

## Corruption and Tax Revenues: New Evidence from Some Developing Countries

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**Abstract:** Corruption usually harms all aspects of macroeconomic performances of all countries around the World especially the developing world. The purpose of the present paper is to investigate the impact of corruption on government tax revenues in developing countries. To do so, we have concentrated on a sample of 27 developing countries for which the necessary data were available for the period 2002-2006. We have also used a composite index of corruption called Corruption Perception Index (CPI). CPI varies from zero (highest level of corruption) and 10 (lowest level of corruption). Our findings based on panel data regression models indicate that in general a positive relationship between CPI and tax revenues exists and it is statistically significant coefficient in the (TAX/GDP) equation. In other words, the higher is the corruption the lower will be the tax ratios. Therefore, developing countries implementing tax reforms aimed at improving the tax system in their countries must necessarily take into account the corruption phenomenon and at the same time try to use policies reducing corruption.

**Key words:** Corruption Perception Index; CPI; Tax Revenues; Developing countries; Panel Data.

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### INTRODUCTION

In recent years, and especially in the 1990s, a phenomenon broadly referred to as corruption has attracted a great deal of attention. In countries developed and developing, large or small, market-oriented or other wise, governments have fallen because of accusations of corruption, prominent politicians (including president of countries and prime ministers) have lost their official positions, and, in some cases, whole political classes have been replaced. For example, see Johnston (1997). Corruption is not a new phenomenon. Two thousand years ago, Kautilya, the Corruption, defined as the misuse of public office for private gain, has attracted a great deal of attention in recent years. Many international and regional organizations now regard corruption and poor governance as major obstacles to good policy-making. The existing tax system may be regressive if tax inspectors tend to go after poorer taxpayers rather than rich ones. Evidence that countries with high level of corruption tend to have lower collection of tax revenues in relation to GDP. Previous studies of corruption and tax collection have addressed the effect of corruption on the level of taxation and not on its composition. Some taxes are self-assessed in some countries (e.g. income taxes), some are assessed by tax inspectors, hence, they are subject expected to use his or her authority on those activities on which it is easier to collect bribes. Indeed, corruption may alter the government revenue. The first one is the total amount of government revenue decreases as corruption reduces tax revenue if it contributes to tax evasion, improper tax exemptions or weak tax administration (e.g. Tanzi (1998) and Tanzi and Davoodi (1997)). It is possible to conclude that corruption may reduce the government revenue as it contributes to reduce the tax revenue over GDP. In addition, a country with a higher level of corruption imposes greater taxes on international trade as a source of the government revenue, corruption increases tax evasion and tax collection costs. The fiscal crises experienced by several DCs in the past three decades underscored the importance of an adequate level of taxation as the main source of mobilizing resources to pay for government spending. A number of studies examined the link between the level of taxation (defined as the tax revenue-GDP ratio, or TAX/GDP) and various aspects of development to explain why (TAX/GDP) was relatively low in DCs. The extent of corruption in an economy can affect both the tax revenue level and mix (see, for example, Ghura, 1998; Tanzi and Davoodi, 2000). Corruption in tax assessment and collection tends to be a more serious problem when the tax base is harder

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to observe (for example, some types of income and profits), or taxpayers can negotiate tax payments with tax administrators who have excessive discretionary power to assess the amount of taxes due (for example, in the case of property taxes). Other factors that tend to encourage fiscal corruption include complicated tax laws and the necessity for frequent contacts between tax collectors and taxpayers (Tanzi,1998). Since various tax types differ with respect to these factors, they tend to be differently affected by a given level of corruption. Moreover, to the extent corrupt tax collectors drive some businesses into the informal sector and investment and growth are adversely affected by corruption, tax revenues from the profits of small owner-operated businesses and taxes on goods and services tend to shrink.

## **2- CPI and Tax Revenues: Empirical Studies:**

In this section, we review some major recent studies of relationship between corruption and tax revenue in DCs. However, the main conclusion of most studies supported the positive impact of CPI on tax revenue of developed as compared to developing countries. Leuthold (1991) examined determinants of (TAX/GDP) in a panel of eight African countries over the period 1973-81. The results, based on the OLS estimation method, indicated that the share of agriculture depressed the level of taxation while the share of foreign trade raised it in a statistically significant way. These relationships were robust to the decomposition of total tax revenue into direct and indirect taxes. Stotsky and Wolde Mariam(1997) analyzed the relationship between (TAX/GDP) and the sectoral composition of the value added, the overall level of industrial development, the share of the international trade sector, and the IMF-supported programs in a sample forty-three sub-saharan African countries during 1990-95. The authors employed both fixed-and random-effects specifications and found that the level of taxation was negatively impacted by the shares of agriculture and mining and positively so by the share of exports and the level of per capita income. Ghura (1998) introduced several new variables including those representing macroeconomic policies and the extent of corruption to explain variations in the level of taxation in a sample of thirty-nine sub-saharan African countries over the period 1985-96. The results indicated that the tax- GDP ratio across the countries of the sample was significantly and adversely affected by the inflation rate and the extent of corruption. Vito Tanzi (1998) discussed in an article entitled corruption around the world, issues related to the causes, consequences, and scope of corruption, and possible corrective actions. Study findings indicate that corruption was affect on tax revenue and has a negative effect on investment, GDP and wages variables and as with increasing public costs leads to budget deficit and reduce level of welfare. Making transparent tax and tax structural reform can be reduce negative effects on corruption to some extent. Tanzi and Davoodi (2000) attempted to empirically assess the effect of an index of corruption on the total(tax and non-tax) revenue level and mix using a sample of (up to) ninety countries over the period 1980-97. In addition to the corruption index, the only other explanatory variables included were real per capita income and the shares in GDP of agriculture and trade. Their findings suggested that corruption had a significant negative effect on government total tax revenue, but not on its non-tax revenue component. Within the total tax revenue portion, corruption had a larger negative impact on direct taxes as a group compared with indirect taxes. Fisman and Svensson (2002) analyzed effect of corruption on firms growth Using statistical data on 243 firms in 14 different industries in Uganda during the years 1997-1995. The results of method Ordinary Least Squares (OLS) shows that corruption reduces the firms growth, this long term will be reduce government tax revenue. Jinyoung Hwang (2002) traces out the impacts of corruption on government revenue based on cross-country data consisting of 41-66 countries and four years 1980, 1985,1990 and1995 for which were largely dictated by the availability of data, such as corruption indices and government revenue. Five alternative corruption indices (CI), which represent the degrees of corruption or questionable payments in business transactions, are used in this paper. It is identified, by using cross-national evidence, that several corruption indices are positively and significantly associated with the taxes on international trade over current government revenue. Moreover, corruption is negatively and significantly related to the domestic tax revenue as well as total amount of government revenue over GDP. Agbeyegbe *et al.* (2004) estimated equations for the total tax revenue and taxes on income, international trade, and goods and services(all as ratios of GDP) for a sample of twenty-two countries of the sub-saharan Africa over a period covering 1980-96. The authors focused on the effect of trade liberalization or openness equations specified in this study did not constitute system, the results provided only a partial only a partial picture of the effects of the variables of interest on the tax revenue mix. Imam and Jacobs (2007) in a study using panel data method based on Generalized Method of Moments (GMM) investigated the effect of corruption on tax revenues in 12 countries in the Middle East region during the period 2003-1990. The results suggest that taxes on business and personal tax income compared to other taxes are higher under the negative effects of corruption, as well as indirect taxes compared to direct taxes show severe reaction than Corruption. Saeid Mahdavi (2008) in the investigation on the subject "The Level and

Composition of Tax Revenue in Developing Countries" specified models for total tax revenue and its components and estimated them using an unbalanced pooled data based on Generalized Method Of Moment(GMM) system set which consists 769 annual observation for 43 countries over the period1973-2002.A general finding is that some variables affect both the level and composition of total tax revenue while other affect its components in opposite directions rendering their net effects on the revenue level statistically insignificant.

**3- Model, data, and estimation methodology:**

We study the case of 27 developing countries and use annual data for the 2002-2006 periods. This time period and frequency is largely dictated by the availability of data on CPI. Data on TAX/GDP is the ratio of tax revenues to GDP(percent),CPI, GDP per capita, Inflation, AGR is the ratio of agriculture value added to GDP(percent), IND is the ratio of sum industry and service value added to GDP (percent) are from WDI.We have also used a composite index of CPI called Corruption Perception Index (CPI). The Corruption Perception Index is an e-index based on 17 different types of votes by 10 organizations that are independent of transparency international organizations, have been achieved. Financial corruption, includes several subject in connection with the matter of the Trade and Development. Since this index is based on subjective perceptions may not indicate the actual level of corruption in the country. Index range is between zero and 10 so zero represents the maximum amount of corruption and 10 shows there is minimum corruption in the country.

The basic model is estimated on panel data for 27 developing countries and the sample period is 2002-2006.

$$\frac{TAX_{it}}{GDP_{it}} = \alpha_i + \alpha_1 CPI + \alpha_2 Y + \alpha_3 AGR + \alpha_4 IND + \alpha_5 open + \epsilon_{it} \tag{1}$$

The variables (for country i and time t):

CPI is corruption perception index.

Y is GDP per capita.

AGR is the ratio of agriculture value added to (% of GDP).

IND is the ratio of sum industry and service value added to (% of GDP).

Open is the ratio of exports and imports (trade) to (% of GDP).

In general a regression model of panel data is as follow:

$$Y_{it} = \alpha_{it} + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + U_{it} \quad U_i = \mu_i + V_{it} \tag{2}$$

Where  $E(U_i)$  and have constant variance.  $\mu_i$  include Fixed Effects that show difference between individual, households or countries especial characteristic.

$$V_{it} \text{ is residual term that: } V_{it} \approx IID(0, \delta_v^2) \tag{3}$$

First we test heterogeneous between units by F-statistic. If null hypothesis is n't accepted, we use panel data. Null hypothesis is:

$$H_0 : \mu_1 = \mu_2 = \dots = \mu_N = 0$$

$$H_0 \neq H_1$$

$$F = \frac{\frac{(RRSS - URSS)}{(N-1)}}{\frac{URSS}{(NT - N - K)}} \sim F_{[(N-1), (NT - N - K)]} \tag{4}$$

RRSS: Restrict Residual sum Squares

URSS: Unrestricted Residual sum Squares

N= numbers of units

K= numbers of Parameters

Then for choice between Fixed Effect (F.E) and Random Effect (R.E) models we used Hausman Test:

$$H=(b_s-B_s) (M_I-M_0)^{-1} (b_s-B_s) \approx \chi^2 (r)$$

Where  $r$ = number of parameters,  $M_I$ = covariance matrix for coefficients of F.E model ( $b_s$ )

$M_0$ = covariance matrix for coefficients of R.E model ( $B_s$ )

In Hausman test null hypothesis show Fixed Effect. In according above tests we run the regression Whit Random effect model (EGLS method). Table 1 presents the pool EGLS (cross-section weights) regression results.

**Table 1:** Impact of corruption index on the tax revenues

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.00679	1.120407	18.74924	0.0000
CPI	0.949972	0.153094	6.205176	0.0000
OPEN	0.971242	0.906021	1.071987	0.2862
Y	0.000102	6.57E-05	1.550359	0.1241
AGR	-0.516236	0.024279	-21.26249	0.0000
IND	-0.034855	0.003522	-9.895088	0.0000

**Table 1:** Impact of corruption index on the tax revenues (Continued)

		Effects Specification	
		Cross-section fixed (dummy variables)	
		Weighted Statistics	
R-squared	0.990824	Mean dependent var	26.45541
Adjusted R-squared	0.988062	S.D. dependent var	30.03792
S.E. of regression	1.057025	Sum squared resid	115.0821
F-statistic	358.7694	Durbin-Watson stat	1.537804
Prob(F-statistic)	0.000000	Unweighted Statistics	
R-squared	0.952999	Mean dependent var	15.41063
Sum squared resid	127.7703	Durbin-Watson stat	1.416284

**4- Findings and concluding Remarks:**

Based on regression results in table 1 the estimated parameters coefficient of CPI in equation (1) is positive and significant. GDP per capita is positive but it is significance at 12 percent level .The coefficient of the ratio of agriculture value added to GDP is negative and significant. The coefficient of the ratio of sum of industry and service value added to of GDP is negative and significant. The coefficient of the ratio of exports and imports (openness) to GDP is positive but it is not significance at even 10 percent level. In general a positive and significance relation between CPI and tax revenues exists in the countries under consideration. Therefore, reforms aimed to improve the tax system in these countries are suggested.

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