

PAKISTAN SOCIETY OF DEVELOPMENT ECONOMISTS

**CORRUPTION AND INCOME INEQUALITY:
A Panel Data Analysis**

Muhammad Aman Ullah

M.Phil Student

Quaid-i-Azam University
Islamabad, Pakistan

economist_21@yahoo.com

Dr. Eatzaz Ahmad

Chairman

Department of Economics
Quaid-i-Azam University
Islamabad, Pakistan

22nd ANNUAL GENERAL MEETING

December, 2007

**PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS
P.O. Box 1091, Quaid-i-Azam University Campus
Islamabad (Pakistan)**

Table of Contents

1:	Introduction.....	1
2:	Theoretical and Empirical Background.....	4
3:	Framework of Analysis.....	8
4:	Description of the Data.....	10
5:	Results and Discussion.....	12
6:	Conclusion and Recommendations.....	18
	References.....	20
Appendix I:	Data Set for Generalized Method of Moment	22
Appendix Ia:	Data Set for Random Effects Model.....	23
Appendix II:	Descriptive Statistics of Regression Variables.....	24
Appendix III:	Corruption, Income Inequality and Economic Growth.....	25
Table 5.1.	The GMM Estimates of the Relationship between Income Inequality and Corruption.....	16
Table 5.2.	The Random Effects Estimates of the Relationship between Income Inequality and Corruption.....	17
Figure 4.1.	Gini index and Corruption index.....	12
Figure 5.1.	Relationship between Corruption and Economic Growth.....	15

**CORRUPTION AND INCOME INEQUALITY:
A Panel Data Analysis**

ABSTRACT

This paper demonstrates the relationship between corruption and distribution of income, using panel data for seventy one developed and developing countries. Corruption not only affects income growth but also the distribution of income. The analysis reveals that Income inequality has been shown to be harmful to economic growth, so if corruption increases income inequality, it will also reduce economic growth and thereby exacerbate poverty. A central message of corruption and income inequality relationship suggest that corruption has significant distributional implications and, given its negative efficiency implications, should be considered harmful to both growth and equity. Therefore, policies that reduce corruption will also improve income distribution.

1. Introduction

"One of the biggest curses from which Sub-continent is suffering, I do not say that other countries are free from it, but, I think our condition is much worse, is bribery and corruption. That really is a poison. We must put it down with an iron hand."

(Quaid-i-Azam)

Economists, historians, and political scientists have long been engaged in a debate as to whether, and to what extent, corruption affects income growth. The prevailing view is that corruption disrupts economic activity by imposing costs that distort efficient allocation of resources. Perhaps surprisingly, some have argued that corruption can also sometimes be beneficial for the economy, by ‘oiling the wheels’ of bureaucracy [e.g. Leff (1964), Francis T. Lui (1985)].

Corruption can affect resource allocation in two ways. First, it can change (mostly) private investors’ assessments of the relative merits of various investments. This influence follows from corruption-induced changes in the relative prices of goods and services, and of resources and factors of production, including entrepreneurial talent. Second, corruption can result in resource misallocation when the decisions on how public funds will be invested, or which private investments will be permitted, are made by a corrupt government agency. The misallocation follows from the possibility that a corrupt decision-maker will consider potential ‘corruption payments’ as one of the decision criterion. Ranking of projects based on their social value may differ from ranking based on the corrupt income that the agent expects to receive.

The literature defines corruption as, “the abuse of public offices for private gains” [World Bank (1997), Transparency International (1998)]. Corruption has been identified

by the World Bank, the IMF, the United Nations and other international organizations as a major obstacle to development, economic growth and social and political stability. A large number of theoretical studies point to several channels through which corruption may adversely affect income, but as of yet, these theoretical investigations, although suggestive, have an empirical basis.

Over the past few years, economists have begun to study how the institutional framework of societies affects economic growth. The 1997 World Bank's World Development Report, for example, stated that without an honest state "sustainable development, both economic and social, is impossible". Similarly, Gray and Kaufman (1998) reported a survey in which high-ranking officials from more than sixty developing countries classified corruption as "the most severe impediment to development and growth.

On the international arena, the globalization of markets, finances, and numerous other transactions have expanded the opportunity of collusive and concealed transactions, including between the various non-state players and the "host" governments and their representatives. Multinational companies are for instance buying concessions, preferences and monopolies; kickbacks are offered on tenders, loans and contracts; and development projects are sometimes eased through by including travels, computers and other fringe benefits for local officials.

Increasingly, corruption has become an elections issue in numerous countries. Moreover, corruption scandals helped unseat governments in Ecuador, Brazil, India, and Italy and have shaken long-entrenched ruling parties in Japan and Mexico. In Pakistan, the 1999 National Accountability Ordinance set up a new agency specifically to fight

corruption. In addition, the surge in privatization, especially in Latin America and Eastern Europe, has frequently been accompanied by corruption where political insiders were able to purchase state enterprises at prices far below-market values. The benefits from corruption are likely to accrue to the well-connected at the expense of the poor. Gupta *et al.* (1998) therefore argued that corruption increases income inequality, as measured by the Gini coefficient.

The decisive role of the state is reflected in most definitions of corruption, which will define corruption as a particular and perverted state-society relation. Corruption is conventionally understood and referred to as the private wealth seeking behaviour of someone who represents the state and public authority. It is the misuse of public resources by public officials, for private gains. The encyclopaedic and working definition used by the World Bank (1995), Transparency International (1998) and others is that corruption is *the abuse of public power for private benefit (or profit)*. Another widely used description is that corruption is a transaction between private and public sector actors through which collective goods are illegally converted into private (Heidenheimer *et al.* 1989:6). This point is also emphasized by Rose-Ackerman, who says corruption exists at the interface of public and private sectors (Rose-Ackerman 1978).

The main purpose of this paper is to increase the understanding of the relationship between corruption and income inequality using panel data. An attempt has, therefore, been made in the present study to understand the problem of corruption and income inequality, through empirical evidence and to offer policy recommendations based on findings.

The study proceeds by reviewing the existing literature on corruption and income inequality in Section 2. Framework of analysis is discussed in Section 3, while Section 4

provides detailed discussion on data issues. The empirical analysis of the results is carried out in Section 5. Finally, Section 6 summarizes the main findings of the study to offer policy recommendations.

2. Theoretical and Empirical Background

Several studies have demonstrated a relationship between corruption and income inequality. The theoretical foundations for this relationship are derived from rent theory and draw on the ideas of Ackerman (1978) and Krueger (1974), among others. Propositions include a) Corruption may create permanent distortions from which some groups or individuals can benefit more than others, b) The distributional consequences of corruption are likely to be more severe when corruption is persistent.

A World Bank study of poverty following the transition to a market economy in Eastern Europe and Central Asia (ECA) produced important findings concerning income distribution and corruption (World Bank, 2000). The study analyzes data on firms' perceptions of corruption and notes that more firms in ECA report that corruption is a problem than in most other geographic regions.¹ The authors analyze whether there is any apparent link within ECA, between corruption and measures of income inequality (World Bank, 2000). When Gini coefficients for income per capita are graphed against the Transparency International (TI) Corruption Perceptions Index (CPI), lower levels of corruption are seen to be statistically associated with lower levels of income inequality (the simple correlation coefficient is 0.72). Similar results are obtained using other measures of corruption. The authors add that closer examination of the links between corruption and

¹ Data are taken from the World Bank's Business Environment and Enterprise Performance Survey (BEEPS), and shows that 70% of firms in the CIS report that corruption is a problem, compared to 50% in Central and Eastern Europe, 40% in Latin America and 15% in OECD (World Bank, 2000).

income inequality show that the costs of corruption fall particularly heavily on smaller firms.

This report also examines the relationship between a particular type of corruption, namely the state capture, and income inequality. State capture describes the situation in which businesses have undue influences over the decisions of public officials. The report notes that differences in income inequality are greatest in those ECA countries where the transition has been least successful and where state capture is at its highest. In these countries, state capture has allowed large economic interests to distort the legal framework and policy-making process in a way that defeats the development of a market economy.² The report explores the relationship between state capture and income inequality through regression of the Gini coefficient on measures of state capture and other variables and finds that a higher degree of state capture is correlated with higher income inequality. The relationship holds even when controlling for political freedoms, location, and years under state planning (World Bank, 2000).

Gupta *et al.* (1998) conduct cross-national regression analysis of up to 56 countries to examine the ways that corruption could negatively impact income distribution and poverty. The study looked at the following relationships:

- Growth: Income inequality has been shown to be harmful to economic growth, so if corruption increases income inequality, it will also reduce economic growth and thereby exacerbate poverty.

² See generally World Bank 2000, *A Look at Income Inequality*, pp 139-170. The transition economies have been particularly vulnerable to state capture because of the socialist legacy of fused economic and political power.

- Bias in tax systems: Evasion, poor administration and exemptions favoring the well-connected potential tax payers can reduce the tax base and progressivity of the tax system, thereby increasing income inequality.
- Poor targeting of social programs: Extending benefits to well-to-do income groups or siphoning from poverty alleviation programs will diminish their impact on poverty and income inequality (and will tend to act as a regressive tax on the poor, enhancing income inequality).

Gupta *et al.* (1998) also examined these propositions through an income inequality model using Gini coefficient to measure income inequality. The model specifies the personal distribution of income in terms of factor endowments, distribution of factors of production and government spending on social programs. The model uses several indices of corruption and finds that the benefits from corruption are likely to accrue to the well-connected agents at the expense of the poor.

Davoodi *et al.* (1998) find that the impact of corruption on income distribution is in part a function of government involvement in allocating and financing scarce goods and services. The author further argue that corruption increases income inequality, as measured by the Gini coefficient. In a cross section of 37 countries, a significant positive impact of corruption on income inequality is found, while taking into account various other exogenous variables. When controlling for GDP per head, this impact remains significant at a 10 % level. The study concludes that deterioration in a country's corruption index of 2.5 points on a scale of 0 to 10 is associated with the same increase in the Gini coefficient as a reduction in average secondary schooling of 2.3 years. The authors test various

instrumental variables to ascertain whether the relationship between corruption and income inequality is not a case of reverse causality.

Davoodi *et al.* (1998) also investigate income growth of the bottom 20 per cent of population. While controlling for various influences, they report that growth of corruption exerts a significant and negative impact on this variable. However, since the perception of such levels of corruption may change quicker than the levels themselves, it is not certain that the variable which measures growth of corruption is soundly determined. But whether the causality actually moves in a direction from corruption to income inequality has been questioned by Husted (1999: 342-3), who argues that income inequality also contributes to high levels of corruption. This has also been suggested by Swamy *et al.* (1999). Moreover, both variables might be driven by cultural determinants. Acceptance of authority and low accessibility of people higher in hierarchy may increase income inequality and corruption at the same time.

Li *et al.* (2000) find that corruption affects the Gini coefficient in an inverted U-shaped way; that is, income inequality is low when the level of corruption is high or low, but income inequality is high when the level of corruption is intermediate. Corruption alone also explains a large proportion of the Gini differential across continents. Even after correcting for measurement errors and imposing a rich conditional information set, corruption retards economic growth. Corruption, however, does not explain much of the growth differentials across continents. In countries where asset distribution is less equal, corruption is associated with a smaller increase in income inequality and a larger drop in growth rates. Finally, authors conclude that corruption raises income inequality to a less extent in countries with higher government spending.

In addition, Mauro (1995 and 1997) finds that corruption especially reduces investment expenditures on health and education, which can be especially critical for the poor. Furthermore, corruption may direct health and education expenditures toward programs favoring the wealthy, such as substituting high technology medical equipment favoring the elite in place of widespread immunization programs benefiting the poor. Also, education expenditures may be channeled away from literacy programs and primary education and toward university education. Scholarships may also benefit the children of the well-connected.

3. Framework of Analysis

Corruption not only affects income growth but also the distribution of income. “The benefits from corruption are likely to accrue to the better connected individuals, who belong mostly to high income groups [Gupta *et al.* (2002, 23)]”. As Tanzi (1995) argues, corruption distorts the redistributive role of government. Since only the better connected individuals get the most profitable government projects, it is less likely that the government is able to improve the distribution of income and make the economic system more equitable. Nevertheless, there are only a couple of empirical studies (Li *et al.* 2000, Gupta *et al.* 2002) analyzing the effects of corruption on income distribution whereas theoretical studies are almost non-existent. Both of the empirical studies find that corruption increases income inequality significantly.

Theory and empirical results suggest that corruption impedes economic efficiency, which could slow or even shrink economic growth. Such slowing would adversely affect all income classes, especially the most vulnerable, the poor. Moreover, some wealthy and well connected citizens may attempt to influence government through

both legal (lobbying) and illegal (bribery and favoritism) means to tilt government expenditures and the incidence of taxes in their favor. To the extent that corruption fosters both tax evasion and exemptions favoring the wealthy and well-connected, it lowers tax revenues and makes the tax system less progressive. Also, government expenditures in real terms could shrink both because of the loss in tax revenue and also because corruption raises the cost of government programs.

As some of the studies points out, if corruption is significant, it is likely to affect a country's income distribution. In this paper we examine the impact of corruption on the income distribution, we also include a number of control variables to minimize the omitted variable bias. In income inequality regressions we include controls for education, trade, capital per worker, government expenditure, and population growth. The following model of income inequality will be tested.

$$\mathbf{Gini}_{it} = \beta_1 + \beta_2 \mathbf{Corr}_{it} + \beta_3 \mathbf{y}_{it} + \beta_4 \mathbf{Open}_{it} + \beta_5 \mathbf{Gpop}_{it} + \beta_6 \mathbf{Lsse}_{it} + \beta_7 \mathbf{Govt}_{it} + \beta_8 \mathbf{Ln}\left(\frac{\mathbf{K}}{\mathbf{L}}\right)_{it} + \beta_9 \mathbf{Gini}_{i,t-1} + \varepsilon_{3it}$$

Where:

\mathbf{Gini}_{it} = Gini index.

\mathbf{Corr}_{it} = Corruption index.

\mathbf{y}_{it} = Log of GDP per worker.

\mathbf{Open}_{it} = Indicator of external competitiveness, measured as trade to GDP ratio.

\mathbf{Lsse}_{it} = Secondary school enrollment rate (log form).

\mathbf{Gpop}_{it} = Growth rate of population.

$Govt_{it}$ = Government expenditure (as percentage of GDP).

$\ln\left(\frac{K}{L}\right)_{it}$ = Log of capital per worker.

$Gini_{i,t-1}$ = Lag of Gini index.

β 's are the coefficients of the variables and ε is the error term in the above equation. i and t represents the country index and the time index respectively.

4. Description of the Data

The study is based on a panel data set over the period 1984-2002 for 71 developed and developing countries. High income countries are categorized as developed countries and the countries that fall into the categories 'low income', 'lower middle income', and 'upper middle income' are developing countries according to the *World Development Report 2004*. An important advantage of using panel data is that these capture both time-series and cross-section variations in variables. The data are sourced from the publication of Political Risk Services "International Country Risk Guide" (ICRG), IMF's International Financial Statistics yearbook (2004), henceforth IFS, World Bank's World Development Indicators (2004) henceforth WDI.

The income inequality data are based on a new data set on the Gini coefficient, which is widely regarded as having the best inequality measure, developed by Deininger and Squire (1996). Three criteria are used to compile the data. First, all observations are based on national household surveys for expenditure or income. Second, coverage represents the national population. Third, all sources of income and uses of expenditure are accounted for, including own-consumption.

In order to analyze panel data, the study employs two data sets. The smaller one, dataset given in appendix I, contains 60 countries, both developed and underdeveloped. Dataset given in appendix Ia contains 71 countries. Country choice is constrained by the limited availability of data on policy variables and also by the limited availability of data on Gini coefficients for the appropriate years.³ Descriptive statistics for regression variables are given in appendix II.

In the given sample of seventy one countries, the country reported to have the lowest corruption is Sweden, which in 1984-2002 obtained grades of 12 out of 12 for all the bureaucratic efficiency indices we use. It also had the very low income inequality and highest real GDP per worker over the period 1984-2002. At the opposite extreme in 1984-2002, ICRG considered Nigeria as having the worst in institutions among the countries in the sample. According to PRS's consultants, corruption in Nigeria was rampant. Nigeria's Gini index has also been much high. During the same period Russia has lowest growth rate of GDP per worker (-2.2). Income inequality was highest in Zambia and it has lowest coefficient for Sweden during (1984-2002). A casual glance at the appendix III shows that richer countries tends to have low corruption than poorer countries, and that fast-growers also tend to be among the countries with a higher corruption index (low corruption).

Figure 4.1 plots the average of 1984-2002 ratings of the ICRG corruption index ranging from zero to twelve, with zero the most corrupt, against Gini coefficient. It looks quite obvious from the figure that the countries with high score on corruption index (less corruption) had low income inequality. Countries like, Nigeria and Zambia are more

³ On larger data set we used Random Effects Estimation, while on smaller data set Generalized Method of Moment is adopted.

corrupt and have high income inequality, while most of the European countries have high values of corruption index (less corruption) with low income inequality.

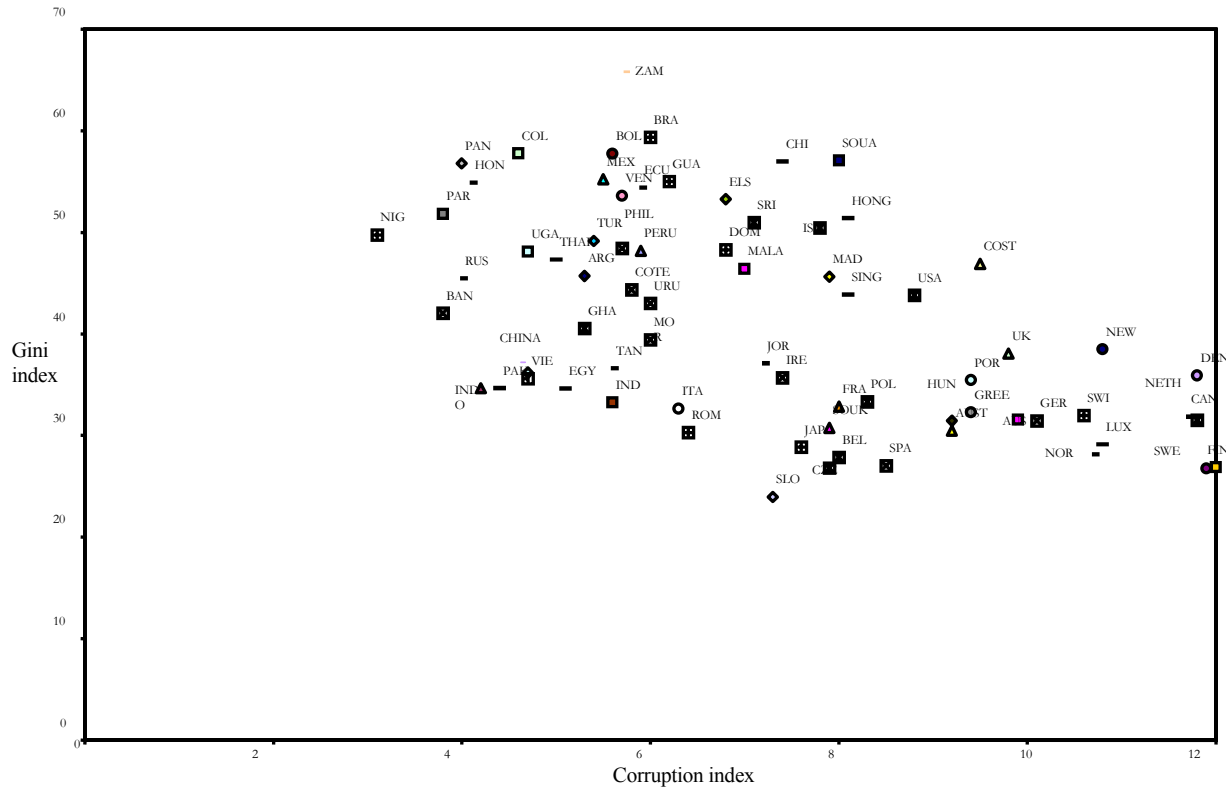


Figure 4.1: Gini index and Corruption index
 Corruption index is average of 1984-2002 from ICRG
 Gini coefficient is 1984-2002 average of Deininger and Squire Dataset.

5. Results and Discussion

The model of income Inequality is estimated using Generalized Method of Moment on panel country data for 1984-2002. (Results from Random Effect Model which is similar to the ones from GMM, are also reported). The income inequality regression is estimated using several specifications. In the first one (Table 5.1, column 1), the Gini coefficient is regressed on log of capital per worker, government expenditure,

log of secondary school enrollment rate, population growth, openness, log of GDP per worker and corruption index.

As regards the effect of corruption on income inequality, it is necessary to first specify the nature of the null and alternative hypotheses. In the absence of any theoretical evidence linking corruption to income inequality, the null hypothesis that corruption has zero correlation with income inequality needs to be tested against the alternative hypothesis of nonzero correlation. The two tailed test rejects the null hypothesis at the one percent significance level.

In all the specification the estimated coefficient of corruption index is negative and highly significant, indicating that corruption increases income inequality.⁴ The robustness of the results shows that higher corruption is indeed associated with higher income inequality at one percent level of significance. The magnitude of the effect of corruption on income inequality is considerable. It is equal to -0.362 in the specification when all control variables are included. A worsening in the corruption index of a country by one standard deviation (3.73 points on the scale of 0 to 12) is associated with an increase in Gini coefficient of about 1.38 percentage points (Table 5.1, Column 1). These results are consistent with the findings of Gupta *et al.* (1998).

Results in Table 5.1 also show that openness, GDP per worker and population growth is insignificant in column 1, 2 and 4. Although the coefficient on population growth and log of secondary school enrollment rate in column 1, 2 and 6 are significant, as theoretically expected, higher population growth rates also imply greater inequality, and higher educational attainment is associated with less inequality. The explanatory variables account for about 92 percent of cross-country variation in income inequality.

⁴ The corruption index is a value from 0 to 12. A low value represents more corruption.

Government expenditure, when added to columns 1 and 2 of Table 5.1, is found to have statistically significant effect on income inequality at the conventional levels. One percent increase in government expenditure would cause almost -0.27 percent decrease in income inequality. This result is consistent with the observations made by Gupta *et al.* (1998) and Alesina (1998).

The results also show that the coefficient of log of capital per worker in the income inequality equation is positive and statistically significant, indicating that capital growth has adverse effect on income inequality. The parameter estimate shows that one percent increase in log of capital per worker translates into around 1.7 percent increase in income inequality (Table 5.1). The lag of Gini coefficient is also positive and significant.

The results of the Random Effects estimation for nine different specifications are given in Table 5.2. In most of the specifications the estimated coefficient of corruption is negative and highly significant indicating that corruption increases income inequality. It is equal to -0.787 in the specification with all the control variables. Similar to the GMM estimation, the estimated coefficient of corruption index change drastically when we eliminate control variables. In REM estimation, coefficients of openness, log of GDP per worker and population growth are highly significant (Table 5.2).

Figure 5.1 plots the average Gini index against the average corruption index. The Gini coefficient is positively correlated with corruption. Countries with higher corruption tend to have high income inequality. Or, putting it differently, countries with low income inequality tend to have low corruption.

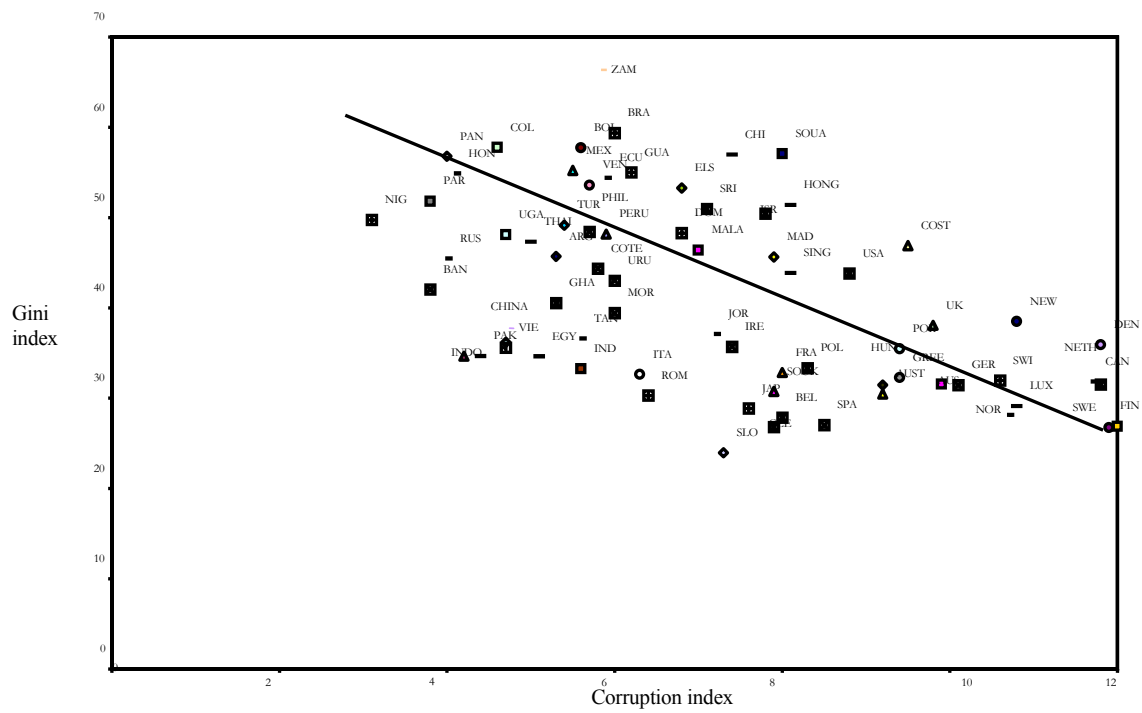


Figure 5.1: Relationship between Corruption and Income inequality

**TABLE 5.1: THE GMM ESTIMATES OF THE RELATIONSHIP BETWEEN
INCOME INEQUALITY AND CORRUPTION
(DEPENDENT VARIABLE IS GINI INDEX)**

Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Corruption	-0.362** (0.188)	-0.373** (0.185)	-0.352** (0.161)	-0.309** (0.162)	-0.296*** (0.100)	-0.266*** (0.097)	-0.263** (0.103)	-0.290** (0.132)	-0.311*** (0.117)
Log of GDP per worker				0.075 (0.234)					
Openness	-1.402 (1.561)	-1.313 (1.471)			-0.347 (0.600)				
Population growth	1.262 (1.122)	1.362 (1.082)				0.213* (0.0102)			
Log of secondary school enrollment rate	-3.251** (1.538)	-3.090** (1.497)	-2.249* (1.360)				-0.412 (0.591)		
Government expenditure	-0.286* (0.159)	-0.269* (0.150)	-0.132 (0.112)					-0.001 (0.064)	
Log of capital per worker	2.273 (2.146)	1.725** (0.772)	1.176* (0.664)						0.094 (0.210)
Gini (-1)	0.999*** (0.064)	0.996*** (0.060)	0.954*** (0.047)	0.978*** (0.030)	0.971*** (0.026)	0.963*** (0.028)	0.972*** (0.027)	0.976*** (0.029)	0.979*** (0.025)
Constant	-33.15* (18.869)	-28.46** (14.63)	-26.93** (12.597)	2.661 (2.280)	3.761** (1.782)	3.344** (1.562)	-0.656 (10.822)	3.308* (1.833)	2.386 (2.184)
N	969	969	969	969	969	969	969	969	969
Adj. R square	0.924	0.926	0.928	0.934	0.934	0.934	0.933	0.934	0.934

Note: Standard errors are in parentheses.

*Significant at 10%, **significant at 5%, ***significant at 1%.

**TABLE 5.2: THE RANDOM EFFECTS ESTIMATES OF THE RELATIONSHIP BETWEEN
INCOME INEQUALITY AND CORRUPTION
(DEPENDENT VARIABLE IS GINI INDEX)**

Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Corruption	-0.787*** (0.174)	-0.564*** (0.172)	-0.486*** (0.164)	-0.229*** (0.0815)	-0.254*** (0.085)	-0.243*** (0.083)	-0.900*** (0.148)	-0.248*** (0.081)	-0.189** (0.081)
Log of GDP per worker	-4.821*** (0.911)			0.215 (0.552)					
Openness	-1.174*** (0.502)	-1.624*** (0.503)			-0.629 (0.556)				
Population growth	3.580*** (0.887)	4.308*** (0.893)				0.003 (0.255)			
Log of secondary school enrollment rate	-7.651 (0.919)	-7.236*** (0.933)	-9.283*** (0.891)				-10.78*** (0.770)		
Government expenditure	-0.062 (0.059)	-0.122** (0.059)	0.017 (0.056)					0.148*** (0.052)	
Log of capital per worker	-3.177*** (0.913)	1.380*** (0.321)	1.214*** (0.299)						-1.129** (0.581)
Constant	-134.0*** (9.672)	-140.2*** (9.779)	-133.3*** (9.786)	40.31*** (5.224)	49.90*** (1.387)	42.44*** (1.182)	-96.51*** (11.314)	40.20*** (1.459)	53.25*** (5.932)
Number of countries	69	69	71	71	69	71	71	71	71

Note: Standard errors are in parentheses.

*Significant at 10%, **significant at 5%, ***significant at 1%.

6. Conclusion and Recommendations

The evidence from this study demonstrates the statistical importance of corruption in determining income inequality. The study finds that the relationship between corruption and income equality is considerably negative. A worsening in the corruption index of a country by one standard deviation (3.73 points on a scale of 0 to 12) increases the Gini coefficient by 1.3 percentage points. The empirical literature also suggests that highly corrupt countries have high income inequality, and our empirical results confirm it. In particular, when government spending is higher corruption is more harmful for economic growth.

A central message of corruption and income inequality relationship suggest that corruption has significant distributional implications and, given its negative efficiency implications, should be considered harmful to both growth and equity. Therefore, policies that reduce corruption will also improve income distribution.

The fight against corruption has to be multi-fronted. While laws and its enforcement are indispensable, countries serious about fighting corruption should also pay attention to reforming the role of government in the economy. To improve political process, role of devolution of power to grass roots — decision-making, monitoring, planning and execution would also help to curb this menace. Moreover, anti corruption strategy should be pluralistic and holistic where players in public sector, the corporate private sector, and civil society jointly share responsibility by addressing the issues of accountability, transparency, participation, openness and rule of law.

International pressure on corrupt countries, including criminalizing bribing foreign officials by multinational firms, is useful. But the success of any anti-corruption campaign ultimately depends on the reform of domestic institutions in corrupt countries.

Hong Kong, Portugal, and Singapore have demonstrated that corruption can be reduced significantly. Fighting corruption requires reducing corruption's benefits while raising its costs. Also, encouraging research and the dissemination of its findings can provide valuable direction to policy makers. Yet, in setting anticorruption goals, Rose-Ackerman (1997) cautions that attempting to completely eliminate it is unrealistic. To attempt to do so may be prohibitively expensive and may undercut personal freedoms and human rights. Furthermore, dishonest governments may use the guise of fighting corruption to punish political opponents. Thus, an effective anti-corruption strategy should:

(a) encourage the reduction of rents by means of economic liberalization, deregulation, tax simplification, de-monopolization and macroeconomic stability; (b) reduce discretion through administrative and civil service reform, including meritocratic recruitment and decentralization; (c) honest and visible commitment by the leadership to the fight against corruption. The leadership must show zero tolerance for it; and (d) increase accountability – by building up institutions such as auditing and accountancy units, through legal reforms such as judicial strengthening, by encouraging public oversight through Parliament and a more vibrant civil society.

References

- Alesina, A. and B. Weder (1998), “*Do corrupt governments receive less foreign aid?*”, NBER Working Paper No. 7108, Cambridge MA.
- Andvig, J. Fjeldstad, O. Amundsen, I. Sissener, T. and SØreide, T. (2000), “Research on Corruption: A Policy Oriented Survey”, *Norwegian Agency for Development Co-operation, (NORAD) Report 2000*.
- Barro, Robert J. (1997), *Determinants of Economic Growth: A Cross-Country Empirical Study*, 2nd edition MIT Press Cambridge, MA.
- Deininger, Klaus. and Lyn Squire, (1996), “A New Data Set Measuring Income Inequality”, *The World Bank Economic Review* 10, 565-91.
- Easterly, W. and Sergio Rebelo. (1993), “Fiscal Policy and Economic Growth: An Empirical Investigation,” *Journal of Monetary Economics*, 32: 417-458.
- Gray, Cheryl W. and Kaufmann, D. (1998), “Corruption and Development”, *Finance & Development*, 35 (March): pp. 7-10.
- Gupta, S. Davoodi, H. and Alonso-Terme, R. (1998), “*Does Corruption Affect Income Inequality and Poverty?*” IMF Working Papers 98/76.
- Huntington, Samuel P. (1968), *Political Order in Changing Societies*, Yale University Press: New Haven.
- Husted, (1999), “Wealth, Culture and Corruption”, *Journal of International Business Studies*, 30(2): 339-360.
- International Monetary Fund (2004), *International Financial Statistics 2004*, Washington, DC.
- Kaufmann, D. and Shang-Jin Wei (1998), “*Does "grease money" speed up the wheels of commerce?*”, NBER Working Paper, no. 7093 (April).
- Kaufmann, D. Kraay, A. and Zoido-Lobaton, P. (1999), “*Governance Matters*”, World Bank Policy Research Paper, no. 2196. Washington DC: World Bank.
- Krueger, Anne O. (1993), *Political Economy of Policy Reform in Developing Countries*, Cambridge, MA: MIT Press.
- Lambsdorff, Johann G. (1999a), “Corruption in international research – a review”, Transparency International, Working Paper, Berlin.

Leff, N. (1964), "Economic Development through Bureaucratic Corruption", *American Behavioral Scientist*, 8-14.

Levine, R. and Renelt, D. (1992), "A Sensitivity Analysis of Cross-Country Growth Regression", *American Economic Review*, 82: 942-963.

Li, H. Colin, L. and Zou, H-F. (2000), "Corruption, Income Distribution and Growth", *Economics and Politics*, 12(2): 155-181.

Lui, F. T. (1996), "Three Aspects of Corruption", *Contemporary Economic Policy*, 14(3): 26-29.

Lui, Francis T. (1985), "An equilibrium queuing model of bribery", *Journal of Political Economy*, 93(4): 760-81.

Mauro, P. (1995), "Corruption and Growth", *Quarterly Journal of Economics*, 110(3): 681-712.

Mauro, P. (2002), *The Effects of Corruption on Growth and Public Expenditure*, International Monetary Fund Working Paper.

Murphy, K. Shleifer, A. and Vishny, W. (1991), "The Allocation of Talent, Implications for Growth", *Quarterly Journal of Economics*, 106: 503-530.

Political Risk Services (2004), *International Country Risk Guide Dataset*, Available for purchase at <http://www.icrgonline.com>

Rose-Ackerman, S. (1975), "The Economics of Corruption", *Journal of Public Economics*, IV: 187-203.

Rose-Ackerman, S. (1978), *Corruption: A Study in Political Economy*, Academic Press.

Shleifer, A. and Vishny, Robert W. (1993), "Corruption", *The Quarterly Journal of Economics*, 108: 599-617.

Tanzi, V. (1995), "Corruption: arm's-length relationships and markets", in Gianluca Fiorentini and Sam Peltzman (eds.) *The Economics of Organized Crime*, Cambridge: Cambridge University Press, pp. 161-180.

Tanzi, Vito and Davoodi, H. (1997), *Corruption, public investment, and growth*, IMF Working Paper 97/139. Washington D.C.

World Bank (2004), *World Development Indicators 2004*, Washington, DC.

World Bank. (1997), *The State in a Changing World: World Development Report 1997*, Oxford: Oxford University Press.

APPENDIX I:

DATA SET FOR GENERALIZED METHOD OF MOMENT

1. Argentina
2. Australia
3. Austria
4. Bangladesh
5. Belgium
6. Bolivia
7. Brazil
8. Canada
9. Chile
10. China
11. Colombia
12. Costa Rica
13. Cote d' Ivory
14. Czech Republic
15. Denmark
16. Dominican Republic
17. Ecuador
18. Egypt
19. El Salvador
20. Finland
21. France
22. Germany
23. Ghana
24. Guatemala
25. Honduras
26. Hungary
27. India
28. Indonesia
29. Italy
30. Japan
31. Jordan
32. Malaysia
33. Mexico
34. Morocco
35. Netherlands
36. New Zealand
37. Nigeria
38. Norway
39. Pakistan
40. Panama
41. Paraguay
42. Peru
43. Philippines
44. Poland
45. Romania
46. Russia
47. Slovakia
48. South Africa
49. South Korea
50. Spain
51. Sri Lanka
52. Sweden
53. Switzerland
54. Tanzania
55. Thailand
56. Uganda
57. United Kingdom
58. United States Of America
59. Uruguay
60. Venezuela

DATA SET FOR RANDOM EFFECTS MODEL

1. Argentina
2. Australia
3. Austria
4. Bangladesh
5. Belgium
6. Bolivia
7. Brazil
8. Canada
9. Chile
10. China
11. Colombia
12. Cost e' Rica
13. Cote d' Ivory
14. Czech Republic
15. Denmark
16. Dominican Republic
17. Ecuador
18. Egypt
19. Elsalvador
20. Finland
21. France
22. Germany
23. Ghana
24. Greece
25. Guatemala
26. Honduras
27. Hong Kong
28. Hungary
29. India
30. Indonesia
31. Ireland
32. Israel
33. Italy
34. Japan
35. Jordan
36. Luxemburg
37. Madagascar
38. Malaysia
39. Mexico
40. Morocco
41. Netherlands
42. New Zealand
43. Nigeria
44. Norway
45. Pakistan
46. Panama
47. Paraguay
48. Peru
49. Philippine
50. Poland
51. Portugal
52. Romania
53. Russia
54. Singapore
55. Slovenia
56. South Africa
57. South Korea
58. Spain
59. Sri Lanka
60. Sweden
61. Switzerland
62. Tanzania
63. Thailand
64. Turkey
65. Uganda
66. United Kingdom
67. Uruguay
68. United States of America
69. Venezuela
70. Vietnam
71. Zambia

APPENDIX II:**DESCRIPTIVE STATISTICS OF REGRESSION VARIABLES**

Series	Mean	Standard Deviation	Minimum	Maximum
Corruption	7.29	3.73	0.0	12.0
Openness	0.80	0.56	0.12	4.72
Secondary school enrollment rate (log)	4.12	0.60	1.59	5.36
Growth rate of GDP	3.26	3.68	-14.53	18.83
Population growth	1.45	1.07	-1.70	11.83
Government expenditure (% GDP)	14.76	5.66	2.12	29.99
Gini index	40.37	10.15	19.70	67.71
GDP per worker (log)	9.02	1.49	5.83	11.37
Capital per worker (log)	9.92	1.56	6.47	12.55

APPENDIX III:

**INSTITUTIONAL EFFICIENCY, INCOME INEQUALITY AND ECONOMIC
GROWTH**

1984-2002 AVERAGE

Country Name	Gini index	GDP per worker growth	Corruption
Argentina	45.7	2.6	5.3
Australia	31.6	3.5	9.9
Austria	30.5	2.1	9.2
Bangladesh	42.1	4.8	3.8
Belgium	27.9	1.9	8.0
Bolivia	57.7	3.5	5.6
Brazil	59.4	2.5	6.0
Canada	31.8	2.8	11.7
Chile	57.0	5.9	7.4
China	36.2	9.7	4.7
Colombia	57.8	2.4	4.6
Cost e' Rica	46.9	4.7	9.5
Cote d' Ivory	44.3	1.9	5.8
Czech Republic	26.8	0.6	7.9
Denmark	35.9	2.2	11.8
Dominican Republic	48.3	5.5	6.8
Ecuador	54.4	2.3	5.9
Egypt	34.6	4.2	5.1
Elsalvador	53.3	4.2	6.8
Finland	26.9	2.0	12.0
France	32.8	1.8	8.0
Germany	31.5	1.7	10.1
Ghana	40.5	4.3	5.3
Greece	32.3	2.6	9.4
Guatemala	55.0	3.8	6.2
Honduras	54.9	3.2	4.1
Hong Kong	51.4	4.1	8.1
Hungary	31.4	1.3	9.2
India	33.2	5.4	5.6
Indonesia	34.7	4.3	4.2
Ireland	35.7	7.1	7.4
Israel	50.5	4.4	7.8
Italy	32.6	1.5	6.3
Japan	28.9	1.3	7.6
Jordan	37.1	5.1	7.2
Luxemburg	29.1	4.9	10.8
Madagascar	45.6	0.9	7.9

APPENDIX III: (Continued)

Country Name	Gini Index	GDP per Worker Growth	Corruption
Malaysia	46.4	6.4	7.0
Mexico	55.2	3.0	5.5
Morocco	39.4	2.8	6.0
Netherlands	31.5	2.6	11.8
New Zealand	38.5	3.0	10.8
Nigeria	49.8	2.4	3.1
Norway	28.1	3.3	10.7
Pakistan	34.6	3.7	4.4
Panama	56.8	4.4	4.0
Paraguay	51.8	1.7	3.8
Peru	48.2	3.8	5.9
Philippine	48.4	3.2	5.7
Poland	33.3	3.3	8.3
Portugal	35.5	2.5	9.4
Romania	30.3	-0.6	6.4
Russia	45.5	-2.2	4.0
Singapore	43.9	6.4	8.1
Slovenia	23.9	1.1	7.3
South Africa	57.1	2.0	8.0
South Korea	30.7	6.0	7.9
Spain	27.0	2.6	8.5
Sri Lanka	51.0	4.6	7.1
Sweden	26.7	1.9	11.9
Switzerland	32.0	0.8	10.6
Tanzania	36.6	3.5	5.6
Thailand	47.3	4.5	5.0
Turkey	49.2	3.1	5.4
Uganda	48.1	6.6	4.7
United Kingdom	38.1	2.3	9.8
Uruguay	43.0	1.4	6.0
United States of America	43.8	2.9	8.8
Venezuela	53.6	1.3	5.7
Vietnam	35.6	7.5	4.7
Zambia	64.2	1.3	5.8