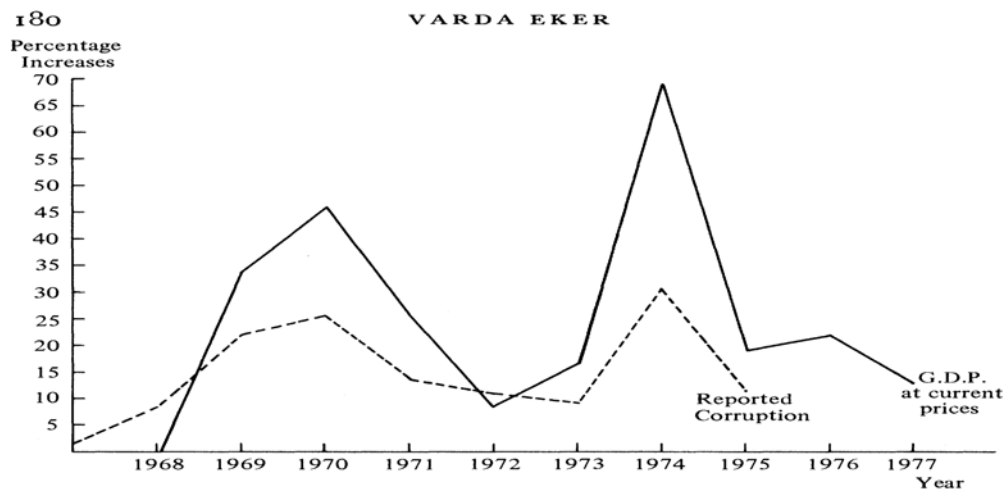


Diagram 1. Annual Percentage Changes in G.D.P. and Reported Corruption

boom and reported cases of corruption. The data also show the necessary conditions for corruption to emerge were in place because approximately 70% of the cases of corruption were in the public sector where power is concentrated. Eker also shows that this period exhibited the highest positive relationship between status of a government official and amount of corruption reported.

The creation of surpluses generates avenues for corruption and the rate at which these surpluses increase will determine the frequency of corruption. These factors, combined with high concentration of both political and economic decision making powers in government, provide necessary conditions for corruption to thrive. The drive to benefit from the booming surplus becomes a major stimulant to offer bribes in order to obtain permits, patents, licenses and so on. In this sense, wealth is given to an individual in position of power. The paper also acknowledges that even where there is no wealth, moral code and authority structure alone can breed corruption. When there is excess wealth that is increasing at a fast rate, top-down authority structure (where power is concentrated above) and an

accommodating moral code, corruption is even more rampant.

“Are Corruption and Taxation Really Harmful to Growth? Firm Level Evidence”

By Raymond Fisman and Jakob Svensson

This paper proposes that corruption hinders development much more than taxation. The effect of corruption on development can be explained through its effects on firm growth. They use statistical methods to provide micro-based support for the idea that corruption through bribery paid out by firms is not conducive for growth. This goes against the idea that bribery enables firms to get things done in an inflexible bureaucratic system. The paper admits that bribery may be positively correlated with growth for individual firms but negatively correlated for the macro economy.

Econometric methods are used to estimate the effects of bribery while controlling for other factors that may account for firm growth. The estimated effects of bribery on growth in other models may be underestimated due to the fact that

there are firms who pay more bribes due to higher growth potential or growth rates. The underestimation may also result due to firms offering bribes as a way to spur their own growth. They try to take care of this endogeneity problem and estimate the true relationship.

Bribery payment is deflated by sales and so are tax payments. They correct measurement errors by using variable averages and then estimate the model: $\gamma_i = \beta_0 + \beta_b B_j + X_{ij} \delta + \beta_\phi \Phi_{ij} + B_\tau \tau_j + \eta_{ij}$. X_{ij} includes variables such as log-sales, log-age, foreign ownership (to determine foreign/local ownership) and trade (import/export) since these are factors that can influence growth and may also influence bribery. τ_j and B_j are industry-location specific taxes as a fraction of sales and industry-location bribery as a fraction of sales respectively obtained from first-order regressions. They use industry-location specific bribery and taxes because it helps eliminate the endogenous nature of bribery and taxes which can be dependent on growth or growth potential. Growth is estimated as a difference in the log of sales divided by 2. Data from 1995-1997 were carefully collected from 176 firms in Uganda by an Employers' association.

The results show that a 1 percentage point increase in rate of bribery resulted in an approximately 3.3 percentage point decrease in annual growth which is substantial compared to a 1.5 percentage point decline as a result of taxes. This leads to the conclusion that bribery leads to even greater distortion and a decline in growth than taxes when the endogenous nature of bribery in relation to growth are controlled for. Bribery is a deterrent to firm growth and economic growth at large.

“Does Corruption Grease or Sand the Wheels of Growth?”

By Pierre-Guillaume Méon & Khalid Sekkat

This paper answers the question: In the presence of bad governance, does corruption improve welfare? It shows that in the presence of a distortion (bad governance), adding corruption worsens the welfare of the masses through output and that good government can help alleviate the negative effects of corruption.

The hypothesis that corruption helps grease the wheels of growth is based on the idea that government interference, especially a bad one, is a distortion to the market system. Another distortion, like corruption, might help allocate resources, such as time wasted on queues and public funds used inefficiently by the government, more efficiently by diverting them to private interests. The “sand the wheels of growth” hypothesis on the other hand argues that in the presence of bad governance, the introduction of corruption worsens the inefficiency created by the government. They argue that parties who are involved in bribes spend an ample amount of resources trying to evade detection and they may not allocate resources any more efficiently than the government.

Simple statistical techniques are used to capture the effect of corruption on growth in the presence of bad governance. They do a standard cross-country analysis and estimate the model: $\log(y_t) - \log(y_0) = \alpha_0 + \alpha_1 \log(y_0) + \alpha_2 \log(Sc_0) + \alpha_3 [\log(pop_t) - \log(pop_0)] + \alpha_4 \log(inv) + \alpha_5 \log(open) + [\alpha_6 + \alpha_7 \log(gov)] * \log(cor) + \mu$ where the left hand side represents output per capita growth. The right hand side includes known factors which determine growth. They are initial per-capita output, school enrollment (an estimate for human capital), population growth, investment as a ratio of GDP and openness of the economy respectively. $[\alpha_6 + \alpha_7 \log(gov)] * \log(cor)$ represents $\log(cor)$

(an estimate for corruption) and $\log(\text{gov}) * \log(\text{cor})$ which is the interactive term between corruption and government. If $\alpha_6 > 0$ (implying that corruption stimulates growth in the presence of bad or no governance at all), and $\alpha_7 < 0$ (implying that in the presence of good governance, high corruption retards growth) then corruption greases the wheel of growth in the presence of bad governance. The reverse will be the case if corruption sands the wheel of growth in the presence of bad governance.

They use economic data from the Growth Development Index for cross country economic variables. Corruption data is obtained from two sources that use different indices to account for corruption but which converge. The Corruption Perceptions Index (CPI) from Transparency International and the Corruption Index from World Bank. The model is estimated using the Generalized Least Square (GLS) method in order to account for heteroskedasticity and they run one regression with investment as an explanatory variable and another without.

The results show that the coefficient for corruption is less than zero while the coefficient for the interactive term α_7 comes out positive. This implies that corruption is bad for growth (in terms of output and investment) but in the presence of good governance, the effects of corruption can be alleviated. The coefficient for corruption also enters as negative and significant even when investment is added to the set of explanatory variables. This implies that corruption influences growth in other ways other than investment. Conclusively, corruption does not improve welfare in the presence of bad governance.

Works by P. Mauro (1995) and the others summarized above show that corruption does indeed hurt growth through investment, as proposed by Mauro, and through other means, as suggested by Méon and Sekkat (2005). Beatrice Weder (2002) explains that corruption may not only slow

down the bureaucratic machine but it also leads to the creation of more bureaucracies in order to collect more rents instead of engaging in economically productive activities. Bardhan (1997) lists various ways corruption can and does retard growth. In general, the consensus tends to be that corruption retards growth. As Weder (2002) put it, "...new empirical research in the last decade has settled this question and has established that corruption is highly detrimental to development." Research in this field is now focused towards how corruption influences growth and away from its effect on growth. From my readings, research into this subject is important because it determines how the World Bank, IMF and other international organizations at large will choose to allocate foreign aid. If corruption hinders progress, then more should be done towards curbing the tide of corruption before financial aid can be delivered to the same corrupt government.

The last section of this paper will use a multiple equilibrium model (Andvig, 1991) modified to explain why people indulge in rent seeking activities in an already relatively highly corrupt society as opposed to engaging in economically productive activities. I will then illustrate how it can be shown statistically that this diversion of human capital away from economically productive activities can be detrimental to economic growth using a simple linear regression.

The Model

An individual in this economy has two choices when deciding how to use human capital. The individual can either use human capital in an economically productive activity or indulge in rent seeking from corruption. An economically productive activity here is defined as any legal activity that produces output which does not involve corruption and/or exchanging money for power and preferential treatment. The individual

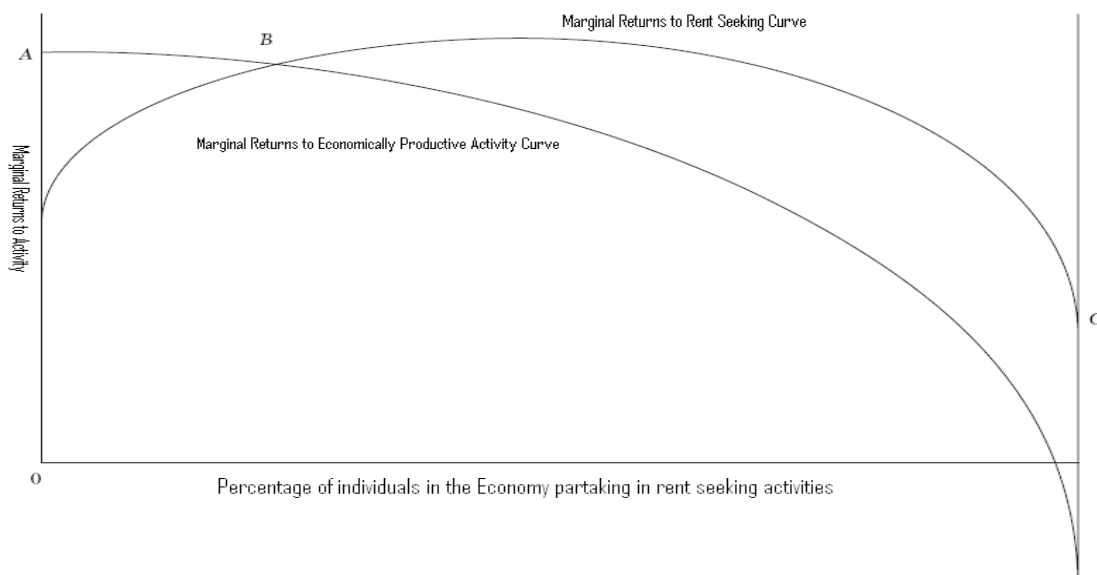
requires the same levels of education to enter an economically productive activity or a rent seeking activity. The only factor driving the individual's decision making process is how much he is going to make in either activity. The foregone cost is the benefit from the forfeited activity. The benefit from engaging in economically productive activity is increasing. There is no extra cost resulting from being caught engaging in corruption (this assumption helps simplify things).

The individual also has perfect information concerning what his returns are. I assume that once in an activity, an individual cannot switch immediately to another, and there are limits to the number of people who can partake in either activity. The outcome (equilibrium) can be illustrated using a Schelling diagram which also appears in Bardhan (1997) and Andvig (1991) but is modified to fit what is being explained. The Schelling diagram, shown below, has the percentage of individuals partaking in rent seeking activities (i.e. corruption) on the horizontal axis and

marginal returns to activity on the vertical axis.

There are 3 possible equilibriums in this model (A, B and C). The marginal returns to economic activity curve is more concave than the marginal returns to rent seeking curve. This means that as more and more people engage in rent seeking, the marginal returns to economic activity declines faster than the marginal returns to rent seeking.

At equilibrium point A, where nobody is partaking in rent seeking, it is beneficial to invest human capital in economically productive activity. At point A marginal returns to economic activity are higher than marginal returns to rent seeking. Economic forces will keep the economy at a low level of corruption and a high level of returns to economic activity relative to rent seeking when we start off at A. Marginal revenue from engaging in economic activity is greater than marginal cost (revenue from participating in rent seeking).



At point B an individual is indifferent between participating in a rent seeking or an economically productive activity since marginal returns to both activities are equal. If one more person decides to engage in rent seeking, then the individual will engage in rent seeking since it provides higher returns and the reverse is the case if one more person decides to enter into an economically productive activity.

At point C marginal returns to rent seeking are higher than marginal returns to economically productive activity. In this case, where a greater percentage of the population are involved in rent seeking, the individual will be pushed by economic forces to enter rent seeking due to the fact that marginal revenue from rent seeking is greater than marginal cost (foregone marginal revenue from economically productive activity). The percentage of individuals who can or cannot partake in rent seeking is limited by 0% to the left and a high percentage to the right in the long run when others in the economy have reordered their preferences. More and more people will like to get into rent seeking when corruption (rent-seeking activity) is high but are forced to bear these negative returns.

Certain shocks, like a sudden economic boom as described by Eker (1981), will cause a shift in both curves and change people's incentives and returns to economic activities accordingly. A boom opens up avenues for rent collection and creates wealth which enables and encourages people to partake in rent seeking activities. The conditions provided by Eker (1981), both necessary and sufficient, will determine which of the equilibriums on the Schelling diagram we arrive at. If the necessary and sufficient conditions for corruption - economic surpluses increasing at a fast rate, a concentration of power on top of a hierarchy and permissive moral codes - then we will end up at equilibrium C where corruption is rampant. If one of the conditions for corruption is present, we end

up at B and if none is present we are likely to be at A. Svensson (1998) notes that rent seeking seems to be severe in good times.

Statistical Testing

A linear regression model as used in the paper "Does Corruption Grease or Sand the Wheels of Growth?" by Pierre-Guillaume Méon & Sekkat (2005) can be used to empirically estimate the effects of individuals going into rent seeking as opposed to economically productive activities on output growth. The challenge here is to find a good proxy for increasing rent seeking activities. Eker (1981) explains that in most corrupt countries, individuals in the public sector are the ones who benefit most from rent seeking because they possess power that can be exchanged for money. Public sector will include private business owners who become politicians again seeking more power to be able to attract rents. The change in public/private sector participation ratio will be a good indicator of individuals who go rent seeking when there are surpluses. This is assuming that there are no exogenous increases in public/private sector wage ratios, so the only other incentive to go into the public sector will be to collect rents through corruption.

The regression will include commonly known factors that influence economic growth and adding change in public/private sector participation ratio and an estimate for public/private sector wages. A cross-country GLS regression is run in the following form:

$$\log(y_t) - \log(y_0) = \alpha_0 + \alpha_1 \log(y_0) + \alpha_2 \log(\text{Sc}_0) + \alpha_3 [\log(\text{pop}_t) - \log(\text{pop}_0)] + \alpha_4 \log(\text{inv}) + \alpha_5 \log(\text{open}) + \alpha_6 [\log(\text{public/private sector}_t) - \log(\text{public/private sector}_0)] + \alpha_7 [\log(\text{public/private sector wages}_t) - \log(\text{public/private sector wages}_0)] + \mu.$$

The right hand side represents the change in income over time. y_0 is included to account for any convergence that might have

taken place over time as predicted by the neoclassical growth model (Meon and Sekkat 2005). $[\log(\text{pop}_t) - \log(\text{pop}_0)]$ accounts for population growth from time 0 to time t, $\log(\text{inv})$ accounts for investment, $\log(\text{open})$ is included to account for whether the economy is an open or closed economy. $[\log(\text{public/private sector}_t) - \log(\text{public/private sector}_0)]$ is the variable of interest which accounts for changes in the public/private sector participation ratio from time 0 to time t. $\alpha_7 [\log(\text{public/private sector wages}) - \log(\text{public/private sector wages})]$ represents the change in wage ratio over that period (if any). It is included so that if the changes in public/private sector participation are due to the wage ratio changes, as opposed to rent seeking individuals, then the effects of the change in public/private sector participation will wash out. It should be noted however, that this regression estimate is not all inclusive. Any other known variables which are known to affect economic growth can be included in the regression.

Data for economic variables like investment, output and population can be obtained from various sources like the World Bank, IMF and national governments' statistical divisions, like Statistics Canada. Data for public/private sector participation and relative wages can be collected from Labour and Income surveys of the respective countries like the Survey of Labour and Income Dynamics in Canada.

If there are more changes in the public/private sector participation ratio than can be accounted for in the change in public/private sector relative wages, the rest of the change can then be attributed to individuals going into the public sector for rent seeking. A negative sign will be expected from α_6 (the coefficient for public/private sector participation ratio). If this coefficient is significant, it will support the hypothesis that corruption, through its effects on how individuals in an economy

invest human capital, acts as a deterrent to growth. This occurs possibly because the rent collected through corruption is not redistributed and cannot be taxed. It is also not economically efficient since most parties who engage in corrupt activities exhaust a significant amount of resources trying to avoid detection and the risk involved since bribery contracts are not legally enforceable in courts (Bardhan, 1997). All these factors will contribute to slow down the rate of economic growth.

Conclusion

Attention has been brought to the issue of corruption partly due to the rise of institutional economics, and partly by parties who are trying to explain why foreign aid to developing countries has been largely ineffective. There cannot be more and more foreign aid if these countries have a few individuals at the top who make all the economic and political decisions and are able to divert these funds to private gains.

This paper explains that not only does corruption negatively influence investment, it may also influence how individuals allocate their human capital. A Schelling diagram can be used to show how individual's choices of how to invest their human capital changes in response to the nature of corruption present. They are compelled to allocate their human capital to rent seeking (corruption) as opposed to economically productive activities when the returns to rent seeking outnumber the returns to going into the economically productive labour market and this occurs when corruption is rampant. Rent seeking is not efficient by any means and will negatively affect growth. As the number of rent seekers increase, economic growth can even be affected further because profits will be taken away as rents. Therefore, an activity like corruption which encourages rent seeking will be detrimental to growth and should be discouraged on every level.

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