

Corruption and Economic Development Nexus: Variation Across Regions and Income Levels

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Abstract

Corruption includes a broad range of issues and takes many different forms. This paper examines the variations in corruption across regions and by income categorisation of high-income, middle-income and low-income countries. In examining the factors that contribute to corruption the study extends the analysis in estimating these effects for 100 countries. Using panel data estimations for the period 1995 to 2004 the results show several factors that impact corruption and that these effects differ in terms of classification of countries by regions and income groups. The results remain robust under alternative panel estimations.

Keywords: Corruption, Economic Development, Regional and Country Studies

JEL classification: D72, O1, O5

Paper to be presented at the New Zealand Association of Economists Annual Conference, James Cook Grand Chancellor, Wellington, 1st to 3rd July, 2009.

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1. Introduction

Corruption includes a broad range of issues and takes many different forms. The existing literature recognizes broadly three types of corruption in a democratic society. First, the political corruption refers to the acts of the political leaders by which they exploit their power to make economic policies. Second, bureaucratic corruption refers to the corrupt acts of the bureaucrats in their dealings with either their superiors or with the public. Third, the legislative corruption is found to be thriving in electoral democracies. It has been noted that corruption leads to poor economic performance, especially in the context of developing economies.¹ As it is one of the most severe bottlenecks in the process of economic development, little empirical analysis has been taken to measure its impact by income classification, regional bases and which factors explain the causes of corruption. Given that cross-sectional comparative empirical research is fairly uncommon, this paper examines the variations in corruption across regions and income categorisation of high-income, middle-income and low-income countries.

The study examines the social and economic determinants of corruption and its implications on economic development. It contributes to the existing literature in three different ways. First, it analyses what economic, social and political factors are the causes of corruption. In addition to real GDP per capita various variables are identified, such as education, income inequality, unemployment, type of state, and economic freedom. Second, the variations in corruption are examined across regions in order to explain whether corruption is endemic to particular regions or countries. Third, the relationship between economic development and corruption is investigated by categorising countries into low-income, middle-income and high-income groups, in line with the international practice. In examining the factors that contribute to corruption the study extends the analysis in estimating these effects for 100 countries using the panel data estimations for the period 1995 to 2004.

In examining various hypotheses by income classifications and regions we attempt to first answer if corruption is lower in more economically developed countries and/or higher in developing countries. The second question addresses the effects of various social factors, i.e.

¹ See Rose-Ackerman (1978), Klitgaard (1988), Mauro (1995), Knack and Keefer (1995), Bardhan (1997) and Brunetti et al., (1998) for details.

level of literacy and education, inequality and unemployment. Next, we examine whether corruption is lower in democratic countries and by income classifications and regions. A brief overview of corruption issues is presented next followed by Section 3 that outlines empirical models, data and methodology. Section 4 discusses the results with conclusions in the final section.

2. Corruption: A Brief Overview

The current literature classifies corruption as grand corruption and petty corruption (Jain, 2001). Grand corruption generally refers to the corrupt act of the political elite at the highest levels of society, whereas petty or administrative corruption refers to corruption in ordinary people's daily lives, such as bribes paid for licences or traffic violations. Some of the recent studies present cross-sectional analysis of the causes of corruption that explain the historical and cultural traditions, level of economic development, political institutions, and government policies to address those challenges (Triesman, 2000, Sandholtz and Koetzle, 2000).

Corruption exists in many forms, also there are alternative denotations of economic corruption (Bardhan, 1997). The centralized and decentralized corruption, described by Shleifer and Vishny (1993) note that in the centralized corruption bribe per unit is less even though total amount of bribe paid may be larger. In the decentralized corruption bribe per unit of transaction is higher but the total amount of revenue collected from bribe is less. In the decentralized system an individual monopolist supplier drives the quantity sold down so far that the total revenues collected from the bribes fall. Another useful distinction is made by Mauro (1998) between well-organized corruption and chaotic corruption. Under the well-organized corruption bribers have a clear idea of whom they need to bribe and how much to bribe to obtain a favor. In contrast, under the chaotic corruption people are not sure how much to pay and to whom payment is to be made and more uncertainty is involved in the delivery of service and payment of further bribe.

Like different forms of corruption, there are different levels of corruption. Rose-Ackerman (1999) and Cheung (1998) consider the idea of bottom-up and top-down corruption. Bottom-up corruption refers to a setting in which corruption decisions are decentralized at the level of lower officials. In this form of corruption, the senior most persons or the chief of state is simply one among many collectors of bribes. Whereas the top-down refers to a setting in

which corruption decisions are centralized by the chief of state, who then monitors lower-level officials in an attempt to collect bribes.

Political and bureaucratic corruption differentiates with reflections on the causes and consequences of corruption. For example, the effect and nature of corruption by political leaders are not the mirror image of bureaucratic corruption as they bureaucrats possess different nature and level of power. Corrupt politicians exploit their power to make economic policies. As elected official, politicians are supposed to make resource allocation decision based solely upon the interests of their principal – the populace. Instead, corrupt-political elite can change the national policies to serve its own interests to remain in power at some cost to the populace (Jain 2001). On the other hand, corrupt bureaucrats exploit their power to extract bribes or payments while carrying out tasks assigned to them by their superiors - the political elite. In addition, there are different variations of bribes that constitute bureaucratic corruption. Rose-Ackerman (1998) identifies three sub-category of bribe for bureaucratic corruption, i.e. bribes that equate demand and supply, bribes as incentive payments for bureaucrats and bribes that lower costs. Kaufman (1997) notes in the case of India that officials in India, it appears, cannot always speed up bureaucratic processes, but can promise to slow down the approval process of rival companies, for example.

The other issue pointed out in the literature is why in some countries the cases of corruption are so persistent than others. The liberal economists argue that it is the regulatory state with its elaborate system of permits and licenses that spawns corruption, and different countries with different degrees of insertion of the regulatory state in the economy that give rise to varying amounts of corruption (Bardhan, 1997). In contrast, sociologists argue that social norms are very different in different countries. What is corrupt in one society may be a part of routine transaction in another. Furnivall (1948) in examining why Burma was so corrupt relative to the British standards concluded that Burmese were simply following their customary norms of correct conduct. Some of the activities most praised in capitalist economies such as private investment and accumulation of resources are regarded as corrupt in a communist system (Montias and Rose-Ackerman, 1981). What is lawful and what is unlawful depends on the country and social culture in question (Klitgaard, 1988). A major problem in this explanation is that it merely states that a country has more corruption because its norms are more favourable to corruption.

The general consensus is that poor countries are more corrupt than rich countries. Countries where incomes are relatively low create certain structural incentives for corrupt behaviours. Sandholtz and Koetzle (2000) point out that because of high marginal value of money in poor countries, any extra income affects both givers and takers of bribes. Paying a bribe can be a worth expenses if it creates opportunities for higher income gains. Likewise, receiving a bribe generates direct boost in income. On the other hand, high incomes of government officials make corruption more costly in terms of job loss due to the risk of getting caught. Thereby, corruption will be higher in poor countries and lower in rich countries.

The level of education can be the important explanatory variable in explaining the variations in corruption across developed and developing nations. Education helps to generate moral values against corruption. Hauk and Saez-Marti (2002) examine in an overlapping generations model with intergenerational transmission values that if young generations are educated to adopt a moral attitudes against corruption, high fines or monitoring can be reduced while low corruption levels are perceived. Educating the young is a key element in reducing corruption successfully. High level of education also fosters a sense of nationalism and civic duty in the citizenry. It also raises the public's awareness of their rights and duties. Generally, most of the citizens in developing countries are not aware of their public entitlements. The ignorance of general public provides opportunities for the high levels of corruption in developing countries. Thus, corruption will be lower where populations are more educated and literate.

Income inequality can increase the level of corruption because with the increased inequality, the richer people have greater resources for paying bribes to buy public services both legally and illegally (Glaeser, Scheinkman and Shleifer, 2003). You and Khagram (2005) point out that the wealthy have both greater motivation and more opportunity to engage in corruption, whereas, the poor are more vulnerable to extortion and less able to monitor and hold the rich and powerful accountable as inequality increases. Moreover, countries where inequality is high, the large number of poor people are more likely to be deprived of basic public-services and hence they are more likely to rely on petty corruption. Accordingly, inequality fosters perception of widespread corruption.

In developing countries unemployment and underemployment rate is high. The demand for stable sources of income is high, so, to secure an earning position with stability and reasonable income opportunities, people are willing to make huge investments. The study on

the process of buying and selling civil service positions in Indonesia by Kristiansen and Ramli (2006) reveals that prices for positions are rising and vary among departments in accordance with available opportunities to boost the income. Thus a high level of unemployment can help explaining the observed variations in corruption, particularly in developing countries.

There is a growing consensus that more democracy means less corruption. However, the generally observed increase in corruption levels in transitional economies is not consistent with the view that democracy has a negative impact on the level of corruption. Moreover, some countries experienced less corruption although they do not enjoy a liberal political environment. Thus, it raises an interesting question as to whether democracy can reduce corruption. However, several studies have found that democracy tends to reduce corruption (Sandholtz and Koetzle, 2000; Montinola and Jackman, 2002; Sung, 2004; Bohara et al., 2004). In democracies, freedom of expression, association and press lead to closer monitoring which in turn increase the risk of exposure of unjust activities. Accordingly, it is expected that democracy prevents corruption.

Like political liberalisation, many nations have stimulated economic liberalisation for curbing corruption, as an environment of regulation provides opportunities and incentives for rent seeking behaviour. More regulation means firms enjoy higher rents, and the bureaucrats with control rights over them have higher incentives to engage in corrupt behaviour. In this context, Ades and Di Tella (1999) argue that the lack of product market competition offers greater potential gain to public officials of countries with large endowments of natural resources such as fuels, minerals and metals, and this promotes corruption. Thus, it is the expectation that competition and corruption are negatively related.

3. Models, Data, and Methodology

The models, data and the methodology used to estimate the hypotheses are presented in this section to explain the levels of variations in corruption across countries and regions. Similar to most past empirical work in the corruption literature, the dependent variable corruption is measured by corruption perception index. The base model is formed by incorporating economic, social and institutional variables, i.e. right-hand side variable. These include real per capita GDP to focus on the influence of per capita income on corruption, gini coefficient (that measures income inequality), unemployment rate, tertiary level of education, and adult

literacy rate that examines the effect of social factors, and democracy and economic freedom variables that reflect the institutional impact.

The base model specification takes the following form:

$$CPI_{i,t} = \beta_0 + \beta_1 \log (RGDP)_{i,t} + \beta_2 GINI_{i,t} + \beta_3 UNEM_{i,t} + \beta_4 ALR_{i,t} + \beta_5 LED_{i,t} + \beta_6 DEMO_{i,t} + \beta_7 EF_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where CPI is corruption perceptions index,
 RGDP is the real per capita GDP,
 GINI is the gini coefficient for measuring income inequality,
 UNEM is the unemployment rate,
 LED is the tertiary level of education,
 ALR is the adult literacy rate,
 DEMO is a democracy index,
 EF is an economic freedom index,
 i is country,
 t is time, and
 ε is error term.

Given the theoretical explanation in the economics and political science, as noted above, the signs of the coefficients β_1 , β_4 , β_5 , β_6 and β_7 in equation (1) are expected to be negative whereas the signs of β_2 and β_3 are expected to be positive. The base model shown above is extended to incorporate regional and income classification of countries. The extended models allow us to ascertain whether the estimated relationships between corruption and other explanatory variables are robust across alternative model specifications, and whether they provide additional evidence on the effects of the other variables themselves on corruption across regions and income-group of countries.

Estimating the level of corruption by regions and income classifications of countries are expressed in equations (2) and (3), respectively, as follows:

$$CPI_{i,t} = \beta_0 + \beta_1 \log (RGDP)_{i,t} + \beta_2 GINI_{i,t} + \beta_3 UNEM_{i,t} + \beta_4 ALR_{i,t} + \beta_5 LED_{i,t} + \beta_6 DEMO_{i,t} + \beta_7 EF_{i,t} + \beta_8 \text{Asia} + \beta_9 \text{Latin America} + \beta_{10} \text{Africa} + \beta_{11} \text{Middle East} + \beta_{12} \text{East Europe} + \mu_{i,t}, \quad (2)$$

$$CPI_{i,t} = \beta_0 + \beta_1 \log (RGDP)_{i,t} + \beta_2 GINI_{i,t} + \beta_3 UNEM_{i,t} + \beta_4 ALR_{i,t} + \beta_5 LED_{i,t} + \beta_6 DEMO_{i,t} + \beta_7 EF_{i,t} + \beta_8 \text{Middle-income countries} + \beta_9 \text{High-income countries} + v_{i,t}, \quad (3)$$

where μ and v are the error terms.

The dependent variable in this study is a subjective measure of corruption based on the perceptions of corruption.² Transparency International's (TI) annual corruption perceptions index (CPI) is used as a principal measure of corruption.³ The TI data set is regarded as most reliable for cross-national comparisons and covers a large number of countries. The original ranking of CPI has been converted to a scale from 0 (least corrupt) to 10 (most corrupt) for simplicity, consistency with other variables and the ease of exposition. For consistency of CPI data the number of countries used in the estimations is 100 nations for the period 1995 to 2004.

The explanatory variables RGDP, GINI, UNEM, DEMO, EF, LED and ALR are obtained from Groningen Growth and Development Centre (2004), World Institute of Development Economic Research (2004), World Income Inequality Database, Political Risk Services Group (2004), Heritage Foundation (2005) and World Bank (2005). Following Nelson and Singh (1998), democracy index (DEMO) is the average of political rights and civil liberties indices, which has been re-scaled from 0 to 10 as that of economic freedom index, i.e. higher values represent higher levels of democracy and economic freedom. The EF variable is included as a control variable to measure the impact of amount of regulation on economic activities in a country on corruption.⁴ Descriptive statistics of the variables are summarized in Appendix Table A1 and the list of the countries included in the models is shown in appendix Table A2.

The panel estimation methodologies are utilised based on equation (1) and (2) to evaluate the hypotheses for the period 1995 to 2004. As the effect of economic development on corruption is likely to be long term, it is useful to use a longer period rather than single year estimation. Also, the analysis of variance (ANOVA) of CPI values show that variation between countries explained 68 percent of the total variation whereas, 33 percent variation is within countries over time. The evidence supports the use of panel estimations in the analysis.

² The major obstacles to the comparative study of corruption have been the lack of a general definition of corruption and the absence of objective cross-national data on corrupt behaviour.

³ The definition of corruption in the study is consistent with the definition of TI. This index has been most commonly used in the empirical studies in the literature of corruption, see for example, Ades and Di Tella (1997); Johnson et al. (1998); Sandholtz and Koetzle (2000); Treisman (2000), Montinola and Jackman (2002); Gupta, Davoodi and Alonso-Terme (2002); Ali and Isse (2003); Chowdhury (2004); You and Khagram (2005); and Emerson (2006).

⁴ Economic freedom is equally weighted index based on eight individual freedoms: business freedom, trade freedom, monetary freedom, freedom from government, fiscal freedom, property right, investment freedom and financial freedom. We have taken out freedom from corruption component from the original economic freedom index constructed as corruption is the dependent variable in the study.

To avoid the problems of panel data cross-country analysis that generate clusters or groups leading to the problems in statistical interference, following Moulton's (1986, 1990) studies we utilise cross-section standard errors corrected regressions methodology for the estimations of the models.⁵ This allows for general correlation of observations within a cross-section or cross section heteroskedasticity. In addition, the robustness checks for the period standard errors corrected and generalised least square estimates have been computed.⁶

4. Estimated Results

The results for the relationship between corruption and real GDP per capita, and other economic and institutional factors of the panel least squares (PLS) techniques are reported in Tables 1 and 2. The equations perform well in terms of model diagnostics and indicate no concern. The conventional tests show a relatively high explanatory power of the models. First, the results for all countries and regions are discussed (subsection 4.1) followed by three groups of countries based on income classification (subsection 4.2).

4.1. Panel estimation results for all countries and by regions

The regression results of the base model (equation 1), with corruption perception index as the dependent variable are reported in Table 1. The coefficient of log (RGDP) has the expected negative sign and is significant at 1 percent level (column 1). This indicates that real GDP per capita has a dampening effect on the level of corruption. A one standard-deviation increase in log (RGDP) reduces the CPI by 2.09 points, approximately 79 percent of a standard deviation of this index. The result explains more than three-quarter of the variation in the corruption levels between countries in the sample.

Interestingly, the sign of the coefficient of adult literacy rate is positive and highly significant. It indicates that a one standard-deviation increase in the literacy rate increases corruption by 0.753 points, or 28 percent of a standard deviation in the corruption perception index.⁷ This suggests that literacy leads to corrupt activity in a more efficiently and secret manner. The

⁵ Moulton (1986, 1990) studies examined the issue of clusters and statistical interference problems and notes that when the explanatory variables in a regression model are drawn from the population with grouped structure, the regression errors are often correlated within grouped structure and fails to account for correlation of errors within groups, thus it can result in spurious regression in estimating the effects of the variables.

⁶ Results of these two methodologies not reported here are available from the authors on request.

⁷ Throughout the results show that adult literacy rate significantly increases the level of corruption with an exception where regional dummies are included. It is worth noting that raw data present a group of countries with very high level of corruption and literacy rates, such as Albania, Azerbaijan, Belarus and Bosnia. In contrast, only Bangladesh represents a high level of corruption and a low level of literacy.

coefficient of tertiary level education is negative and significant at the 1 percent level, indicating that countries with high levels of tertiary education have lower corruption. A one standard-deviation increase in tertiary education decreases corruption by 0.316 points, or 12 percent of a standard deviation in the CPI.⁸ Income inequality and unemployment coefficients are positive (as expected) and significant at the 1 percent level, suggesting that higher income inequality and unemployment increase corruption. A one standard-deviation increase in gini index and unemployment increase corruption by 0.260 points and 0.256 points, respectively.

The result for democracy coefficient shows a direct relationship between democracy and perceived corruption level, the coefficient is positive and significant at the 1 percent level.⁹ A one standard-deviation increase in democracy increases corruption by 0.288 points, or 11 percent of a standard deviation in the corruption perception index. The positive sign of the democracy coefficient suggests that corruption level increases with an expansion of democracy which is consistent with the generally agreed high levels of corruption in transition countries. This result differs from recent empirical findings of Goldsmith (1999); Sandholtz and Koetzle (2000); Treisman (2000); Montinola and Jackman (2002); Ali and Isse (2003); Sung, (2004); and Bohara et al., (2004). However, the result confirms the findings of Ades and Di Tella (1999), they note that political rights had no significant impact on corruption. This can be supported by countries such as India, Hong Kong and Singapore that provides some contradictory relationship between democracy and perceived corruption.

The coefficient of economic freedom confirms the expected sign and is significant at the 1 percent level. A one standard-deviation increase in the economic freedom index reduces corruption by 1.561 points, or 58 percent of a standard deviation in the corruption perception index. The magnitude of the coefficient is much larger in comparison with democracy. The result supports the findings of Ades and Di Tella (1997, 1999); Sandholtz and Koetzle, (2000); and Emerson, (2006) that economic freedom and perceived corruption are negatively related. With the economic and social variables, democracy and economic freedom explain more than 75 percent of the variations.

⁸ The result is consistent for the case of India. The raw data for the level of education suggests that the average value of the level of education variable equals 9.68 in India, which is far less than the average value of 31.41 of the variable. Also, India experiences a higher level of corruption with an average value of CPI of 7.22.

⁹ The estimation results fail to find the beneficial effects of democracy on corruption. Noticeably, countries such as Hong Kong and Singapore show the existence of low level of corruption and very low level of democracy. On the other hand, India presents a high level of corruption with a high level of democracy. The result deserves closer scrutiny and further research to examine the relationship between democracy and corruption.

Column (2) shows the regression results across regions based on equation (2). The estimated results of the regional dummy variables indicate higher level of corruption in Asia, East Europe and Latin America. The estimated coefficients of these regional dummies are positive and significant at the 1 percent level. In particular, the result is crucial for Asia and East European countries as the coefficients are substantially larger for these two regions. The results clearly reflect that problem of corruption is more serious in Asia and East European countries compared to other regions. Notwithstanding of the results, it is noted that the estimated coefficient for Africa is negative and statistically significant at the 1 percent level. The results obtained in column (4) for the economic, social and institutional variables are similar to the estimated results in column (3) except the sign of the coefficient of literacy rate which is negative but insignificant. The result suggests that in developing countries literacy rate may help to reduce corruption level.

Table 1 Economic and Social Determinants of Corruption

	(1)	(2)	(3)
Log RGDP	-0.881*** (0.022)	-0.573*** (0.043)	-0.608*** (0.035)
Literacy Rate	0.028*** (0.002)	-0.005 (0.003)	0.019*** (0.002)
Level of Education (Tertiary)	-0.010*** (0.002)	-0.014*** (0.001)	-0.007*** (0.001)
Gini index (inequality)	0.040*** (0.003)	0.051*** (0.003)	0.022*** (0.005)
Unemployment Rate	0.013*** (0.005)	0.018*** (0.003)	0.013*** (0.005)
Democracy	0.086*** (0.013)	0.0855*** (0.018)	0.087*** (0.013)
Economic Freedom	-0.751*** (0.021)	-0.621*** (0.016)	-0.652*** (0.021)
MICs			0.325*** (0.079)
HICs			-1.222*** (0.081)
Asia		1.085*** (0.082)	
Latin America		0.606*** (0.10)	
Africa		-0.404*** (0.128)	
Middle East		-0.084 (0.131)	
East Europe		1.709*** (0.122)	
Constant	12.458*** (0.254)	11.116*** (0.375)	11.237*** (0.343)
Adjusted R^2	0.757	0.811	0.787
Observations	982	982	982

Notes: White Heteroscedasticity corrected standard errors are in parenthesis.

***, **, * indicate significance level at the 1 percent, 5 percent and 10 percent, respectively.

Based on the estimated equation (3) by income classification, Column (3) reports the results for middle-income countries (MICs) and high-income countries (HICs) groups in comparison to that of low income countries (LICs).¹⁰ The results depict a strong correlation between economic development and perceived corruption. The coefficient of HICs has the expected negative sign whereas the coefficient of MICs is positive. High-income countries are perceived to be less corrupt than low-income countries. However, the middle-income countries are perceived to be more corrupt than low-income countries. Column (6) presents the impact of previous year's corruption on the current level. It is noted that African countries are less corrupt than Organisation for Economic Co-operation and Economic Development (OECD) countries and middle-income countries are more corrupt than low-income group of countries. These results provide evidence against the claim that economic growth lowers corruption. To examine the results more rigorously the next subsection analyses the relationship between real GDP per capita and corruption separately for LICs, MICs and HICs.

4.2. The relationship between per capita income and corruption in LICs, MICs and HICs

In order to examine the impact of corruption by income classification of low-income, middle-income and high-income group of countries equation (1) is re-estimated for each group for the period 1995-2004. The estimation results are presented in Table 2. Column (4) shows the estimates of the base specification for the low-income countries. The sign of the coefficient of log (RGDP) is positive and significant at the 10 percent level. The positive sign indicates that the level of corruption increases with income. The result supports the evidence presented in column (2) and (3) that African and low-income countries are less corrupt. The coefficients of the other economic variables retain the expected signs and significance at the conventional levels. Interestingly, the sign of the democracy index is negative and highly significant. This indicates that the expansion of democracy lowers corruption in the low-income countries.

Columns (5) and (6) show the results for the middle-income and high-income countries, respectively. The estimated coefficient of log (RGDP) is significant and has the expected negative sign for both the MICs and HICs groups. The magnitude of the coefficient is highly greater for the HICs suggesting that a high-income nation of the developed group of countries reduces corruption significantly with a greater degree than the MICs. Figure 1 shows the

¹⁰ The LICs, MICs and HICs are based on World Bank classification of countries by income group. See World Development Indicators database, World Bank 2008 for details.

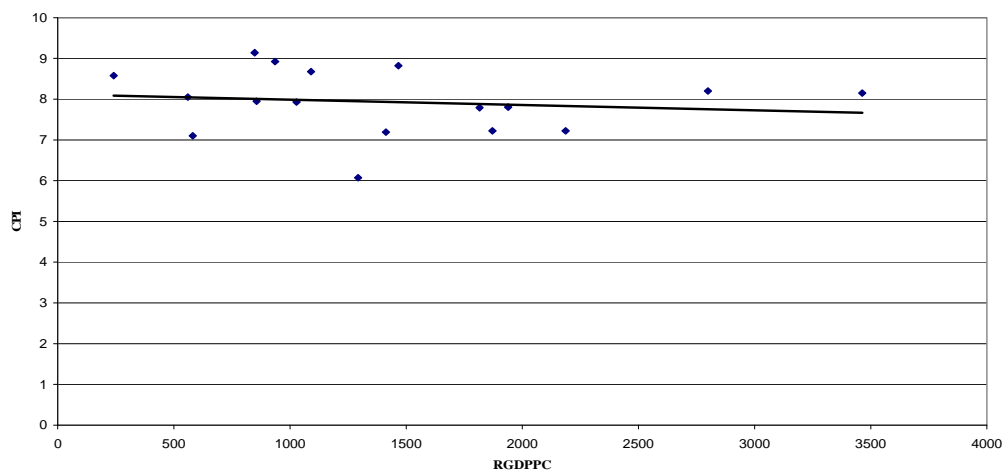
scatter plots of the relationship between real GDP per capita and corruption for LICs, MICs and HICs. The negative relationship is observed for the middle-income and high-income countries and the slope of the regression line is steeper for high-income countries in comparison with middle income countries. Contrarily, low-income countries do not support the evidence of the negative relationship between the level of income and corruption.

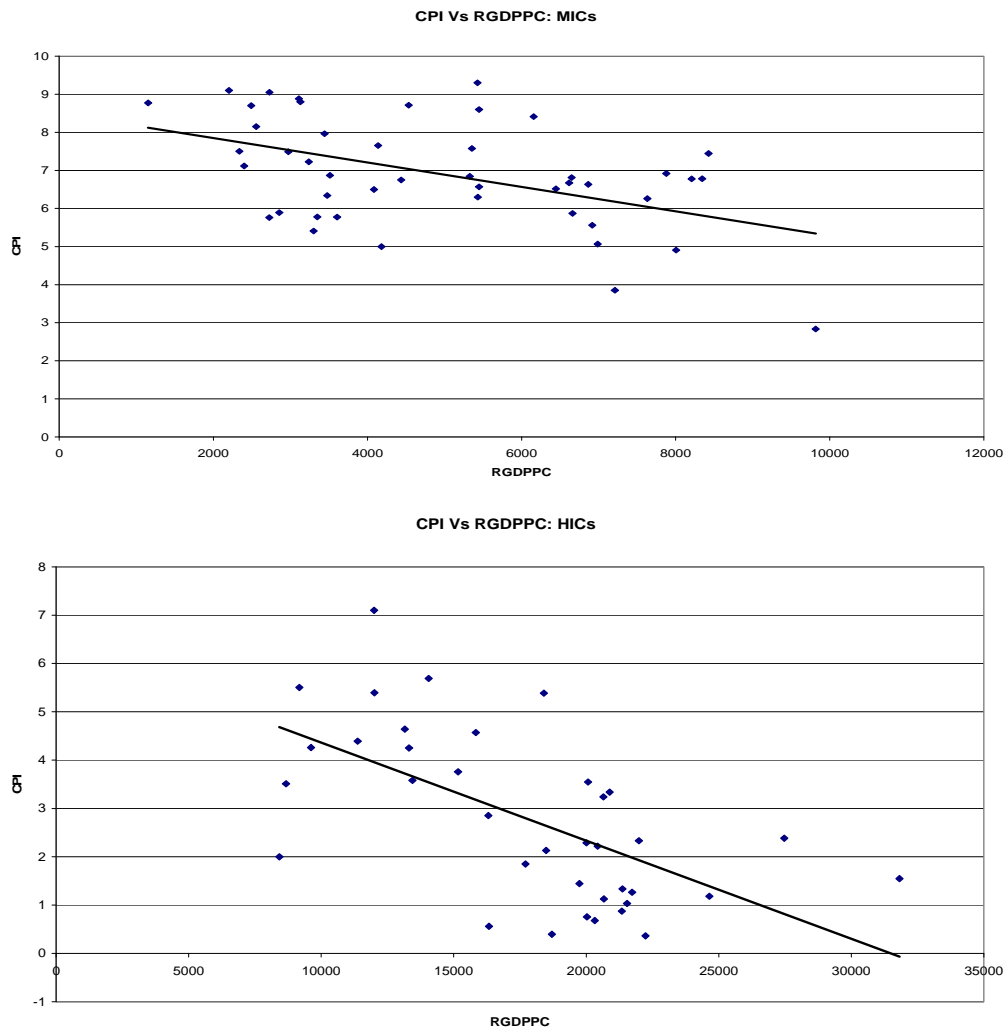
Table 2 The Relationship between RGDP per capita and Corruption for LICs, MICs and HICs

	(4) LICs	(5) MICs	(6) HICs
Log RGDP	0.142* (0.074)	-0.715*** (0.092)	-2.158*** (0.194)
Literacy Rate	0.004** (0.002)	0.038*** (0.002)	0.073*** (0.009)
Level of Education (Tertiary)	-0.016* (0.009)	0.004 (0.003)	-0.025*** (0.003)
Gini	0.051*** (0.012)	-0.004 (0.004)	0.107*** (0.005)
Unemployment Rate	0.016*** (0.003)	0.010 (0.008)	0.008 (0.009)
Democracy	-0.068*** (0.019)	-0.030 (0.024)	0.208*** (0.021)
Economic Freedom	-0.134*** (0.049)	-0.543*** (0.036)	-0.652*** (0.049)
Constant	4.817*** (0.969)	11.838*** (0.783)	17.149*** (1.433)
Adjusted R^2	0.263	0.548	0.587
Observations	170	460	370

Notes: White Heteroscedasticity corrected standard errors are in parenthesis. ***, **, * indicate significance level at the 1%, 5% and 10% respectively.

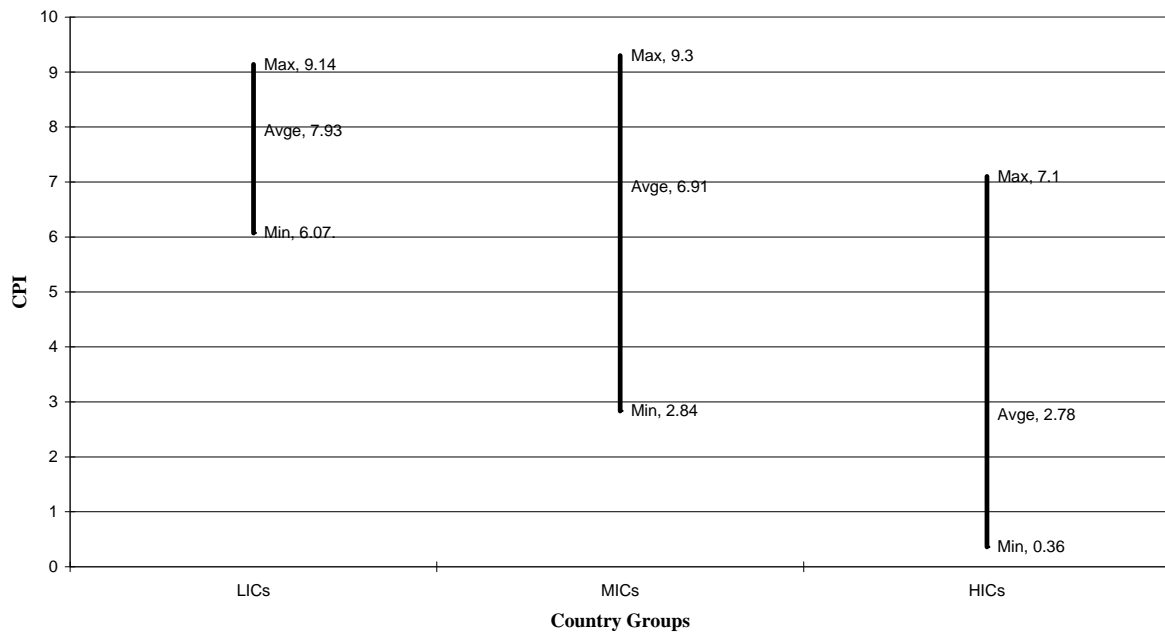
Figure 1 RGDP per capita and CPI for LICs, MICs and HICs
CPI Vs RGDP: LICs





Inspection of the range of the CPI values for the LICs, MICs and HICs suggest that the maximum CPI score for MICs is greater than the maximum CPI score of LICs (Figure 2). Moreover, the range of the CPI score is higher for the MICs and HICs. Furthermore, the minimum CPI score of LICs is far greater than MICs and HICs. This evidence might explain that the low-income countries do not generate sufficient income to control the high level of corruption. In addition, a small increase in income does not inflate the cost of being corrupt which in turn reduces the level of corruption. Even an increase in income increases the opportunity of further corruption. The results suggest that there is a possibility of an existence of a non-linear relationship between the level of income and corruption. In other words, in the early stages of economic development an increase in income encourages corruption whereas in the mature stages of economic growth an increase in income reduces the level of corruption.

Figure 2 Range of CPI in LICs, MICs and HICs



5. Conclusion

This paper presents empirical evaluation on the causes of corruption across countries by income and regional classifications. Various economic, social and political factors examine the impact on corruption. Corruption is found to be negative and significantly correlated with real per capita GDP, tertiary education and economic freedom. These factors suggest that corruption decreases as countries become mature where higher education and economic freedom reduce corruption levels. In contrast, various social, economic and political factors affect corruption positively. Corruption rises significantly with unemployment, income inequality, and literacy rate; however, interestingly democracy also increases corruption.

In terms of regional perspective of the level of corruption it is seen that higher levels of corruption are in Asia, East Europe and Latin America compared to that of African region. Based on the income classification groups of nations the results depict a strong correlation between economic development and perceived corruption. The high-income countries are less corrupt compared to low-income countries while the middle-income countries are perceived to be more corrupt than low-income countries. Furthermore, African countries are less corrupt than high-income and middle-income countries that are more corrupt than low-income group of countries. These results provide evidence against the claim that economic growth lowers

corruption. As higher education reduces corruption effort should be directed to the establishment of good education and decentralization of economic powers aimed at curbing corruption.

Reference

- Ades, A. and Di Tella, R. (1997). "The New Economics of Corruption: A Survey and Some New Results." *Political Studies*, 45(Special Issue), 496-515.
- Ades, A. and Tella, R. D. (1999). "Rents, Competition, and Corruption." *The American Economic Review*, 89(4), 982-993.
- Ali, A. M. and Isse, H. S. (2003). "Determinants of Economic Corruption: A Cross-Country Comparison." *Cato Journal*, 22(3), 449-466.
- Bardhan, P. (1997). "Corruption and Development: A Review of Issues." *Journal of Economic Literature*, 35(3), 1320-1346.
- Bohara, A. K., Mitchell, N. J., and Mittendorff, C. F. (2004). "Compound Democracy and the Control of Corruption: A Cross-Country Investigation." *The Policy Studies Journal*, 32(4), 481-499.
- Brunetti, A., Kisunko, G., & Weder, B. (1998). Credibility of rules and economic growth:evidence from a worldwide survey of the private sector. *The World Bank Economic Review*, 12(3), 353-384.
- Cheung, S. (1998). "The Curse of Democracy as an Instrument of Reform in Collapsed Communist Economies." *Contemporary Economic Policy*, 16(2), 247-249.
- Chowdhury, S. K. (2004). The Effect of Democracy and Press Freedom on Corruption: An Empirical Test. *Economic Letters*, 85, 93-101.
- Emerson, P. M. (2006). "Corruption, Competition and Democracy." *Journal of Development Economics*, 81, 193-212.
- Freedom House (2006). Freedom in the World: Political Rights and Civil Liberties, 1972 through 2006, <http://www.freedomhouse.org/uploads/fiw/FIWAIScores.xls>.
- Furnivall, J. S. (1948). *Colonial Policy and Practice: A Comparative Study of Burma and Netherlands India*. Cambridge, England: Cambridge University Press.
- Glaeser, E., Scheinkman, J., and Shleifer, A. (2003). "The Injustice of Inequality." *Journal of Monetary Economics*, 50, 199-222.
- Goldsmith, A. A. (1999). "Slapping the Grasping Hand: Correlates of Political Corruption in Emerging Markets." *American Journal of Economics and Sociology*, 58, 865-883.
- Groningen Growth and Development Centre (GGDC). Faculty of Economics, University of Groningen, Netherlands: GGDC available at: <http://www.ggdc.net/homeggdc.html>.
- Gupta, S., Davoodi, H. and Alonso-Terme, R. (2002). Does corruption affect income inequality and poverty? *Economics of Governance*, 3(1), 23-45.
- Hauk, E. and Saez-Marti, M. (2001). "On the Cultural Transmission of Corruption." *Journal of Economic Theory*, 107(2), 311-335.
- Heritage Foundation (2006). Washington DC, USA: The Heritage Foundation available at: <http://www.heritage.org/index/>.
- Jain, A. K. (2001). "Corruption: A Review." *Journal of Economic Surveys*, 15(1), 71-121.
- Kaufman, D. (1997). "Economic Corruption: the Facts." *Foreign Policy*, 107, 114-131.
- Klitgaard, R. (1988). *Controlling Corruption*. Berkeley, CA: University of California Press.
- Knack, S., & Keefer, P. (1995). Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures. *Economics and Politics*, 7(3), 207-227.

- Kristiansen, S. and Ramli, M. (2006). "Buying an Income: The Market for Civil Service Positions in Indonesia." *Contemporary Southeast Asia*, 28(2), 207-233.
- Mauro, P. (1998). "Corruption and the Composition of Government Expenditure." *Journal of Public Economics*, 69(2), 263-279.
- Mauro, P. (1995). "Corruption and Growth." *Quarterly Journal of Economics*, 110(3), 681-712.
- Montias, J. M., and Rose-Ackerman, S. (1981). "Corruption in a Soviet-type Economy: Theoretical Considerations." In S. Rosefielde (Ed.), *Economic Welfare and the Economics of Soviet Socialism: Essays in Honor of Abram Bergson*. Cambridge, England: Cambridge University Press.
- Montinola, G. R., and Jackman, R. W. (2002). "Sources of Corruption: A Cross-Country Study." *British Journal of Political Science*, 32(1), 147-170.
- Moulton, B. R. (1990). An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units. *The Review of Economics and Statistics*, 72(2), 334-338.
- Moulton, B. R. (1986). Random Group Effects and the Precision of Regression Estimates. *Journal of Econometrics*, 32, 385-397.
- Nelson, M. A., & Singh, R. D. (1998). Democracy, Economic Freedom, Fiscal Policy, and Growth in LDCs: A Fresh Look. *Economic Development and Cultural Change*, 46(4), 677-696.
- Rose-Ackerman, S. (1999). *Corruption and Government: Causes, Consequences and Reform*. Cambridge: Cambridge University Press.
- Rose-Ackerman, S. (1998). "Corruption and Development." *Annual World Bank Conference on Development Economics 1997*, 35-57.
- Rose-Ackerman, S. (1978). *Corruption: A Study in Political Economy*. New York: Academic Press.
- Sung, H.-E. (2004). "Democracy and Political Corruption: A cross-national comparison." *Crime, Law and Social Change*, 41, 179-194.
- Sandholtz, W., and Koetzle, W. (2000). "Accounting for Corruption: Economic Structure, Democracy, and Trade." *International Studies Quarterly*, 44(1), 31-50.
- Shleifer, A., and Vishny, R. W. (1993). "Corruption." *Quarterly Journal of Economics*, 108(3), 599-617.
- PRS Group, (2005). Political Risk Services, East Syracuse, New York: The PRS Group available at: <http://www.prsgroup.com/>.
- Transparency International (2005). Corruption Perception Index (CPI). Berlin, Transparency International: http://www.transparency.org/policy_research/surveys_indices/cpi/2005.
- Treisman, D. (2000). "The Causes of Corruption: A Cross-National Study." *Journal of Public Economics*, 76(3), 399-457.
- World Institute of Development Economic Research (2004). World Income Inequality Database. Helsinki, Finland: WIDER World Income Inequality Database available at: <http://www.wider.unu.edu/wiid/wiid.htm>.
- World Bank (2005). *World Development Indicators*. Data on CDROM, Washington DC.: World Bank.
- You, J.-S., and Khagram, S. (2005). "A Comparative Study of Inequality and Corruption." *American Sociological Review*, 70(February), 136-157.

Appendix Table A1: Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
ALR	87.812	95.74	100	33.59	16.311	1000
CORR	5.553	6.3	10	0	2.6693	1000
DEMO	3.938	3.33	10	0	3.3526	1000
EF	5.173	5.13	10	0.725	2.0791	1000
GINI	38.557	37.55	63.7	20	8.9703	1000
LED	31.408	27.75	89.5	0	21.037	1000
RGDP	9102.44	6463	36341	204	7702.2	1000
UNEM	12.254	9.25	42	0.4	9.8467	1000

Appendix Table A2: Countries Included in the Analysis

Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Bangladesh, Belarus, Belgium, Bosnia, Brazil, Bulgaria, Canada, Chile, China, Colombia Congo Democratic Republic, Cote d' Ivore, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, Estonia, Ethiopia, Finland, France, Georgia, Germany, Ghana, Greece, Guatemala, Hong Kong Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Japan, Jordon, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lithuania, Luxemburg, Macedonia, Malaysia, Malta, Mexico, Moldova, Morocco, Myanmar, Netherlands New Zealand Nigeria Norway, Oman, Pakistan, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Syria, Taiwan, Tajikistan, Tanzania, Thailand, Turkey Turkmenistan, Ukraine, United Arab Emirates, United Kingdom, United States, Uzbekistan, Venezuela, Vietnam, and Yemen.