

# The effects of corruption on the nigerian economy



To evaluate the effects of corruption on the Nigerian economy, we utilise the estimated size of the hidden economy (a proxy for corruption) in effect to Nigerian economy growth, (Salisu, 2006). A MIMIC is a structural econometric model for estimating an equation in which the dependent variable is unobservable (latent). (Frey & Weck-Hannemann, 1984) pioneered the use of MIMIC modelling in the context of the hidden economy. Since then, a number of other studies have employed this technique, (Aigner et al. 1986; Schneider 1997; Giles 1997, 1999; Tedds, 1998). It is a powerful technique for estimating the underground economy, as it allows for simultaneous interaction between multiple explanatory variables and multiple indicators of the hidden economy. The latent variable is linked, on the one hand, to a number of observable indicators (reflecting changes in the size of the unreported economy); and on the other hand to a set of observed causal variables, which are considered to be important determinants of the unreported economic activity.

#### **4. 4 Discussion of Empirical Results for Model**

Based on the reasoning we try to model the existence and the effect of corruption on Nigerian economy (FDI) based on the model by Johnson and Dahlstrom which depicts the picture of what we applying. The model is based on assumption that the bureaucrat has monopoly in providing government services that the MNE needs in order to operate in the host county, ( Dahlstrom and Johnson, 2004):

##### **4. 4. 1Equation 1**

Corruption if:  $\hat{c} = c(i)$

No corruption if:  $\hat{\pi} < c$

Where  $\hat{\pi}$  is an agent's expected payoff from corruption and  $c$  is the expected cost. For corruption to take place  $\hat{\pi} \geq c$  for all involved agents.

#### 4. 4. 2 Equation 2

Equation two below presents payoff functions for the two types of agents.

Payoff for MNE  $\hat{\pi}_{mne} = \hat{\pi}^2 \hat{\pi}$  ( ii)

Payoff for bureaucrat  $\hat{\pi}_{off} = \hat{\pi}$ .

Where  $\hat{\pi}^2$  is the probability that the bureaucrat indeed delivers the government service,  $\hat{\pi}$  signifies the value of that government service for the MNE and  $\hat{\pi}$  signifies the size of the bribe.

The payoff of corruption is simply the monetary value an agent can earn by realising the action. For an MNE the payoff of engaging in corruption could for example be the future cash flow connected to a building contract granted by the bureaucrat. For a bureaucrat the payoff of corruption is simply the size of the bribe (Dahlstrom and Johnson, 2004).

The probability variable  $\hat{\pi}^2$  has been discussed by (Shleifer and Vishny , 1993) among others and can be used to distinguish bribes from taxes. As discussed earlier, (Shleifer and Vishny, 1993) distinguish between centralised corruption where a single agent (bureaucrat) collects the bribe.

Decentralised corruption implies that several individual bureaucrats can demand bribes. Therefore, even when having paid a bribe there is still a possibility that the MNE does not get access to the government service that

it wants. This would force the MNE to pay yet another bribe to get the demanded service. Under a decentralised system of corruption it is more likely that additional bureaucrats would put up demands for bribes. This is one example of how corruption introduces an element of uncertainty for the MNE. For an economy where centralised corruption dominates we would expect  $\hat{I}^2$  to be close to one while decentralised corruption would imply a smaller value of  $\hat{I}^2$  (Dahlstrom and Johnson, 2004). They went further citing that the cost of corruption for the bribed is normally the punishment that can be imposed on him if he is found guilty, while for the briber it is the expected cost of punishment as well as the size of the bribe that composes the cost.

The culture in the host-country can be assumed to influence the willingness of the agents to engage in corrupt practices. In economies where corruption is frowned upon there should, ceteris paribus, exist less corruption than in an economy that accepts corruption. The general cost function shown in equation 3 below tries to take all of the above into account.

### 4. 4. 3 Equation 3

The general cost function  $c_j = ((\hat{I}' + \hat{I}^\pm)) p + \hat{I} \cdot$  (iii)

Where  $c_j$  is the cost of the  $j$ : th bribe with  $j$  going from 1 to  $n$ ,  $p$  signifies the perceived risk of being caught, the expected punishment is denoted  $\hat{I}'$ , while  $\hat{I}^\pm$  represents the “ social cost” of being revealed as engaging in corrupt behaviour and  $\hat{I} \cdot$  is the monetary value of the bribe.

For the bribed  $\hat{I} = 0$  while  $\hat{I} > 0$  for the briber. The social cost of corruption  $\hat{I}^\pm$  goes from to infinity where a low value signifies that corrupt behaviour is widely accepted and a high value signify a culture with a strong aversion

against corruption. Similar cost components of corruption for the individuals can be found in (Sen, 2002,).

The risk of being caught is dependent on the effectiveness of the police as well as the legal system. (La Porta et al, 1999) argues that countries having common law are better protected against corruption since the legal system has stronger property rights. But the enforcement of the laws is of equal importance. Triesman, finds that is perhaps not only the use of common law that decreases the amount of corruption but also whether or not a country has been under British rule, thus having had a strong influence on the legal culture not only the legal system. By taking the first derivative of equation 3 with respect to  $\hat{I}$  we get the sensitivity of punishment. As can be seen the punishment depicted in law is highly dependent on surveillance and enforcement to have a deterrent effect on corruption in a country. Many developing countries have all the laws and regulations demanded from the international society regarding corruption but suffer from a severe lack of enforcement of the laws. Thus those laws have little effect besides working as cosmetics for an ugly economy in need of aid and trade relations with developed countries (Triesman, 1999).

#### **4. 5 Social cost of corruption**

The social cost of corruption may be lower in countries with more hierarchal religions as Islam and Catholicism since it is less accepted to challenge those above you in the hierarchy than in religions such as Protestantism (Triesman, 1999). Furthermore, countries with hierarchical religions tend to have stronger family ties, than countries that practice Protestantism (Triesman, 1999) It can also be the case that in cultures where the distinction between

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the officials private and official power is less distinct bribery may have lower social costs. All these things tend to affect the social stigma attached to corruption thus increasing or decreasing the cost.

According to (Dahlstrom and Johnson, 2004) in order to develop the model we have to combine the cost and payoff functions described above in order to determine whether corruption takes place. We have rewritten equation 1 by incorporating equation 2 and 3 resulting in one set of equations for the MNE, Equation 4, and one set for the bureaucrat, Equation 5, below.

#### 4. 5. 1Equation 4

MNE

No corruption if:  $\hat{I} - ((\hat{I}' + \hat{I}_{\pm}) p) - \hat{I} < 0$  (i)

Corruption if:  $\hat{I} - ((\hat{I}' + \hat{I}_{\pm}) p) - \hat{I} \geq 0$  (ii)

Expected profit:  $\pi_{MNE} = \hat{I} - ((\hat{I}' + \hat{I}_{\pm}) p) - \hat{I}$  (iii)

#### 4. 5. 2Equation 5

Bureaucrat

No corruption if:  $\hat{I} - ((\hat{I}' + \hat{I}_{\pm}) p) < 0$  (i)

Corruption if:  $\hat{I} - ((\hat{I}' + \hat{I}_{\pm}) p) \geq 0$

Expected profit:  $\pi_{off} = \hat{I} - ((\hat{I}' + \hat{I}_{\pm}) p)$  (iii)

They went further, using 4. i and 5. i to solve for the expected profit of corruption for the MNE yields  $\hat{I} = 2 \hat{I}'$ . This is only valid if we assume that all of the cost variables  $\hat{I}'$ ,  $\hat{I}_{\pm}$ ,  $p$  are identical for both the MNE and the

bureaucrat. This is a strong assumption since both the fines as well as the social cost probably are higher for the MNE than for the bureaucrat. If we assume that the value of the bribe,  $\hat{b}_j$ , is the reservation price for the bureaucrat due to the fact that the MNE has more bargaining power.

### 4.5.3 Equation 6

Equation 6 below show the total monetary value of the bribes paid in an economy. This could be seen as the actual cost for the economy when we disregard the uncertainty of corruption. This uncertainty comes in two shapes, the one of getting caught and the one of fulfilling ones obligation. If the service would have been delivered as a tax service equation 6 would equal the tax cost the MNE would have paid.

n Total monetary value of corruption (6)  $V = \sum_{j=1}^n \hat{b}_j v_j$

1

Where is the monetary value of the  $j$ : th bribe with  $j$  going from 1 to  $n$ , with  $n$  being the number of transactions where it may be possible to offer a bribe,  $v_j = \hat{b}_j$  if both  $0 < \alpha < \hat{b}_j - (\hat{b}_j + \hat{b}_j) * p_j$  for all other cases  $v_j = 0$ . In a developing economy  $n$  can be assumed to be higher under decentralised corruption than under centralised corruption since there are probably a greater number of different bureaucrats that demand bribes in the former case than in the latter.

#### 4.5.4 Equation 7

Equation 7 below gives an account for the total cost of corruption that MNEs experience in a country. Here we include the cost of uncertainty unlike equation 6.

n

Total corruption cost for the MNE (7)  $CMNE = \sum_{j=1}^n c_j$

1

Where  $c_j$  is the expected cost of the  $j$ :th bribe with  $c_j = (\hat{I}'_j + \hat{I}_{\pm j}) * p_j + \hat{I} \cdot j$

if both  $0 \leq \hat{I}^2_j - ((\hat{I}'_j + \hat{I}_{\pm j}) * p_j) - \hat{I} \cdot j$  and  $0 \leq \hat{I} \cdot j - (\hat{I}'_j + \hat{I}_{\pm j}) * p_j$ .

If  $0 \leq \hat{I}^2_j - ((\hat{I}'_j + \hat{I}_{\pm j}) * p_j) - \hat{I} \cdot j$  but  $0 \leq \hat{I} \cdot j - (\hat{I}'_j + \hat{I}_{\pm j}) * p_j$  then  $c_j = (\hat{I}'_j + \hat{I}_{\pm j}) * p_j$  but

for all other cases  $c_j = 0$

#### Cost of corruption for the MNE

IF  $\hat{I} \cdot j \geq c_{off}$

then official chooses corruption

IF  $\hat{I} \cdot j < c_{off}$

then official chooses no corruption

IF  $\hat{I} \cdot j \geq CMNE$

then MNE chooses corruption



$$c_j = (\hat{I}'_j + \hat{I}_{\pm j}) * p_j + \hat{I} \cdot j$$

$$c_j = (\hat{I}'_j + \hat{I}_{\pm j}) * p_j$$

IF  $\hat{I} \neq MNE < CMNE$

then MNE chooses no corruption

0

0 (Source: Dahlstrom and Johnson, 2004)

It is evident from the above equations 6 and 7 that, i. e. the actual cost of corruption for the

MNE is greater than just the size of the bribe thus it would have been less costly for the MNE to invest in a country where the services would have been supplied as a tax service. Further corruption as opposed to a tax does not benefit the government but the individual bureaucrat. The tax income could, if used efficiently by the government, promote growth of direct investment through increasing the stock of human capital or improving market economy institutions. This tax income could also be used to combat corruption through the legal system or by raising the salaries of the government officials. But for taxes to be less damaging than corruption this does not have to be the case. The only necessary condition is that there is less uncertainty involved. Furthermore, companies seldom have the choice whether to pay tax or not so the corruption cost will be something that has to be paid in addition to taxes, ( Dahlstrom and Johnson, 2004).

#### 4. 6 Effect of the host country corruption from the analysis

The resulting effect of host-country corruption is that the actual cost of conducting business activities in the country is higher than what could be expected based on observable costs such as wages or transport costs. Based on this reasoning, corruption gives rise to extra costs that the MNE has to operate in the host-economy.

If MNE presence does reduce corruption while corruption has a negative effect on FDI there might exist virtuous or vicious circles. If there is little FDI in a country the corruption stays high which discourages the MNE to invest, thus decreasing the FDI. Here we have a vicious circle but the opposite is also possible. If an MNE invests in a country the corruption decreases this further improves the incentives for future investments. If one also assumes that both FDI and low corruption encourages growth the country who finds itself in a virtuous circle will have a much higher probability of development than one that finds itself in a vicious circle.

We now proceed to try to develop an expression that describes the effect of host country bureaucratic corruption on FDI inflows. We start by introducing a profit function for the MNE:

$$\pi(p, w, A) = \max \{ p y - c(w, y, CMNE) \}$$

where  $p$  indicates the world market price of the output  $y$  of the MNE,  $w$  is the cost of production factors and  $CMNE$  represents the MNE cost of corruption as earlier

Use of the expression  $p < y$  implies that demand for the good in the host country is too small to have an effect on the price that the MNE receives for its output. This assumption is most suitable for an export-platform type of FDI as described in (Ekholm et al, 2003) where the MNE production in the host-country is exported to third country markets. This type of FDI is most likely to appear in developing economies where small domestic markets exclude market-seeking motivated FDI but with low labour costs. This implies that the profit function is most suitable for MNEs that operate in developing economies.

It might be argued that the MNE only starts production in the host country if the expected profit from doing so is larger than some minimum level of profits:

$$E(\pi) = [E(p)E(y) - c(E(w), E(y), E(CMNE)))] \geq \pi^* E(\pi)$$

where  $\pi^*$  is the minimum profit necessary for entry.

Therefore, a rise in  $CMNE$ , the costs caused by corruption, should decrease the amount of FDI inflows that a host-country receives. It is also possible that MNEs that are already established in the host country decide to close down facilities if the costs of corruption become too high. (Cuervo-Cazurra, 2006)

Although corruption has a negative impact on FDI because of the additional uncertainty and costs, such costs vary depending on the country of origin of the FDI. With respect to this topic, more FDI is gotten from OECD countries which are the rationale behind a corrupt country like Nigeria decreasing the quantity of its inward FDI because of the costs which the foreign MNC will have to incur to establish business in Nigeria. So therefore results show that

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the relationship between corruption and FDI is modified by the country of origin of the FDI.