

# The Macroeconomic Effects of Corruption, Remedial Measures on Selected Developing and Emerging Economies: An Empirical Analysis

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## Abstract

In the last two decades there has been a greater acknowledgement nationally and internationally that corruption impedes economic progress in developing and emerging economies. This study uses panel data from 1997 to 2007 to examine the effect of corruption on selected developing and emerging economies. The empirical results of this study indicate that corruption has a negative effect on economic growth and the standard of living. However, inconsistent policy in addressing corrupt practices has failed to have effective results both from national and an international perspective due to prevailing economic and other related constraints. We argue that effective remedial measures should be based on the theory of second best solution where optimal policy solutions are unattainable. The underlying analysis provides an indication that corruption is an international phenomenon requiring national and international remedies.

## Introduction

In the last two decades there has been a greater acknowledgment that economic corruption regresses economic progress in developing and emerging economies. With the current trend of globalization and increased interdependence among countries economic corruption has evolved into an international phenomenon. Its overall effect can be traced to decline in economic growth and low standard of living among developing and emerging economies. The complexity of corruption means it is much easier to evade government authority where there are no effective anti-corruption measures. In many instances government contracts and business deals are only extended when bribes are exchanged. The challenge faced by governments' authority is how to formulate and

implement anti-corruption measures so as to eradicate corruption. Hence, the remedial measures to reduce corruption should not just take a national perspective but also an international outlook. Further, the willingness to embrace the most practical approach given the limited resources means a less than optimal solution will offer a sufficient condition.

We propose remedial measures that can be taken by a government that are based on the theory of second best to counteract prevailing economic distortions due to structural constraints. The obvious structural constraints include and not limited to *de facto* state supported or sponsored monopolies. Also in the same vain are subsidies that are used to buy political favor but have poorly conceived economic goals. These structural constraints limit the optimal effect of corruption control instruments propelling the idea that combating corruption is not a winnable proposition. However, while the attainment of the first best policy is the ideal, the circumstances confronting the policy makers may require a less than optimal policy. In such a situation a case can be made that a policy is a success if an adopted policy will lead to the most achievable goal. That is the second best option given the prevailing economic reality. We provide evidence of the effect of corruption in selected countries (Kenya, Uganda, Tanzania, Chile and Indonesia) using panel data from 1997 to 2007. The empirical results support the hypothesis that corruption is an international phenomenon requiring national and international remedies.

### **Literature Review**

Several studies have explored the effect of corruption on developing and transitional economies. The overall effects of corruption are to impede development and to destroy the social fabric of society. The consensus is that corruption hampers economic growth, imposes disproportionate burdens on the poor and undermines standard of living. There is strong indication that an effective economic development policy cannot escape rent seeking adventurers, opportunistic policy makers and bureaucrats. Ehrlich and Lui (1999) found that the relationship between corruption and a

country's economic growth is nonlinear. There is empirical evidence that corruption has significant negative impact on world economies in private, public and foreign sectors.

Collier and Gunning (1999) found that corruption contributes to poor public social capital especially in sub-Sahara countries. A weak state in terms of governance or autocratic regimes usually compounds the corruption problem due to lack of legal enforcement. The effect is more evident in the consumption and government expenditures pattern of developing countries where corruption curtails the level of consumption and government spending through bribery and kickbacks. This reduces household consumption expenditures and lowers the standard of living. Further, public expenditures tend to be diverted to private consumption and siphoned out of the country due to lack of effective anti-corruption measures to discourage such fraud. The outcome is a higher level of government expenditure with lower level of public investment. Mbaku (2003) argues that anti-corruption programs through societal, legal, market and political reforms have failed in Africa due to posits reasons including incompetent and inefficient civil servants, satism, and poverty and income inequality.

Hence for the African countries, scenarios are played out where issues of corruption tend to dominate the debate in political arena, in business and in daily lives of general public. Collier (2000) notes that massive rise in the opportunities for corruption caused the increases in corruption in Africa: of importance, the power to regulate private activities, public sector employment evolving in a patronage system, growth of public sector procurement and a weakened scrutiny of the political process have contributed to corruption.

Folorunso (2007) observed that in Nigeria every citizen is involved in one corrupt practice or the other whether petty or grand corruption. His analysis points not just to the leaders but also the followers, the democrats, the rich and the poor, the security and those to be secured. A further finding by Folorunso is that democratic governance has had less effect on reducing corruption not to mention poor economic performance which has created an environment for more incidences of corruption. His findings are that corruption in Nigeria tends to have influence on general price level. Hence success in enacting policies that reduce corruption will contribute towards price

level stability. In Kenya, Kimuyu (2007) observes that some sectors of economy are more susceptible to corruption than others. Of note is that manufacturing firms that receive government contracts pay an average of 14.2 percent of their total contract on bribes to public officials. A strong case is made by Kimuyu in that on the average firms pay 7.5 percent of their annual sales on bribes which rival losses incurred on theft, vandalism and arson. Also, the level of corruption in the country has not escaped the attention of the international community including the World Bank who tied the international aid to specific anticorruption reform.

The underlying observation is that the presence of corruption permeates every sector of the economy. It is therefore not surprising that in receiving public service, the general public is forced to bribe the bureaucrats. The use of coded words such as give some “chai” or “tea” or “kitu kidogo” (a Swahili word meaning something small) are used to solicit bribes. It is an open secret that the traffic police (law enforcement officers) in the street and highways are not there to guarantee public safety but to collect bribes. In return they are to share their collected bribes with their superiors up the chain of command. While such activities tend to inconvenience the general public, the toll has cumulative economic cost. In the larger scope of corrupt practices, Goldenberg and Anglo Leasing scandals demonstrated that corruption can permeate major government institutions both domestically and internationally.

The Kenya government ministries, government departments, financial institutions including Central Bank of Kenya were used to siphon over \$4 billion dollars from the central treasury under a complex gold export scheme by Goldenberg International Company. In essence, it is unusual to receive any public service without payment of bribe in Kenya. In an attempt to force reform on Kenya government, IMF (2008) in 1997 suspended its structural adjustment program in part due to government reluctance to implement anticorruption and governance measures and prosecute the culprit of these scandals. To a greater extent the 1990s saw an escalation of corruption as challenges to the government of the day gave way to multiparty democracy with desire for accountability and transparency in public services.

The effect of corruption is also evident in such areas as tax revenue collection, public procurements and expenditures. The failure to properly monitor and impose checks and balances in the fiscal system creates opportunity for corruption. Hence a weak revenue tax administration promotes corruption. Devas *et al* (2001) observes that several African countries have realized the importance of reforming the tax administration authorities not only to raise tax revenues but also to curb corruption. Fjeldstad (2003) observes that Tanzania attained this milestone in 1996 with significant results by forming a semi-autonomous Tanzania Revenue Authority. Like many developing African countries, Fjeldstad argues, that corruption thrived due to political favoritism, unenforceable complicated regulation, high tax rates among other factors. Hussein (2005) observes that Malawi faces similar challenges in combating corruption. Besides poverty and disparity between the rich and the poor, patronage-elites in sociological factors and including inefficiency in public service have promoted corruption. Further, Hussein notes there is a tendency by foreign investors to bribe politicians and government officials to win contract and business deals.

For South Africa, Lodge (1998) argues that the real citadel of official self-enrichment in central government is found in the ministries of social welfare, safety and security, and justice. His main contention is that the frequency of interaction between civil service bureaucrats and the public the more likely they are bound to be dishonest. He further points out those corrupt practices especially in ministry of social welfare are rooted in pre-apartheid era. Also as it relates to South Africa, Van Vuuren (2004) points out that corruption results in a lack of public confidence in democratic process, hence entrenching the elites, slowing economic growth and deepening economic inequality as money continues to trickle up. The form of corruption in Sub-Saharan countries is therefore more regressive on economic growth compared to other transitional economies. Corruption in Sub-Saharan countries tends to be uncoordinated and competitive giving corruption a more distortionary effect on the economy. As such, the underlying effect of corruption is experienced in every facet where market transaction takes place imposing social and economic costs on society.

In Asian countries, on the other hand, corruption is more centralized, institutionalized and monopolistic according to Collier and Gunning (1999). In either case, this argument does not minimize the economic and social cost imposed by corruption both in the public and in the private sectors. The effect tends to be evident in the pursuit of industrial policy. Ades and Tello (1997) found that the benefits of effective industrial policy are reduced by corruption. Strait Times of Singapore (1996) points out that Singapore is perceived to be the least corrupt while Pakistan is perceived to be the most corrupt among Asian countries. Palmier (1985) observes that corruption in Asian countries (Hong Kong, India and Indonesia) is contributed by three major factors: the existence of low salaries, the existence of opportunities for corruption and perception of corruption as a low risk and high reward enterprise.

World Bank (2003) observes that in Indonesia there is widespread corruption in all government level including petty corruption in other aspects of life. However, the highest level of corruption prevails in government procurement. Warwick (1987) notes that in Indonesia, bureaucrats seek to work in government agencies that offers higher payoffs in bribes. Terminology such as “wet” and “dry” agencies is used to draw a distinction between high payoff and low payoff agencies. Therefore, there is a higher propensity for bureaucrats to clamor for the wet agencies as the most attractive for employment. In such environment, corruption is presented as a morale and staff benefits equalizer across agencies. Hence, agencies such as police, customs, immigration and internal revenue are viewed as wet and most desirable. Klitgaard *et al* (1998) reinforces this view by observing that in Indonesia, corruption is inescapable and it is a way of life and affects everyone: nationals, foreign investors, aid donors including international financial institutions.

Under president Sukarmo’s reign Indonesia experienced the highest level of corruption due to poor economic policy and weak administration. Also of interest is the view expressed by De Sperville (1997) that excessive government regulation create ample opportunity for bureaucratic corruption in Hong Kong. This view is supported by Gould and Amaro-Reyes (1993) and Palmier (1985) among others. Khan (1998) in his study on Bangladesh notes that bureaucrats involved in corruption rarely lose their jobs

when implicated. Hence, corrupt officials tend to gain social notoriety. In other words if corruption crimes are rarely prosecuted, then there is no deterrence. In China on the other hand, perception prevails that high ranking party officials tend to escape the imprisonment or death penalty while junior officials are harshly prosecuted. Accordingly, Root (1996) argues that there is a different treatment in enforcing anti-corruption measures which in itself is a form of judicial corruption. Further, Aidt (2003) points out that the design of government institutions tend to influence the incidence of corruption. His observation is that wage rates, the monitoring system and the legal remedies are integral in deterring corruption. Quah (1999) observes that different anti-corruption measures in Asian countries yield mixed results but anti-corruption legislation with an independent agency tends to be the most effective.

A further observation is that corruption has not escaped Latin American countries either. Seligson (2002) in his study of four Latin American countries observes that corruption erodes the legitimacy of political system including interpersonal trust and civil society relations. He notes that in Latin American countries the view that government is legitimate in the eyes of the general public remains low due to a long period of political instability. Of interest are two studies, one by Morris (1991) and the other by Camp *et al* (2000) on Mexico which makes a distinction between perception and experience of corruption. Morris concludes that elites tend to hold positive view of corruption, while the general public perceives corruption as lowering their trust in government. In other words, corruption does have a bearing on whether the society views a government as legitimate or not. The difference then should be viewed in terms of who is more likely to benefit from corrupt practices. In this regard it can be argued that the elites may tend to have more substantive gain as they have ability to influence a given outcome than the general public.

In the international capital markets, corruption tends to influence the ability of developing countries to attract international investments. The added investment cost of capital means less capital will flow to countries where corruption is more prevalent. This is evident on the selective approach foreign investor's use in shopping for investment opportunities in developing and emerging economies. Wei (2001) found that capital

originating in developed countries tends to be attracted to less corrupt countries. Also Harrison (2003a) compares the level of foreign direct investment (FDI) and FDI per capita for the twenty most corrupt countries, and the twenty least corrupt countries based on Transparency International's (TI) Corruption Perceptions Index (CPI) for the period 1998 to 2000. On the average FDI inflow in the twenty least corrupt countries for 1998, 1999, and 2000 was \$30 billion, \$40 billion, and \$59 billion, respectively. On the other hand, the average FDI inflow in the twenty most corrupt countries for the same period was \$817 million, \$663 million, and \$472 million respectively.

Although corruption occurs in both developed and developing countries, the impact may be more pronounced in developing countries. Shleifer and Vishny (1993) found that the effect of corruption in some developing countries (Kenya and Zaire-Democratic Republic of Congo) tends to be a significant share of GDP. Hence, corruption as a form of leakage is more distortionary on the economy. Usually, its overall impact permeates all the sectors of the economy with a higher cost imposed on the poor and the least connected politically. Arguably, corruption creates more distortionary effect than a poorly implemented tax policy. Most significantly, corruption reduces consumption expenditures by households, investment spending by firms and increases government expenditures. Another area that tends to influence corruption is political instability through ethnocentric differences. Most developing and transitional economies have experienced all forms of political upheaval. Kaufmann *et al* (2007) lists corruption as one of the factors that affect a country's governance. There is a strong indication that political stability is associated with a low level of corruption and promotes economic growth. Where political instability is prevalent corruption tends to thrive both socially and economically. In many developing countries where different ethnic groups contend for political and economic power, corruption tends to thrive through nepotism. These ethnic differences tend to be exploited by both external and internal forces. Such disruption leads to political instability, loss of private and public property, and to the extreme loss of lives. Mauro (1995) observes that countries fractionalized along ethno-linguistic lines may have bearings on institutional efficiency. Mauro found that there is a negative and statistically significant correlation between institutional efficiency and



ethno-linguistic fractionalization. Where ethnic corruption is prevalent, political instability disrupts governance and economic development.

In this paper, we provide some empirical evidence on the comparative effects of corruption in selected countries: South America, (Chile), South East Asia (Indonesia), and Sub-Sahara Africa (Kenya, Uganda and Tanzania). The countries were randomly selected to meet the set criteria on economic growth as well as their history in fighting corruption. The empirical results support the contention that corruption has regressive effects on the economy. Low economic growth and declining standard of living are the result of the high cost imposed by corruption on the society as well as on economic institutions. The empirical results show that corruption is more of an international phenomenon and none of the countries in the sample are immune from corruption.

The paper is organized as follows: section 1 is introduction, section 2 presents literature review, section 3 presents corruption perceptions index including data sources, the research methodology is presented in section 4, empirical results are in section 5, remedial measures are presented in section 6 and conclusion and policy recommendations are in section 7.

### **Corruption Perceptions Index**

Several measures of corruption have been used including Corruption Perception Index (CPI). The CPI by Transparency International attempts to measure the level of corruption of selected countries. The CPI has offered a comparative platform where the effects of corruption on different countries' economic performance are analyzed. Although different arguments have been raised on the accuracy of measuring corruption, there is more agreement that it is possible to measure corruption as well as its effects on the economy. There are several forms of corruption indexes which have been derived by different organizations with the sole purpose of measuring corruption. Included are such indexes as business international (BI) index, the international monetary fund (IMF) index as well as the Transparency International (TI) index. We use the Transparency International (TI) index as our corruption perception index (CPI) of choice.

Table 1 presents the corruption perception index for the five countries in our study as discussed in *Corruption Perception Index*. The data indicate that Chile has a lower level of corruption while the other four countries have a much higher level of corruption perception. A higher index number infers a lower level of corruption while a lower level shows a high level of corruption. The CPI is a composite index based on fourteen published surveys of business people and of country analysts. The indexes are averaged over the previous two years to minimize random noise. By focusing on country scores rather than country ranking, it is possible to evaluate changes in perceptions over time.

The additional data used in this study comes from the International Financial Statistics (IFS) which is provided by the International Monetary Fund (IMF). This data is available in the IMF publications that are published on a yearly basis. The countries were selected to give a comparative sample that includes Asia, South American, and Africa. Further, the sample selected was based on convenience in terms of data availability. An attempt was made to vary the sample so that we could include developing and transitional economies in the sample since that was one of our objectives.

Table 1: TI Corruption Perception Index Table

Year	Kenya	Uganda	Tanzania	Chile	Indonesia
1997	2.3	2.3	1.6	6.1	2.7
1988	2.5	2.6	1.9	6.8	2
1999	2	2.2	1.9	6.9	1.7
2000	2.1	2.3	2.5	7.4	1.7
2001	2	1.9	2.2	7.5	1.9
2002	1.9	2.1	2.7	7.5	1.9
2003	1.9	2.2	2.5	7.4	1.9
2004	2.1	2.6	2.8	7.4	2
2005	2.1	2.5	2.9	7.3	2.2
2006	2.2	2.7	2.9	7.3	2.4
2007	2.1	2.8	3.2	7	2.3

For analysis purposes, the Corruption Perceptions Index is transformed so that high values indicate high corruption and low values low corruption. Further, the CPI is adjusted to read in hundreds instead of tenths. Hence, the percentage rates allows for a more accurate analysis of the effect of corruption on other variables. Other data transformations reflect the goal of the study in measuring the rate of change of the dependent variable to the independent variables.

### **Methodology**

Our methodology draws on theoretical literature by identifying specific determinants of gross domestic product and determinant of gross domestic product per capita. Our data set includes real GDP, real GDP per capita as explanatory variables. Household consumption expenditures, government consumption expenditures, investment expenditure, rate of inflation and corruption perception index, as variable of interest, as independent variables. The main objective in our regression analysis is to gauge the effect of corruption and provide the policy implications of the study. We use an empirical model on a balanced panel data with a fixed number of periods, a finite number of moments, and restrictions in the same sample. We propose a model specification that takes the following general form:

$$Y_{ij}=X_{ij}\beta+\mu_{ij} \tag{1}$$

where:  $Y_{it}$  in model I is real GDP while in model II it is the real GDP per capita, for country  $i = 1, 2, 3, \dots, N$ ) and at time  $t = 1, 2, 3, \dots, T$ .  $\beta$  is a parameter while  $\mu_{ij}$  is a stochastic disturbance term with  $E[\alpha(i,t)] = 0$  and  $\text{var} [\alpha(i, t)] = \sigma^2$ . If we assume that the country specific effects are constant across countries and that the time specific effect is invariant, we can estimate the above model using a fixed effects regression model (FEM) also known as least square dummy variable (LSDV) model. We run two regression equations by introducing dummy variables under the following econometric constructs and estimate the relevant parameters for the log of change in real GDP such that Model I takes the following form:

$$\begin{aligned} \text{Ln}(Y)_{it} = & \alpha_1 + \alpha_2 D_2 + \alpha_3 D_3 + \alpha_4 D_4 + \alpha_5 D_5 + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} \\ & + \beta_5 X_{5it} + \beta_6 X_{6it} + \beta_7 X_{7it} + \mu_{ij} \end{aligned} \quad (2)$$

Where  $\text{Ln}(Y)_{it}$  is the log of change in the Real GDP;  $X_{2it}$  is the change in household consumption expenditure;  $X_{3it}$  is the change in government consumption expenditure;  $X_{4it}$  is the change in investment spending;  $X_{5it}$  is the log of corruption perception index;  $X_{6it}$  represents the log of corruption perception index lagged one period;  $X_{7it}$  represents the log of change in real GDP lagged one period.

For Model II regression equation, we introduce dummy variables under a similar econometric constructs and estimate the relevant parameters for the log of per capita real GDP such that:

$$\begin{aligned} \text{Ln}(Y)_{it} = & \alpha_1 + \alpha_2 D_2 + \alpha_3 D_3 + \alpha_4 D_4 + \alpha_5 D_5 + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} \\ & + \beta_5 X_{5it} + \beta_6 X_{6it} + \mu_{ij} \end{aligned} \quad (3)$$

Where  $\text{Ln}(Y)_{it}$  represents the log of per capita Real GDP;  $X_{2it}$  is ratio of household consumption expenditure to Real GDP;  $X_{3it}$  is the ratio of government consumption expenditure to Real GDP;  $X_{4it}$  is the corruption perception index;  $X_{5it}$  is the inflation rate;  $X_{6it}$  represents the log of change in per capita real GDP lagged one period. The results of the two regressions equations referred here as model I and model II are shown below.

Table 2 presents the OLS regression results for the two models. Since we are dealing with time series, unit root test was conducted by using the first- differenced data for each series. For both models the adjusted coefficient of determination  $R^2$  are high showing how well the two models fit the actual data. Also, since we have autoregressive models in both case of our study, the Durbin-Watson statistic cannot be relied upon to test for serial correlation. However, Durbin-Watson-h test revealed no presence of serial correlation.

Table 2: Regression results

Variables	Model I Dependent Variable: Log $\Delta$ GDP	Model II Dependent Variable: Log Per Capita GDP
Constant	9.30122 (0.846253)	5.27395 (0.751858)
D2	-2.58917* (0.297712)	.209580* (0.000005)
D3	-3.55762* (0.357204)	1.09663* (0.236457)
D4	-3.12058* (0.9457980)	-2.71063* (0.922093)
D5	.933677* (0.162506)	-0.673351* (0.201695)
$\Delta$ CN	-0.620353 (0.000001)	
$\Delta$ GV	0.151339 (0.000011)	
$\Delta$ IN	.150703* (0.000160)	
LCPI	1.38042 (1.33404)	
LCPI <sub>-1</sub>	-2.11395** (0.968648)	
L $\Delta$ GDP <sub>-1</sub>	0.030711 (0.080278)	
CGP		5.47487* (0.572392)
GGP		1.16594 (1.76037)
LCPI-1		-1.20066*** (0.833983)
INF		-.754035 (0.622381)
LPGDP-1		.052311 (0.06199)
Adjusted R <sup>2</sup>	.981875	.953292
N	55	55

**Note:** For Model I:  $\Delta$  is the Greek letter and is used here to refer to change in specific variables. Log  $\Delta$ GDP is the log of change in real GDP;  $\Delta$ CN change in real consumption spending;  $\Delta$ GV change in real government spending;  $\Delta$ IN change in real investment spending; LCPI is log of corruption index; LCPI<sub>-1</sub> log of corruption index lagged one period; L $\Delta$ GDP<sub>-1</sub> log of change in real GDP lagged one period. For Model II: Log of real per capita GDP; CGP ratio of consumption to GDP; GGP ratio of government spending to GDP; LCPI log of corruption perception index; INF inflation rate; LPGDP<sub>-1</sub> log of per capita real GDP lagged one period. The values in parenthesis are standard errors showing statistically significant coefficients at: (\*) 1 %, (\*\*) 5%, and (\*\*\*) 10% level.

The F statistics for both models have a p-value of 0 showing that the hypothesis that all slopes of coefficients are simultaneously zero can be rejected. The Jarque-Bera statistic has low p-values signifying that the residuals exhibit normal distribution. For both models, the dummy variables for Uganda, Tanzania, Chile and Indonesia are statistically significant. For model I, the coefficient on,  $\Delta IN$  and  $LCPI_{-1}$  are statistically significant while that of  $\Delta CN$ ,  $\Delta GV$  and  $LCPI$  and  $L\Delta GDP_{-1}$  are not statistically significant. For model II the coefficient on  $CGP$ ,  $LCPI$  are statistically significant while the coefficient on  $GGP$ ,  $INF$  and  $LPGDP_{-1}$  are not statistically significant.

For model I the intercept coefficient for Kenya is 9.30122, and for Uganda 6.71205 that is (9.30122-3.55762), for Tanzania 5.74360 that is (9.30122-3.55762), for Chile 6.18064 that is (9.30122-3.12058), and for Indonesia 10.234897 that is (9.30122+.933677), showing there are prevailing structure difference of the five economies. For Model II the intercept coefficient for Kenya is 5.27395, for Uganda is 5.48353 that is (5.27395+.209580), for Tanzania is 6.37058 that is (5.27395+1.09663), for Chile is 2.56332 that is (5.27395-2.71063), and for Indonesia 4.600599 that is (5.27395-.673351). This may be evident when one looks at the prevailing level of economic development, the size of the economies, the standard of living, the size of the public sector, the level of household consumption as well as the level of corruption in respective countries.

From model I, holding all other factors constant a 1.0 percent increase in  $IN$  led to 1.5 percent increase in economic growth. However current corruption activity did not have any discernible effect on the gross domestic product. While a 1.0 percent increase in the corruption index lagged one period led to a 2.1 percent decrease in economic growth. For Model II, holding all other factors constant a 1.0 percent increase in consumption spending to real domestic product, led to a 5.74 percent increase in real per capita gross domestic product. For corruption an increase of 1.0 percent led to a decrease of 1.2 percent in per capita gross domestic product. From the above results, it is evident that corruption has regressive effect on economic growth as well as the standard of living.

### **Remedial Measures of Corruption and the Theory of Second Best**

Remedial measures that attempt to reduce corruption can be devised in context of optimization policy. In other words, the society seeks to maximize its utility function at an efficient output level where Pareto optimality condition is attained. As it is usually the case, Pareto optimality condition is presented in public economics as a state where the relative prices of goods are equal to their relative marginal costs: that is the marginal rate of substitution is equal to marginal rate of transformation

( $\sum MRS = MRT$ ). However, in an economic system where social norms are broken and corruption is rampant it is irrational to assume individuals will collectively agree not to be corrupt. This is especially the case where acquisition of power and control in political and economic space leads to accumulation of illegally acquired wealth. Therefore, where the society is threatened by unscrupulous politicians and bureaucrats it is the role of government to intervene to protect the society from corruption and its distortionary effects. However, in addressing problems of economic distortions, of which corruption is primary, Pareto optimality condition may not be easily attainable. As such, corruption problem and the underlying constraints should be addressed on the basis of the second best policy. As argued by McManus (1967), Bohm (1967), Lipsey and Lancaster (1957), Pareto optimality condition requires that all conditions of optimization in the theory of general equilibrium be fulfilled. Otherwise if one condition is not realized then the other conditions are undesirable.

We therefore advocate policy measures that may not provide what we call the first best or Pareto optimal condition in dealing with corruption but policies that result on the second best. As pointed out by Davis and Whinston (1967) not all economic problems are solved within the general equilibrium model. However, where the prevailing conditions that violate optimality condition are small, optimality condition should be considered since such small difference should not influence policy of much more significant projects. In other words, policy geared towards eradicating corruption should not be abdicated due to inability by policy makers to address other temporary economic constraints. As such, a piecemeal approach in dealing with corruption can be embraced in a similar way as other policies that deal with other distortions in the

economy. Again as argued by Davis and Whinston (1967) some economic distortion problems require a micro-economics or piecemeal approach to policy which is what is used in real world. Hence, anti-corruption policy falls in this category as well.

In dealing with corruption constraints, we postulate the following from the general theory of Pareto optimality. First, the assumption is made of an economy that has no economic or other form of constraints that leads to inefficiency. This economy has  $n$  goods and a social utility function of the following form  $U(x_0, x_1, x_2, \dots, x_n)$ . It also has a transformation space which is expressed in the following form  $T(x_0, x_1, x_2, \dots, x_n) = 0$ . Then Pareto optimality (first best) condition seeks to maximize  $U$  subject to  $T$ : This relationship can be expressed as follows:

$$\text{Maximize } U = f(x_0, x_1, x_2, \dots, x_n) - \gamma T(x_0, x_1, x_2, \dots, x_n)$$

where  $u_i = \gamma T_i$  and  $(i=0, 1, 2, \dots, n)$  for any pair of goods  $i, j$ . Then  $n+2$  arrays of equations can be solved to yield  $n+1$  goods and  $\gamma$ . In summary then the general result in this type of system of equations yields the following solution where the rate of substitution is equal to the rate of transformation:

$$MRS_{ji} = u_i / u_j = T_i / T_j = MRT_{ji}$$

This then, is the first best optimal condition where efficiency condition prevails in general equilibrium condition. But where economic constraints exist, resulting in corruption, the economy will fail to attain its efficient state or its first best optimum as presented above. In such a situation, a policy that may not yield the first best in fighting corruption can be adopted since doing nothing would create even worse distortions in the economy. This means that policy makers should focus on finding the second best policy through the prevailing economic and noneconomic constraints. As is usually the case serious distortions arise from state supported and managed enterprises especially in developing and emerging economies. It is in this environment that incubation of corruption tends spread to other sectors of the economy much more easily.



We can demonstrate this condition by introducing a variation of constraints that yield distortions that are captured by the market pricing forces including corruption. Also we acknowledge corruption generated distortion is uniquely different from other mentioned distortions in the market pricing system. Therefore, if we assume a market where good 1 is transacted, and where corruption is prevalent, then, the price of such good does not embody its true opportunity cost. Therefore we can express a variation in such price as follows:  $u_i = \delta T_i + \psi T_i$  where  $\delta$  is different from  $\gamma$  due to prevailing constraints such as monopolies, state managed institutions, technology and human capital; and  $\psi$  is different from  $\gamma$  as a result of corruption constraints on pricing of good 1 in a specific market condition. In other words,  $\delta$  and  $\psi$  are mutually independent. Then a variation of utility maximization function takes the following form as we seek to maximize U subject to T:

$$\text{Maximize } U = f(x_0, x_1, x_2, \dots, x_n) - \gamma T(x_0, x_1, x_2, \dots, x_n) - \phi (u_i - \delta T_i - \psi T_i)$$

$$\text{where } u_i = \gamma T_i + \phi (u_i - \delta T_i - \psi T_i)$$

$$\text{Therefore: } u_i/u_j = \gamma T_i + \phi (u_i - \delta T_i - \psi T_i) / \gamma T_j + \phi (u_j - \delta T_j - \psi T_j)$$

$$\text{MRS}_{ji} = u_i/u_j \neq T_i/T_j = \text{MRT}_{ji}$$

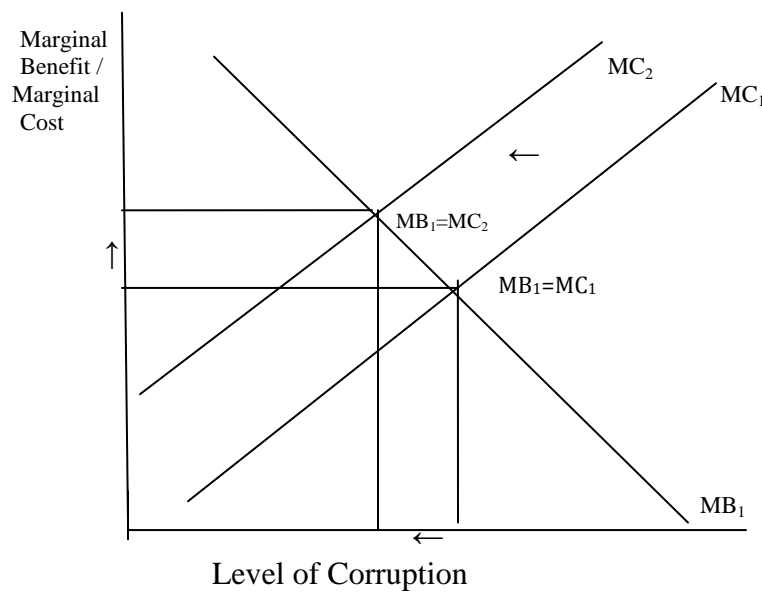
From the above expression the relative prices cannot equal  $T_i/T_j$  which means inefficient market condition prevails. In other words, corruption has distortionary effect on the pricing system and economy as a whole. Further, we can observe that corruption tends to increase price distortion where there exist artificial constraints. On the other hand in a market where there are no artificial constraints and corruption is prevalent, then the level of market price distortion is directly related to the level of corruption. The Challenges faced by policy makers then is how to effectively reduce corruption.

While it is argued that there are social and economic benefits to fighting corruption, the lack of political will may tend to undermine the war on corruption. However, for society to function with credible economic system rule of law and ethical behavior must be enforced. Therefore, fighting corruption must be seen as an essential part of public policy. But where lax laws prevail, there will be incentives for corrupt

individuals to seek to maximize self-interest by weighing marginal cost and marginal benefit of their decisions. There is also a notable understanding that a corrupt bureaucrat will exploit asymmetric information gap from their clients. Hence, the cost of information or lack of information is inconsistent with market equilibrium as noted by Grossman and Stiglitz (1976). Therefore, corruption as an externality creates market distortions that constraints economy in attaining its optimal output level. As observed by Corden (1974) and supported by Macrae (1982) distortions whether policy imposed or not is incompatible with the operation of the economy at Pareto optimal equilibrium.

Since judicial, economic, social and political reforms are the anti-thesis of corruption; policies should be analyzed in terms of their benefits and costs given the prevailing political and economic environment. In other words, a policy should be assessed in terms of its marginal benefit and its associated marginal cost in eradicating corruption. Theoretically, so long as marginal benefit of engaging in corruption is greater than its marginal cost, corruption will tend to thrive in line with diminishing marginal

Figure 1: Marginal Analysis



return. Hence, additional corrupt practices will tend to have less incentive than previous acts of corruption as shown by a downward sloping marginal benefit (MB) curve of Figure 1 below.

Also, as shown in Figure 1 below, the marginal cost of engaging in corrupt practices tends to rise as corruption increases. That means there are higher chances of being caught, face jail time and or higher fines in each additional acts of corruption one engages in. Hence the marginal cost (MC) curve is upward sloping as depicted below.

There is also always a level of corruption that prevails in the society. In the ideal state it is shown at the point where  $MB=MC$ . However, greater rewards of corrupt behavior will tend to shift the MB curve to the right, including the MC curve when government poorly enforces laws or loosens the rules that govern corrupt behavior. The outcome is that more incidences of corruption will occur. Hence, corrupt behavior undermines public policy and erodes society's norms.

Since, corruption imposes economic and social cost on society its effect cannot be measured only in terms of cost and benefit. But its effect should also be looked at on the basis of social norms of acceptable behavior that are not easily measured in economic terms. Failure to embrace such a broader perspective may lead society to lose its moral and ethical dimension of acceptable social behavior. As such, lax law enforcement can encourage corrupt behavior. On the other hand, changing such sub-culture by engraining the value of law and order and high moral standards will transform the society's norms.

In the process, enforcing the law by imposing severe jail time and even confiscating ill acquired wealth will raise the cost of engaging in corruption and discourage such behavior. The effect can be shown as a shift of the MC curve to the left. Therefore, even if there is no discernible way of affecting the MB of corruption the underlying policy will make corruption less desirable. However, beyond enacting laws, punishing the corrupt, as well as creating more transparent institutions, the government could also appeal to society's moral, ethical and spiritual values to reduce corruption. Such actions may raise social consciousness and reduce corruption. As observed by Collier (2002) raising moral norms, increasing the risks of punishment and creating new institutions with stronger incentives to be honest may reorient society's expectations. The

effect is to raise the MC of corruption and reduce the level of corrupt practices. Therefore, one of the criteria in evaluating effectiveness of policies is on the basis of marginal cost and marginal benefit. That means any policy that discourages corrupt practices by raising its marginal cost should be implemented and the less effective policies should be discontinued and new ones adopted instead. Hence government institutions should be empowered to monitor, enforce and prosecute the corrupt. Otherwise corruption will thrive unabated and will be engrained in society.

### **Conclusion and Recommendation**

Several policy instruments have been used to curb and eradicate corruption such as creating new institutions that are meant to monitor and enforce the law. Other efforts include criminalizing corruption through the legislative process, improving efficiency in tax collection including the process of monitoring tax collection, closing tax loopholes and instituting a more transparent tender granting process for major government projects. Further holding bureaucrats accountable including politicians where corrupt practices are detected. Lastly, government may impose jail and monetary penalty as tools of deterring corruption. Where such policy tools have had discernible success in eradicating corruption, they are in essence the first best and leads to low levels of corruption. Such is the case in most developed countries where accountability and transparency in carrying out public policy are upheld. In such situation the optimal policy which is the first best policy solution is easily attainable.

However, in developing and emerging economies accountability and transparency are rarely embraced as indispensable part of public policy. The outcome has therefore resulted in more incidence of corruption due to vague deterrent mechanism and weak institutions. However, where there is commitment to fight corruption the outcome is evident especially in the transformation of the country. Deshazo (2007) observes that although Chile ranks high internationally in eradicating corruption, locally the perception is that there is high level of corruption in the government circles. In the case of Indonesia, World Bank (2003) report indicates that there has been renewed effort to introduce strong anticorruption measures by creating new anticorruption institutions,

prosecuting corruption cases and creating accountability framework that yields the desired result.

Further, a case can be made that Kenya, Uganda and Tanzania presents a mixed success in their anticorruption programs. In Uganda there are measures of progress in establishing legal and institutional structures. However, Chene (2009) observes that there are challenges in implementation of anticorruption measures due to weak law enforcement in Uganda. As far as Kenya is concerned, IMF (2008) observes that the country has not lived up to its stated commitment to fight corruption. Actually, in last ten years the Kenya Anticorruption Commission Agency (KACA) has failed to live up to its mandate. To a greater extent the agency has been a revolving door of new commissioners and directors being appointed and laws being changed whenever the legislators are uncomfortable with the policies of the agency. Hence instability has resulted on many corruption cases going unprosecuted or thrown out of court for lack of prosecutorial evidence. Similar examples prevail in Tanzania where anticorruption agency, Prevention of Corruption Bureau (PCB), is given power to investigate but has limited prosecutorial power. Chene (2009) notes that from 2000 to 2004, only 357 cases were prosecuted resulting in 48 convictions out of a pool of 9,507 reports of corruption in Tanzania. Some of these short comings can be traced to the lack of resources or failure to commit resources to fight corruption

Three strategies have been used in an attempt to reduce corruption: economic, legal, and political. In many cases the enacted policy may not realize the set goals due to economic, social and political constraints. Therefore, policy tools should take into account the discernible constraints that inhibit the success of a given policy. The strategic change may then call for the government to result into the second best policy option and not necessarily the first best due to the prevailing constraints. Such a policy is supported by the presence of externalities. The underlying theme in corruption debate can be summed up as follows: strong institutions, effective legal structures, transparency and accountability, are effective tools in fighting and eradicating corruption. Further, consistent evaluation of corruption policy through marginal analysis will gauge the success of a given policy.

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