

Determinants of Corruption in Developing Countries

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Abstract

Corruption is not a new phenomenon; we are living with it since the birth of government's institutions. Corruption has two dimensions; public sector corruption and private sector corruption. The public sector corruption means, "misuse of public office for private benefits". For cross country analysis, public sector corruption is mainly focused. In this study, we have analyzed the 41 developing countries to investigate the determinants of corruption. Corruption determinants are sub-divided into economic determinants and non-economic determinants. The economic determinants include economic freedom, globalization, level of education, distribution of income and average level of income. The non-economic determinants list consists on press freedom, democracy and share of population affiliated with particular religion. The empirical findings of the study indicates that; all economic determinants are negatively related to the perceived level of corruption except distribution of income and non-economic determinants are not significantly explaining the variations in the level of corruption. This shows that the socio-political and religious norms are so weak that they can not affect the corruption level in these countries. The contribution of religion in people's practical life is very little, so the cultural values of developing countries are not religion based. Therefore, perceived level of corruption is not affected by the religion. This study concluded that government should focus the economic factors to curb the level of corruption.

1. Introduction

Corruption is a limp in the walk of human progress. It is not a new phenomenon; it is as old as the history of mankind itself. The corruption made itself visible when the institution of the government was founded. As Daniel Kaufmann (1997) quoted;

[The King] shall protect trade routes from harassment by countries, state officials, thieves and frontier guards..... [and] frontier officers shall make good what is lost.....just as it is impossible not to taste honey or poison that one may find at the tip of one's tongue, so it is impossible for one dealing with government funds not to taste, at least a little bit, of the king's wealth.

—From the treatise the Arthashastra,

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by Kautilya (Chief Minister to the king in ancient India), circa 300 B. C. — 150 A.D.

According to Glynn et al. [1997] ... no region, and hardly any country, has been immune from corruption. Like a cancer, it strikes almost all parts of the society; as argued by Amundsen [1999], the corruption “eats the cultural, political and economic fabric of society, and destroys the functioning of vital organs”; all these was proved by the major corruption scandals of France, Italy, Japan, Philippine, South Korea, Mexico United States and etc. These corruption scandals bring the corruption problem on the agenda of major international institutions like, International Monetary Fund, World Bank, World Trade Organization, Transparency International and Organization for Economic Cooperation and development.²

According to World Bank, corruption is “the single greatest obstacle to economic and social development. It undermines development by distorting the role of law and weakening the institutional foundation on which economic growth depends.”³ The Transparency International take it as, “... one of the greatest challenges of the contemporary world. It undermines good government, fundamentally distorts public policy, leads to the misallocation of resources, harms the private sector and private sector development and particularly hurts the poor.”⁴

During 20th century, corruptions got a lot of attention in academic research and it becomes a meeting place for researchers, belong to various disciplines of the social sciences and history. The researcher group belonging to political science has focused the small number of themes that includes; how a political system has addressed the corruption problem, whether corruption promote or hampers the economic development⁵ and how public organization are formed that could minimize the corruption. But economics researchers have focused the corruption problem in broader sense. They tried to find out the level of corruption across various countries and its reasons or

² For detail, see Washington Post August 8, 1997, Wall Street Journal, 13th September 1996 and Wall Street Journal 18th December 1997.

³ www.worldbank.org/publicsector/anticorrupt/index.cfm.

⁴ [www.transparency.org/speeches/pe carter address.html](http://www.transparency.org/speeches/pe%20carter%20address.html)

⁵ Initially it was assumed that corruption certainly checked the economic and political development but some scholar argued that corruption might promote development. For more discussion see, Huntington 1968, Rose-Ackerman 1978 and Theobald 1990.

determinants.⁶ Therefore, corruption problems of public sector and private sector have become the main focus of social scientists and especially economists.

The public sector corruption means; misused of entrusted authority for private benefits⁷. This definition was used by various international organizations to measure the level of corruption; out of that Transparency International (TI) has collected the corruption data and formulated the Corruption Perceived Index (CPI) in 1995. According to CPI 1995 survey ranking, the New Zealand got the highest score (least corrupt) in world ranking and Indonesia was at last, perceived to be a most corrupt. On-ward from 1995, the ranking of CPI for most corrupt countries shows; the Nigeria remained first for the periods of 1996, 1997, 2000 and at second for almost the remaining years except for 2004 and 2005. The Cameroon, Bangladesh, Haiti and Chad were at the lowest ranks for the years (1998, 1999), (2001, 02, 03), (2004) and (2005) respectively.

In formulating CPI, Transparency International considered political, social and economic factors that affect the country's level of corruption and ultimately weaken the performance of nations [Lambsdorff, 2001b]. The CPI survey ranking for various years also revealed that all the bottom positions are linked with developing countries. The CPI survey 2006 and its almost all previous issues indicate that more or less all developing countries⁸ are below the middle score except Chile, Jordan and Mauritius. Why it is so that all the time, almost all developing countries are having least score (most corrupt). Many researchers have tried to find out the reasons for corruption at world level; using cross sectional data for mixed countries (developed and developing). But the case of developing countries was not analyzed separately. All this makes necessary to investigate the reasons/determinants of corruption in these countries and due to this, we take the case of only developing countries in this study.

In this study we divided the determinants of corruption into two parts; economic and non-economic determinants. The economic determinants include economic freedom, international integration (globalization), education level, the average income and income distribution. In non-economic determinant's, we include the socio-political and religious

⁶ For detail, see Sandholtz and Koetzle (2000).

⁷ This definition only concentrates on public sector corruption. The private sector corruption is also important but not addressed in this article. Private corruption most probably occurs when people misuse their offices (organizational position in a firm) for personal gains. For detail, see Deleon 1993, Seldadyo and Haan (2006).

⁸ The list of countries included in this study are those which are grouped as developing nations by World Bank on the basis on region and availability of data for concerned country.

determinants in the form of democracy, press freedom and share of population having affiliation with religion. The results indicate that the contribution of economic factors is more as compared to non-economic factors in reducing the level of corruption in developing countries.

The remaining part of this study is constructed as follows: the second section of this paper deals with the definition of corruption and its measurement. The third section presents the literature review and derivation of hypothesis. The fourth section is specified for theoretical framework, definitions of variables and data. The fifth section deals with empirical results and last section includes conclusion and policy implications.

2. Corruption: Definition, Measurement and its Determinants

The Oxford Advanced Learner's Dictionary, (2000) define the Corruption as: (a) dishonest or illegal behaviour, especially of people in authority (b) the act or effect of making somebody change from moral to immoral standards of behaviour. According to this definition, the corruption includes three important elements, morality, behaviour, and authority [Seldadyo and Haan, 2006]. In the words of Gould (1991), the corruption is, "an immoral and unethical phenomenon that contains a set of moral aberrations from moral standards of society, causing loss of respect for and confidence in duly constituted authority".

Various disciplines have used different approach to define the corruption but in political science; three approaches are used to define corruption; (a) public interest approach (b) public opinion approach and (c) the formal- legal approach. In first approach, any activity of political or administrative official is considered as improper when it goes against the public interest. This implies that public officials support some one at the cost of public interest and obtain private benefits. But this approach was criticized and argued; which rule should be followed in identifying the public interest [Theobald, 1990], because every act of government goes opposite to someone's definition of public interest.

The promoters of second approach believed that corruption is what the public thinks it is [Gibbons, 1989]. This approach was also criticized on the basis of word "public". What it means; the political elite, the politically mobilized citizenry or the whole population? According to last and third approach, the corrupt acts are those; (i)

that violate some specific rules through which the public duties should be performed (ii) illegal exchanges of political goods for private benefits [Manzetti and Blake, 1996].

All these definitions faced a single problem that how we can use them for empirical purposes across various nations having different cultures. Therefore, for empirical analysis, a definition must have three basic elements. First it has difference between private sector and public sector [Palmier 1985]. Second is the involvement of an exchange; one party offers incentives to a public official in return for special policy or administrative advantage or “political goods” [Manzetti and Blake, 1996]. The last element that must be the part of a comprehensive definition of corruption is that such exchanges (mentioned in second) are improper, means they deviate from existing values. At last but not least it is stated that corruption is behavior adopted by a public officials that deviates “from the norms actually prevalent or believed to prevail” [Sandholtz and Koetzle 2000], or from “accepted norms” or it is “political conduct contrary to political norms” [Morris, 1991]. Considering all these necessary elements, the mostly used definition of corruption in empirical studies, like; Sandholtz and Koetzle 2000, Sandholts and Gray, 2003 etc is; “the misuse of public office for private gains”.

After definition, the second problem with corruption is its measurement. How it can be measured? The subjective measurement of corruption (micro level) is not applicable for cross country comparison. The other method for the measurement of corruption is objective (general or target-group perception). This shows the feelings of public or a specific group of respondents concerning the ‘lack of justice’ in public transactions. Therefore, this method indirectly measures the actual level of corruption and also solved the problem of previous method. So the data based on the target-group perception is normally used in empirical literature. The corruption perception index (CPI) constructed by Transparency International also indicates the perceived level of corruption rather than actual level of corruption.

For corruption’s determinants, we first see the cost and benefit of a corrupt behaviour in developing countries. The public officials have an expected cost that includes psychological, social and financial costs against expected benefits of a corrupt act. The Political scientists and economists suggested a number of economic, political and social characteristics that vary from country to country; which might affect expected

costs, benefits, or both⁹. The most obvious and harmful cost of a corrupt act is the risk of getting caught and punished that ultimately depends on the legal system of the country [La Porta et al. 1999].

The first channel, through which the perceived cost of corrupt action is influenced, is religion. The other gateways that could affect the cost of corruption are democratic governments, open political systems. The electoral competition may create incentives for corruption; the need to raise campaign funds can lead to abuses of power not to benefit the individual but the private interests of a party (Geddes 1997). The freedom of association and of the press could provoke public interest groups and reporters; with a mission and the right to expose abuses, and greater civic engagement may lead to closer monitoring [Putnam 1993]. The economic development increases the spread of education, literacy, and depersonalized relationships, each of which should raise the odds that an abuse will be noticed and challenged [Treisman (2000)].

Besides all this, the cost of corrupt act depends upon the benefits provided by that job; that includes the level of salaries in public office and the length of time for which an honest official could expect to enjoy them [Van Rijckeghem and Weder, 1997; World Bank 1997].

3. Literature Review and Hypothesis Derivation

Corruption is an outcome of weak state administration that come forward when an individual or organization has monopoly power over a good or service, discretion over making decisions, limited or no accountability, and low level of income [Klitgaard, 1998]. The World Bank definition of corruption commonly quoted in economic literature is “the abuse of public office for private gain” (World Bank 1997). In developing country, the level of corruption in public sector is more as compared to private sector. Many empirical studies tried to find out the relation between corruption and, economic and non-economic factors. But consensus is rarely found among researchers on the determinants of corruptions [Alt and Lassen, 2003]. In literature, it is found that a variable is significant in one regression but it becomes in-significant when some other variables are combined with it. It was also observed that in one period corruption causes

⁹ For detail, see Treisman (2000).

other variables and in second period it was caused by other variables. Some variables have positive relation with corruption like, government involvement in the economy, inequality and absence of competition in the market and others have negative like growth level of education and economic freedom etc.

The government involvement means, how much government and its administrative machinery is having control over the economy. Under this, the government official decides that; who will access to country economic resources and opportunities and how much. This shows that individual economic success not depends on market forces, rather depends on the ability to influence the public official concerned. Therefore; the government institutions are important in determining the level of corruption. Besides government involvement in the market economy, the other variables which are investigated by various studies are economic integration, level of development, press freedom, democracy and share of population affiliated with a particular religion etc.

The studies carried out by Johnson, Kaufmann and Zoido-Lobaton (1998), Bonaglia et al. (2001) and, Fisman and Gatti (2002) found a positive correlation between corruption and the size of the unofficial economy. But some studies have contrary findings like Treisman (2000), Ali and Isse (2003). They found a positive impact of state intervention, means state intervention reduces the level of corruption. Above all, Lambsdorff (1999) found that government involvement neither increases nor decreases the level of corruption; the poor institutions are the main sources of corruption.

The hypothesis of negative correlation between corruption and income is supported by a large number of studies like; Brown, et al. (2005), Kunicova-R.Ackerman (2005), Lederman et al. (2005), Braun-Di Tella (2004), Chang-Golden (2004) and etc. But some studies also proved the positive relation between these variables which includes Braun-Di Tella (2004) and Frechette (2001). The positive relation between corruption and income distribution is supported by the findings of Paldam (2002) and, Amanullah and Eatzaz (2007). A negative relation between trade openness/economic integration and level of corruption is strongly recommended by various studies like; Gurgur-Shah (2005), Brunetti-Weder (2003) and Knack-Azfar (2003) where as a positive relation between these two is also supported by the findings of Graeff-Mehlkop (2003) and Paldam (2001). The negative relation of corruption with democracy, press freedom and share of population affiliated with particular religion is strongly recommended by various studies;

like Kunicova-R.Ackerman (2005), Lederman et al. (2005), Gurgur-Shah (2005), Braun-Di Tella (2004), Brunetti-Weder (2003) Chang-Golden (2004), Herzfeld-Weiss (2003), Persson et al. (2003). The positive relation between corruption and share of population affiliated with particular religion is also found in the studies of Paldam (2001) and La Porta et al (1999).

Almost all these studies used the cross sectional data for both developed as well as developing countries, no one has focused the developing part of the world separately. To see the impact of economic and non-economic factors on the level of corruption in developing segment of the world economy, we have derived the hypothesis in the subsequent section.

3.1 Hypothesis Derivation

It is also commonly assumed that economic freedom commonly lower the rent of economic activities and consequently lessens the motive of public officials and politicians to grasp some parts of these rents by means of corruption. Empirically; Henderson (1999) indicates a negative relation between corruption and economic freedom and Paldam (2002) also supported the same view by using multivariate regressions. He also used the Gastil index to see the impact of democracy on corruption. The correlation between these variables is strong but it breaks down, when a new variable GDP per capita was introduced in the equation. To test this relation only for developing countries we formulated the following hypothesis:

- (i) *The higher level of personal economic freedom (less political control over nation's economic resources and opportunities) will lessen the perceived level of corruption.*

The residents of the open economies not only imports goods, services and capital, but also exchange norms, information and ideas; means the international integration affects the political-economic framework of opportunities and cultural values of the society. The freer trade would remove the control of public official over administrative commodities like quota licenses and permits etc. Therefore, the process of globalization would reduce the chances of exchanges of these products for private benefits. Ades and Di Tella (1997 and 1999) indicates that openness is negatively associated with corruption. They used corruption data made by Business International (BI) and Institutes for Management Development (IMD). They concluded that higher degree of openness lead to reduction in

corruption. This idea was also supported by Brunetti and Weder (1998c), Treisman (2000), Herzfeld and Weiss (2003) and they found a negative correlation between imports and corruption. But Tornell and Lane (1998) concluded that the higher export share of raw materials increases the opportunities of corruption. The positive relation between corruption and trade restriction was supported by Frechette, 2001; Knack and Azfar 2003. Naveed (2001) also tried to investigate the relationship between corruption and government regulations. He concluded that reduction in government regulations up to some threshold level will not decrease corruption; for reduction in corruption, government regulations must be reduced well below threshold level. We also tried to investigate this relation in our study especially for developing countries:

(ii) *The degree of globalization is inversely related to the corrupt norms.*

The levels of development have significant impacts on the level of corruption. The countries having low average income level creates least wealth for its vast majority of citizens in developing countries. This scenario shows that in such economies the marginal additional income have a significant impact on the living conditions of the peoples. This means the marginal value of money in poor economies is greater as compared to rich economies. Therefore; the level of income is commonly used to explain the level of corruption [Damania et al., 2004; Persson et al., 2003]. Almost, all studies have used the GDP per capita as a proxy variable except Ades and Di Tella (1999); used the literacy rate (average educational levels) to measure the level of development. All studies concluded that the nation's wealth significantly explained the variations in the level of corruption. The empirical findings presented in the studies of Brown, et al. (2005), Kunicova-R.Ackerman (2005), Lederman et al. (2005), Damania et al. (2004 presented a negative and significant relationship between development and level of corruption. But the studies carried by Braun and Di Tella, (2004) and Frechette, (2001) using panel data showed the opposite results. For developing countries only, we have formulated the following hypothesis:

(iii) *The levels of development are inversely related to level of corruption.*

In economic literature, the income in-equality (distribution of income) is also considered a determinant of corruption. The theoretical relation between corruption and income inequality is derived from rent theory. Empirically Davoodi *et al.* (1998) found a positive correlation between corruption and in-equality (measured by Gini coefficient) for 37

countries. Li *et al.* (2000) found that the corruption affects the income distribution in an inverted U-shaped. It means lower income inequality attached with high as well as low level of corruption and it is high when the level of corruption is transitional. But Paldam (2002) also used Gini coefficient in estimation and concludes that it explains a little of the variation in corruption, where as the studies of Park (2003) and Brown *et al.* (2005) found no significant positive relation between higher income inequality and corruption. Amanullah and Eatjaz (2006) also investigated the relationship between corruption and distribution of income using panel data for seventy one countries. They concluded that corruption effects the distribution of income and also its growth. We have put the case of only developing countries and constructed the following hypothesis:

- (iv) *The level of Corruption is positively correlated with higher income inequality.*

Along with economic factors, various non-economic factors like democracy, press freedom, share of population affiliated by a particular religion etc are also empirically investigated by various researchers. The democracy is a set of principles and practices that develop institutions of the country, which protect individual freedom. The basic elements of the democracy are: (a) the formulation of government, majority must be preferred. (b) The existence of free and fair elections. (c) Protection of minorities and respect for basic human rights [Laza Kekic, 2007]. This means, democracy includes institutional as well as cultural elements. In democratic societies, the public representatives derive their power from the public and use it (serve) for the interest of the public. Empirically the findings investigated by Suphacahlasai (2005), Kunicova and Rose-Ackerman, 2005 and Lederman *et al.* (2005) showed a negative relation between level of democracy and corruption. For developing countries, we are going to test the hypothesis as below:

- (v) *The strength of democracy is negatively correlated to the corrupt behaviour.*

On the other hand, the freedom of speech and press in democratic states enables the citizens to uncover information, ask questions, demand inquiries and broadcast their discoveries; and in some countries, record their grievances directly to the ombudspersons. Empirically this issue was tested by Lederman *et al.* (2005) and Brunetti-Weder (2003), and they found that higher degree of press freedom will lead to reduction in the level of

corruption. To see the relationship between these two in developing countries, we have formulated the following hypothesis:

(vi) *The freedom of press is also negatively related to the level of corruption.*

The religious variable is also examined in various studies to see the impact of other aspects of culture that can promote or push down the level of corruption. The studies carried out by Chang-Golden (2004) and Herzfeld-Weiss (2003) presented a negative relation between level of corruption and share of population having affiliation with particular religion. But some studies also showed a positive relation between these two, such as Paldam (2001) and La Porta et al (1999). In developing countries, we tried to see the impact of religion on the level of corruption in the following hypothesis:

(vii) *The share of population having religious (Protestant, Catholic, Muslim or Hindus) is inversely related to the corrupt behaviour.*

4. Data and Methodology

We used the cross sectional data for comparative analysis for the sample of 41 developing countries. The dependent variable used in this study is objective rather than subjective measure of corruption. This measurement of corruption is based upon the target-group perceptions. The data on corruption (Corruption Perceived Index) is constructed by Transparency International which assigned scores to 163 nations for 2006, out of that we have used CPI for 41 developing countries¹⁰. This index is “poll of polls”, combing the results of different polls and surveys done by various independent institutions. The institutions who provided data for the CPI are: Columbia University, Economist Intelligence Unit, Freedom House, Information International, International Institute for Management Development, Merchant International Group, Political and Economic Risk Consultancy, United Nations Economic Commission for Africa, World Economic Forum and World Markets Research Centre. Transparency International requires at least three sources to be available in order to rank a country in the CPI but its reliability becomes poor due to fewer resources¹¹. The index score range is between 0 (totally corrupt) and 10 (clean)¹². In this study, we have reversed the order so that higher score of CPI represents more corruption and lower shows less. The main advantages of

¹⁰ The selection of these countries is on the basis of availability of data for all concerned variables.

¹¹ http://en.wikipedia.org/wiki/Corruption_Perceptions_Index

¹² Corruption Perceived Index is given in Appendix, Table 1.

this index are that; it permits for cross country analysis, and it also fulfills the requirements of the definition of corruption used in this study (the misuse of public office for private gain).

We have divided the determinants of corruption in to two groups; economic and non-economic determinants. The economic determinants include economic freedom, globalization (international integration), education level, the average income (GDP per capita) and income distribution (Gini coefficient).

$$CORR = F (\bar{EF} , \bar{GL} , \bar{ED} , \bar{AY} , \bar{YD}) \quad (1)$$

CORR = Level of Perceived Corruption

EF = Economic Freedom

GL = Globalization

ED = Level of Education

AY = Average level of Income

YD = Income Distribution

All these explanatory variables are inversely related to the level of corruption. For estimation, we have used the following equation:

$$CORR = \beta_0 + \beta_1 EF + \beta_2 GL + \beta_3 ED + \beta_4 AY + \beta_5 YD \quad (2)$$

In non-economic determinant's, we include the socio-political and religious determinants in the form of democracy, press freedom and share of population having affiliation with religion (Muslim, Catholic, Protestant and Hinduism).

$$CORR = F (\bar{PF} , \bar{DM} , \bar{RG}) \quad (3)$$

PF = Press freedom

DM = Degree of democracy

RD = Share of population affiliated with particular religion

We used the following equation for estimation.

$$CORR = \alpha_0 + \alpha_1 PF + \alpha_2 DM + \alpha_3 RG \quad (4)$$

4.1 Variables Definition and Data

For average income, we used the GDP per capita¹³. Sandholtz and Gray (2003) used the GDP per capita to measure the level of development where as Ades and Di Tella used average educational level for this purpose. In this study, we have used both GDP per capita and literacy rate. We used Economics freedom Index (2007) to measure the economic freedom. This Index is constructed by the Heritage Foundation and Wall Street Journal for 157 countries¹⁴. It comprised on ten Economic Freedoms like; Business freedom, trade freedom, monetary freedom, freedom from government, fiscal freedom, propriety rights, investment freedom, financial freedom, freedom from corruption and labour freedom. Each one has equal weights, 10. The index score varies between 0 and 100. The higher score of index indicates maximum economic freedom and vice versa.

The globalization (international integration¹⁵) measured by the globalization index. Sandholtz and koetzle (2000), Sandholtz and Gray (2003) like all others have used the sum of exports and imports (trade) as share of GDP to measure the economic integration. But we used the globalization index (2007 KOF Index of Globalization) for this purpose because it includes economic freedom, social freedom and political freedom having weights of (36%), (38%) and (26%) respectively in the index. These three groups are sub-divided in to sub-parts like economic globalization is divided in to two parts; (i) Actual Flows that consists on; Trade (percent of GDP), Foreign Direct Investment [flows as percent of GDP], Foreign Direct Investment [stocks as percent of GDP], Portfolio Investment (percent of GDP), and Income Payments to Foreign Nationals (percent of GDP). (ii) Restrictions that includes; Hidden Import Barriers, Mean Tariff Rate, Taxes on International Trade (percent of current revenue) and Capital Account Restrictions.

The social globalization is divided in to Personal Contact [Outgoing Telephone Traffic, International Tourism Foreign, International letters (per capita) etc.], Information Flows [Internet Hosts, Internet Users, Cable Television, Radios; all are per 1000 people and Trade in Newspapers (percent of GDP)] and Cultural Proximity [Number of McDonald's Restaurants (per capita), Trade in books (percent of GDP) and etc. At last, the political globalization considers; the embassies in country, the membership in International Organizations and participation in U.N. Security Council Missions.

¹³ Data source: 2005 CIA World Fact book and Global Income per Capita, Published 2006.

¹⁴ Sudan, Serbia, Congo, Dem. Republic of, Iraq and Montenegro are not including in the world ranking.

¹⁵ International integration includes both economic integration and social integration. For detail see, Sandholtz and Gray (2003).

The remaining variables in economic model are income distribution (measured by united Nations Gini index) and level of education (Adult literacy rate). The data on Gini coefficient is collected from Wikipedia, the free encyclopedia; CIA Fact book and United Nations. The score of Gini index varies between 0 and 100; 0 represents perfect economic equality and 100 perfect inequalities. We have reversed the ordered and 0 show perfect inequality and 100 indicate perfect income equality. UN data for Gini may represent income shares by percentiles of population, ranked by per capita income, or expenditure shares by percentiles of population, ranked by per capita expenditure.

In non-economic determinants, the press freedom is measured by the press freedom index (2006) constructed by Freedom House Index. This index includes three categories; Legal Environment (0-30), Political Environment (0-40) and Economics Environment (0-30). The index score range is 0 to 100, the lower value of index score indicates high degree of freedom (0 for most freedom) and vice versa. But for consistency purpose, we have inverted the press freedom index, so lower value of index score presents less freedom of press; with increased value of index the press freedom increases.

The level of democracy in each country is presented by the democracy index 2007, formulated by Laza Kekic for Economist Intelligence Unit. The Economist Intelligence Unit's democracy index includes five items: electoral process and pluralism, civil liberties, the functioning of government, political participation and political culture. This index presents the democratic status of 165 independent states. The list of fully democratic states only includes 28 countries, out of remaining 54 are labeled as flawed democracies, 55 are authoritarian and a small number of 30 are given the name of hybrid regimes¹⁶. The Economist Intelligence Unit's democracy index score varies between 0 and 10. The score rating for Full democracies is 8-10, for Flawed democracies is 6-7.9, for Hybrid regimes is 4-5.9 and for Authoritarian states is only 4. To see the effect of religion on cultural values, we added the religion as share of total population. All data on religion (Catholic, Protestants, Muslims and Hinduism) is obtained from CIA World's Facts Book index and Wikipedia, the free encyclopedia.

5. Empirical Findings

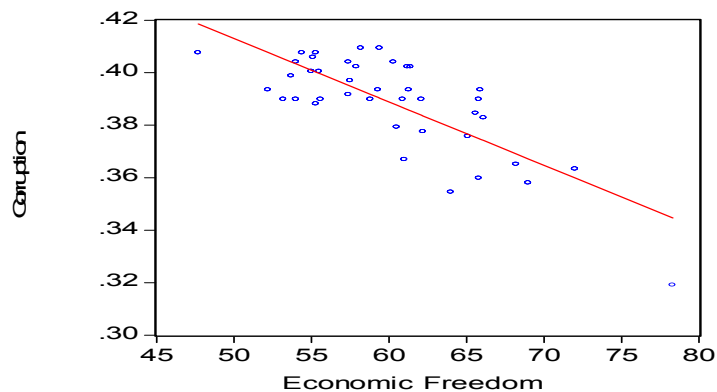
¹⁶ For detail see, By Laza Kekic (2007),

According to Transparency International Corruption Perceived Index 2006; the Iceland, Finland New and New Zealand are the countries perceived to be least corrupt with CPI score of 1/163. On the other side, the list of most perceived corrupt counties along with CPI score includes Haiti (163/163), Guinea (160/163), Iraq (160/163) and Myanmar (160/163). The least corrupt countries are those which have higher degrees of democracy, higher level of economic freedom, press freedom and economic integration (trade openness). The most corrupt states are not having strong political norms, less involved in the world economy and their residents also have less economic freedom.

Before discussing the multivariate, we have presented the relationship of corruption with all economic factors like; economic freedom, average income, globalization, level of education and income distribution (income in-equality) individually in the following scatter diagrams.

Figure 5-1

Corruption and Economic Freedom



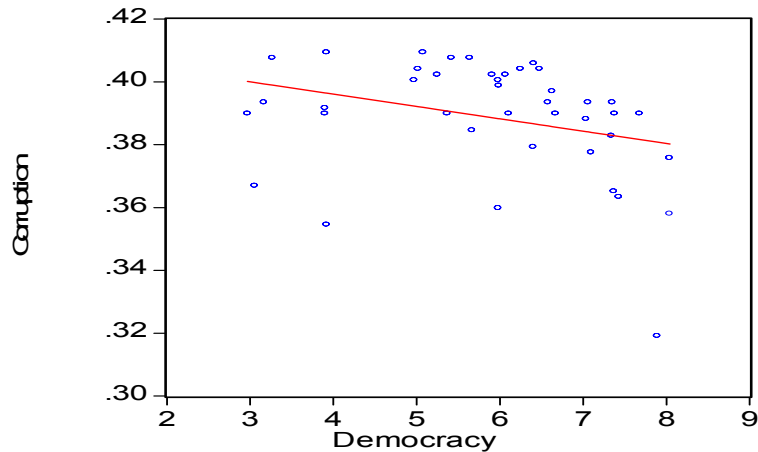
The scatter diagram presents the relationship between corruption and economic freedom. The negative slope of the line confirms the hypothesis that increases in economic freedom will reduce the level of corruption. It supported the Henderson (1999) view that corruption is negatively correlated with different indicators of economic freedom. Almost the same relation is found for all other economic factors¹⁷.

We have also investigated the relation of corruption with non-economic factors like; democracy, press freedom and share of population affiliated with particular religion,

¹⁷ See Appendix, Figure 1.

with the help of scatter diagram. The relation between democracy and corruption is shown in figure 2, for other factors see appendix.

Figure 5-2
Corruption and Democracy



This figure again shows a negative relation between corruption and democracy. This implies that by adopting democratic norms for longer periods will reduce the level of corruption. The democracy also supports the freedom of speech and press. This freedom enables the citizens to uncover information, ask questions, demand inquiries and broadcast their discoveries; and in some countries, record their grievances directly to the ombudspersons. These findings are supported by Kunicova-R.Ackerman (2005).

For multivariate analysis, we estimated the both equations; equation (2) for economic determinants and equation (4) for non-economic determinants. During estimation, we applied the White Heteroskedasticity Test to check the Heteroskedasticity problem which may arise due to cross sectional data. In some cases, we find significant F-Statistics that indicates the presence of Heteroskedasticity problem, so to remove the problem we use two test; White Heteroskedasticity-Consistent Standard and Newey-West HAC Standard Errors & Covariance to remove the problem. Therefore, the standard errors are adjusted for Heteroskedasticity, and then on the basis of adjusted errors, we calculated the t-state presented in parenthesis. In other diagnostic tests we performed the Breusch-Godfrey Serial Correlation LM Test to check the model specification and serial

autocorrelation. The value of F-stat indicates that model was correctly specified and not having the problem of autocorrelation.

Table 5-1
(Economic Determinants of Corruption)

Variables	Coefficients		
	(1)	(2)	(3)
Constant	17.29508 (14.22315)*	16.39065 (14.08914)*	16.80709 (14.68123)*
Economic Freedom	-0.118280 (-5.544028)*	-0.127319 (-6.240973)*	-0.114926 (-5.257994)*
Globalization	-2.82867 (-2.300529)**	-3.524399 (-2.935718)*	-2.896591 (-2.508442)*
Education Level	0.012073 (2.221003)**	0.008577 (1.652520)***	0.012237 (2.591348)*
Average Income	-0.274235 (-2.207003)**	-----	-0.313265 (-2.379312)**
Income Distribution	-0.011464 (-1.026418)	-0.015204 (-1.362624)	-----
R-Squared	0.686553	0.665759	0.677481
Adjusted R-Squared	0.641774	0.628621	0.641645
Durbin-Watson Stat	1.887902	1.934546	1.987149
F-statistic	15.33229*	17.92669*	18.90532*

Note: Value in parenthesis is t-statistics.

* = Significant at 1% level

** = Significant at 5% level

All coefficients are significant and have expected signs, except education and income distribution. The coefficient of education is significant but has positive sign, which indicates that level of education is positively correlated with corruption. In developing

countries, the public sector is and remained the main source of employment. These countries, corruption in public sector is very common and induction in public sector's departments requires education. Therefore, the level of corruption in these countries increases with the increase in education, especially when it becomes the source of employment in the public sector. All other coefficients are having negative signs, which indicate that increase in globalization, economic freedom and average income will lead to reduction in the level of corruption. The globalization includes social globalization, economic globalization and political globalization. All these affect the socio-cultural and political value of the country's residents that affect the corruption inversely. These findings are supported by the previous empirical findings of Kunicova-R.Ackerman (2005), Gurgur-Shah (2005), Ali-Isse (2003), Knack-Azfar (2003), Persson et al. (2003), Ades-Di Tella (1999), Treisman (2000), Paldam (2002-01) and etc. We also performed sensitivity analysis by dropping the variable one by one in the form of equation 2 and 3. In sensitivity analysis; almost all those variables are significant that were significant in equation 1. The coefficient of income distribution remained in-significant in all three equations but has negative sign. The value of adjusted R-square is 0.641 that indicates that 64% variations in the perceived level of corruption are explained by these economic factors for the nations included in this study sample. The other diagnostic test indicates that the performance of the models is well.

In non-economic model, we estimated the equation (4) for non-economic factors like; press freedom, democracy and religion that affect the level of perceived corruption. We applied all relevant tests as in the previous model and results are presented in table 5-2. All four regression equations show that all coefficients are in-significant except, democracy in regression 3 and press freedom in regression 4. But the signs of all coefficients are negative that indicates that increase in press freedom, degree of democracy and share of population affiliated with particular religion will lead to decrease in the level of corruption. All these results indicate that the socio-political and religious norms are very weak in developing countries and unable to affect the level of corruption. The residents of these countries are not true followers of religion concerned because all religions forbidden the corruption. In these countries, the contribution of religion in people's practical life is rare; therefore, the social values are not religion based which can affect the level of corruption. The coefficients of press freedom and democracy are

significant with negative sign in equation 3 & 4. This indicates that press freedom has explored the corrupt behaviors which are socially condemned. So increase in press freedom has reduced the level of corruption. These empirical findings are supported by the previous findings of Lederman et al. (2005) and Brunetti-Weder (2003). The value of R-square is 0.13, which shows that only 13% variation in the level of corruption is explained by non-economic factors. Almost same behaviour is predicted by remaining other three equations.

Table 5-2
(Non-economic Determinants of Corruption)

Variables	Coefficients			
	(1)	(2)	(3)	(4)
Constant	8.594213 (9.590526)*	7.882306 (11.67089)*	8.724311 (8.978222)*	7.654819 (15.30974)*
Democracy	-0.212631 (-0.869070)	-0.085339 (-0.476944)	-0.320410 (-2.21864)**	----- -----
Press Freedom	-0.010415 (-0.641898)	-0.014571 (-0.973776)	----- -----	-0.022992 (-2.391359)**
Religion	-0.005606 (-1.273749)	----- -----	-0.006453 (-1.202806)	0.409575 (0.995887)
R-Squared	0.129453	0.115305	0.118090	0.132647
Adj. R-Squared	0.056908	0.068742	0.070419	0.086996
DW. Stat	2.045093	2.195657	1.990841	2.266125
F-statistic	1.784439	2.476323***	2.477197***	2.905717*

Note: Value in parenthesis is t-statistics.

- * = Significant at 1% level
- ** = Significant at 5% level
- *** = Significant at 10% level

At last, we have combined the economic and non-economic determinants, results are presented in table 5-3. The results of combined model remained almost same as were in previous two models. The economic factor's contribution is more as compared to non-economic factors in reducing the level of corruption in developing countries. The value of R-square is high as compared to previous models which show that the performance of the model is satisfactory.

Table 5-3
(Economic and non-economic Determinants)

Variables	Coefficients			
	(1)	(2)	(3)	(4)
Constant	17.41727 (12.98755)*	17.29508 (14.22315)*	16.77773 (11.16260)*	15.21472 (11.00507)*
Economic Freedom	-0.123067 (-5.320395)*	-0.118280 (-5.544028)*	-0.125420 (-4.730846)*	----- -----
Average Income	-0.253151 (-1.967930)**	-0.274235 (-2.207003)**	-0.267463 (-2.007764)**	-0.512278 (-2.531375)*
Globalization	-3.107829 (-2.199264)**	-2.828671 (-2.300529)**	-2.205957 (-1.947688)**	-4.880471 (-2.253042)**
Literacy Rate	0.004193 (0.488609)	0.012073 (2.221003)**	----- -----	----- -----
Democracy	0.097096 (1.015907)	----- -----	0.228593 (2.617439)*	----- -----
Press Freedom	-0.003824 (-0.412754)	----- -----	-0.008886 (-1.118898)	-0.024849 (-2.403507)**
Income Inequality	-0.001364 (-0.088670)	-0.011464 (-1.026418)	----- -----	----- -----
Religion	-0.004681 (-1.200845)	----- -----	----- -----	-0.009915 (-2.985849)
R-Squared	0.710612	0.686553	0.688524	0.502216
Adjusted R-Squared	0.635932	0.641774	0.644028	0.424438
Durbin-Watson Stat	1.811560	1.887902	2.019213	2.169213

F-statistic	9.515343*	15.33229*	15.47366*	6.456992*
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Note: Value in parenthesis is t-statistics.

* = Significant at 1% level

** = Significant at 5% level

6. Conclusion and Policy Implication

In this study, we tried to investigate the various determinants/reason for perceived level of corruption across 41 developing countries. We considered the economic as well as non-economic determinants of corruption. The list of pure economic determinants consists on economic freedom, globalization, education, average income level and distribution of income. In second group, we included the press freedom, degree of democracy and share of population affiliated with particular religion. The empirical findings shows that increase in economic freedom, globalization and average level of income have reduced the level of corruption in these countries. But the level of corruption in developing countries is increased with the increase in level of education. The income distribution has not significantly explained the variations in the level of corruption for the countries in the sample.

The estimated model for non-economic determinants indicates that jointly, these factors have not contributed well in reducing the level of corruption in these countries. But at individual level, some coefficients are significant and have negative sign according to the previous studies; like press freedom and democracy. At last, we also tried to estimate the both models jointly. The results are almost same as were in previous models

This study concludes that economic determinants are more important as compared to non-economic determinants in reducing the perceived level of corruption in developing countries. The socio-cultural values are not affected by the religions. So the impact of religion on corruption is not significant. The democratic norms are also very weak or at initial stages in these countries, so the role of democracy in reducing the level of corruption is not prominent; rather it is positively related to corruption in these countries up to some extent. At last but not least; the economic determinants have negative relationship with the level of corruption in developing countries,

included in the sample of the this study. On the basis of this study's findings, we suggest that: The government should focus the economic determinants of corruption; especially the policy of economic freedom (free market economy), to control the perceived level of corruption. The policy of globalization must be supported because it has significantly contributed towards reduction in the level of public corruption. The government should also focus the economy's growth, by which the average income increases and in result, the corruption reduces in the country. The policy of press liberalization must be fully supported to reduce the perceived level of corruption.

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APPENDIX

Table-1

Countries perceived to be least and most corrupt

A Complete List of the World

Country or Region	2006 Survey		Country or Region	2006 Survey		Country or Region	2006 Survey	
	Index	Rank		Index	Rank		Index	Rank
Afghanistan	–	–	Chile	7.3	20/163	Greece	4.4	54/163
Albania	2.6	111/163	China	3.3	70/163	Grenada	3.5	66/163
Algeria	3.1	84/163	China, (Taiwan)	5.9	34/163	Guatemala	2.6	111/163
Angola	2.2	142/163	Colombia	3.9	59/163	Guinea	1.9	160/163
Argentina	2.9	93/163	Costa Rica	4.1	55/163	Guyana	2.5	121/163
Armenia	2.9	93/163	Côte d'Ivoire	2.1	151/163	Haiti	1.8	163/163
Australia	8.7	9/163	Croatia	3.4	69/163	Honduras	2.5	121/163
Austria	8.6	11/163	Cuba	3.5	66/163	Hong Kong,	8.3	15/163
Azerbaijan	2.4	130/163	Cyprus	5.6	37/163	Hungary	5.2	41/163
Bahrain	5.7	36/163	Czech Republic	4.8	46/163	Iceland	9.6	1/163
Bangladesh	2	156/163	Dem. R. Congo	2	156/163	India	3.3	70/163
Barbados	6.7	24/163	Denmark	9.5	4/163	Indonesia	2.4	130/163
Belarus	2.1	151/163	Dominica	4.5	53/163	Iran	2.7	105/163
Belgium	7.3	20/163	Dominican Republic	2.8	99/163	Iraq	1.9	160/163
Belize	3.5	66/163	Ecuador	2.3	138/163	Ireland	7.4	18/163
Benin	2.5	121/163	Egypt	3.3	70/163	Israel	5.9	34/163
Bhutan	6	32/163	El Salvador	4	57/163	Italy	4.9	45/163
Bolivia	2.7	105/163	Equatorial Guinea	2.1	151/163	Jamaica	3.7	61/163
Bosnia-Herzegovina	2.9	93/163	Eritrea	2.9	93/163	Japan	7.6	17/163
Botswana	5.6	37/163	Estonia	6.7	24/163	Jordan	5.3	40/163
Brazil	3.3	70/163	Ethiopia	2.4	130/163	Kazakhstan	2.6	111/163
Bulgaria	4	57/163	Fiji	–	–	Kenya	2.2	142/163
Burkina Faso	3.2	79/163	Finland	9.6	1/163	Kuwait	4.8	46/163
Burundi	2.4	130/163	France	7.4	18/163	Kyrgyzstan	–	–

Cambodia	2.1	151/163	Gabon	3	90/163	Laos	2.6	111/163
Cameroon	2.3	138/163	Gambia	2.5	121/163	Latvia	4.7	49/163
Canada	8.5	14/163	Georgia	2.8	99/163	Lebanon	3.6	63/163
Cent African Rep.	2.4	130/163	Germany	8	16/163	Lesotho	3.2	79/163
Chad	2	156/163	Ghana	3.3	70/163	Liberia	–	–
Libya	2.7	105/163	Romania	3.1	84/163	Uzbekistan	2.1	151/163
Lithuania	4.8	46/163	Russia	2.5	121/163	Venezuela	2.3	138/163
Luxembourg	8.6	11/163	Rwanda	2.5	121/163	Vietnam	2.6	111/163
Macau, China	6.6	26/163	Saudi Arabia	3.3	70/163	Yemen	2.6	111/163
Macedonia	2.7	105/163	Senegal	3.3	70/163	Zambia	2.6	111/163
Madagascar	3.1	84/163	Serbia	3	90/163	Zimbabwe	2.4	130/163
Malawi	2.7	105/163	Serbia Montenegro	–	–			
Malaysia	5	44/163	Seychelles	3.6	63/163			
Mali	2.8	99/163	Sierra Leone	2.2	142/163			
Malta	6.4	28/163	Singapore	9.4	5/163			
Mauritania	3.1	84/163	Slovakia	4.7	49/163			
Mauritius	5.1	42/163	Slovenia	6.4	28/163			
Mexico	3.3	70/163	Somalia	–	–			
Moldova	3.2	79/163	South Africa	4.6	51/163			
Mongolia	2.8	99/163	South Korea	5.1	42/163			
Morocco	3.2	79/163	Spain	6.8	23/163			
Mozambique	2.8	99/163	Sri Lanka	3.1	84/163			
Myanmar	1.9	160/163	Sudan	2	156/163			
Namibia	4.1	55/163	Suriname	3	90/163			
Nepal	2.5	121/163	Swaziland	2.5	121/163			
Netherlands	8.7	9/163	Sweden	9.2	6/163			
New Zealand	9.6	1/163	Switzerland	9.1	7/163			
Nicaragua	2.6	111/163	Syria	2.9	93/163			
Niger	2.3	138/163	Tajikistan	2.2	142/163			
Nigeria	2.2	142/163	Tanzania	2.9	93/163			
Norway	8.8	8/163	Thailand	3.6	63/163			
Oman	5.4	39/163	Timor-Leste	2.6	111/163			
Pakistan	2.2	142/163	Trinidad. & Tobago	3.2	79/163			
Palestinian	–	–	Togo	2.4	130/163			
Panama	3.1	84/163	Tunisia	4.6	51/163			
Papua N. Guinea	2.4	130/163	Turkey	3.8	60/163			
Paraguay	2.6	111/163	Turkmenistan	2.2	142/163			
Peru	3.3	70/163	Uganda	2.7	105/163			
Philippines	2.5	121/163	Ukraine	2.8	99/163			
Poland	3.7	61/163	U A E	6.2	31/163			

Portugal	6.6	26/163	U K	8.6	11/163			
Qatar	6	32/163	United States	7.3	20/163			
Rep. of Congo	2.2	142/163	Uruguay	6.4	28/163			

Source: Corruption Perceptions Index 2006, From Wikipedia, the free encyclopedia, and also available at Freedom House.

Figure 1
Relationship between Corruption and Economic Factors

