THE RELATIONSHIP BETWEEN CORRUPTION AND ECONOMIC GROWTH IN PAKISTAN — LOOKING BEYOND THE INCUMBENT

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Abstract: Corruption has opaque significant consideration for researchers during the last few decades due to its effect on economic growth. This study examines the relationship between corruption and economic growth in Pakistan, covering the period from 1985 to 2010. Stationarity of the variables was checked through unit root test and then apply multiple regression technique. The results shows that government expenditures, education expenditures and population growth has a positive impact on per capita GDP, however, domestic investment and corruption has a negative impact on per capita income in Pakistan. It implies that corruption is a major factor impeding economic development. Corruption hampers
economic growth, disproportionately burdens the poor and undermines the effectiveness of investment and aid.

**Keywords:** Corruption; Per capita GDP; Education expenditures; Unit root test; Pakistan.

**JEL:** O47, R11.

**Introduction**

Concern about the negative social and economic impacts of corruption has grown rapidly in both emerging economies and advanced democracies. Major international organizations have consequently begun probing the sources and solutions for corruption. For example World Bank recognized corruption as the single utmost dilemma to economic and social development. It undermines development by falsification the rule of law and fading the institutional establishment on which economic growth depends. Although international organizations time and again declare that corruption hinders economic growth, economists have not essentially agreed with contend from theoretical standpoints. As the government malfunction is itself a gist of corruption however, corruption should have injurious effects on economic growth in the long run. In practice, policy-makers and economists mind more about such long-term cost of corruption than the instant belongings (Akai et al. 2005).

Corruption can occur through various ways but deficiency and flaws of the watch-dog agencies is the major cause of corruption. Such agencies are generally not gifted to address the larger forces inspiring general corruption. Most clearly, agencies cannot be effective in state of affairs where on the whole every key institution is compromised (Meagher and Voland, 2006). Lack of sovereign judiciary can lubricant occurrence of corruption because such form of judicial system dishonoured by bribery deteriorate confidence in supremacy by facilitating corruption across all
sectors of government. The efficiency of the Judiciary will be enhanced when there is Political support which is ultimately important and an effective approach that will assemble support within the political arrangement through alliances and stress on it (Ababa, 2007).

Anticorruption agencies are not enough to negate corruption because its foundation for effective corruption activities are deep rooted and endorse with lack of probable courts, political imbalances, regulatory incentives toward corruption and rent-seeking activities (Meagher and Voland, 2006). If we highlight the consequence of corruption, existence of enormous transaction costs articulate its whopping proof. As it has been figured out corruption is an unlawful treaty and therefore its operation costs are gigantic. Corruption violates the rule of commandment and under such state of affairs there is no shield of private property rights and no concord enforcement. This is the indirect way in which corruption fade away economic efficiency and consequently social welfare. Corruption increases basic business vagueness, particularly regarding protection of property rights. This kind of vagueness decreases the anticipated profit rate for prospective investors. Investor decision making rooted in predictable profit or rate of returns that are likely less under such state of affairs which make them hesitant to take an investment judgment. Since corruption decreases projected returns on investment and consequently evidence lower growth rates (Begovic, 2005).

Corruption might endorse economic growth as it relaxes unproductive and inflexible regulations forced by government Leff (1964). Since the mid 1980’s several economists have distinguished mechanisms in which corruption enhances efficiency and promotes growth. Queue model argues that bureaucrats while allocating business licenses to firms bestow priority to those who appraise time at the utmost value and corrupt the bureaucrats into speeding up proceedings (Lui, 1985). Auction models arguing that bribes in a bidding progression can push competence because the majority efficient firms are often those who can pay for the
highest bribe (Beck and Maher, 1986). Bargaining procedure between public and private sectors enables private agents to purchase their way out of politically obligatory inefficiencies (Shleifer and Vishny, 1994). Corruption may formulate potential smaller or no salary payments to officials who if cautiously supervised will still perform their functions on a fee-for-service basis (Tullock, 1996).

Some economists may disagree that corruption may work as the second-best solution to market distortions forced by government actions and policies at least in the short run. In the long run, however, corruption itself fabricates additional market distortions and reduces market efficiency. Effects of Corruption are dual in nature on the constructive surface it can endorse attainment of allocative efficiency while on the other side of the picture it can render the economic growth of the economy as it violates the rule of law which is a prerequisite for the market economy. Although the first effect still remains a substance of debate, there seems to be no theoretical disagreement for the latter one. Studies spotlight to test negative effect of corruption on economic growth (Lui, 1996).

Corruption is not a problem that can be addressed in seclusion. It is not ample for the criminal law to search for bad apples and penalize them. For sure the state may need to establish integrity by punishing highly noticeable corrupt officials but the goal of such prosecutions is to magnetize notice and public support not resolve the principal dilemma. Anticorruption laws can only offer a environment for more vital structural reforms (Rose Ackerman, 1999). Pakistan is unfortunately way down on the ladder on this account. Corruption in various forms is prevailing in Pakistan incepting from widespread financial and political corruption, nepotism and bribery to the theft of state possessions (Chene, 2008). Political corruption takes place at the highest levels of political authority. It is when the politicians and political decision-makers (heads of state, ministers and top officials), who are allowed to fashion, launch and execute the laws in the name of the people, are themselves corrupt (Andvig and
It has been comprehensively accepted now that corruption hinders economic growth. Economic consequences of corruption consist of low labor output, reduced investment, and as a result shoddier growth. The countries with high corruption stages have inferior economic presentation. Corruption outcomes in the form of condensed domestic and foreign direct investment, flashy government expenditure away from education, health, and maintenance of infrastructure, near to less proficient projects. Corruption harmfully impact on investment climate; it has been found in different cases across countries that corruption significantly slows down foreign direct investment and stream of foreign aid. If corruption decreases domestic and foreign investment one would deem that it would also trim down economic growth (Soomro, 1999). There exist negative connection among corruption and economic growth. It diverts assets from poor to the rich; increases the cost of running businesses, distorts public expenditures, and deters foreign investment. In adding up corruption has awful effect on human development, and increases cost of fundamental social services (Obayelu, 2007).

Since both corruption and economic growth are highly rated on the development policy agenda the question arises as to whether and how they are related to each other. It is commonly assumed that both have negative relationship and corruption encumber economic growth. Overwhelming body of empirical evidence suggests that the impact of corruption on economic growth and development is highly devastating and there are a number of channels through which the negative effects of corruption are transmitted to the economy. Corruption should not be viewed merely as an administrative problem. This issue has economic dimensions as well and requires economic insight for its clarification. Economic reforms aimed at simplifying cumbersome laws and procedures leads to eradicate inefficient rules and regulations.
There’s without doubt that Pakistan is facing lots of economic problems, a few of which are extremely grave in magnitude and depth however corruption is painstaking as the most central dilemma which require instant courtesy. This study attempts to find out its impacts on the economic growth of Pakistan.

The study divides n to the following sections: after introduction which is presented in Section 1 above, Section 2 shows literature review. Data source and methodological framework are presented in Section 3. Results are discussed in Section 4. Final section concludes the study.

**Literature Review**

There is an increasing volume of literature on the relationship between corruption and economic growth, and the general conclusion is that corruption slows down the long-term growth of an economy through a wide range of channels. Hines (1995) viewing that US airplane exports after 1977 decreased in countries supposed to be corrupt. These outcomes are however not enough to argue that the USA has a aggressive disadvantage, since they could just as well designate that competitive advantages in corrupt marketplaces before 1977 had been neutralized subsequently. Mauro (1995) considers that negative relationship among corruption and investment is important, both in a numerical and in an economic logic. For example, if Bangladesh were to get better honesty and effectiveness of its bureaucracy to rank of that of Uruguay, its investment rate would increase by about five percentage points and its annual GDP growth rate would increase by over half a percentage point. Evans and Rauch (1996) investigate the impact of merit-based enrolment on corruption in 35 developing countries. Higher values in the merit-based enrolment index are linked with a greater amount of higher-level officials in the interior economic agencies to be either in control of a university degree or to go through the civil service through a proper exami-
nation system. While calculating for income, this index is negatively related with corruption.

La Porta et al. (1997) argue that trust can be useful in combating corruption, since it helps bureaucrats to better collaborate with each other and with private nation. In a sample of 33 countries, the authors explain that trust has a considerable negative impact on corruption, while controlling for GDP per head. Mauro (1997) created significant outcome which argued that corruption mainly impacts on the accumulation of capital, which can be resulting from the ratio of investment to GDP, but it does not undoubtedly cause the efficiency of capital, because otherwise a link between corruption and growth of GDP should be noticeable. Tanzi and Davoodi (1997) study impact of corruption on quality of investments referring to panel data on corruption from PRS( Political Risk Service) for 1980-95, the authors imply that corruption lowers quality of infrastructure as measured by condition of smooth roads and power outages. They support their hypothesis by reporting a high significance in their statistical results. However, based on own regressions for a cross-section of countries using the TI (Transparency International) index for 1998 it was not possible to repeat the significant results. This sheds some doubt on the strength of conclusion to different methodologies.

Brunetti and Weder (1998) explain that a free press successfully deters corruption. The concluding variables consist of "laws and regulations that manipulate media content", "political control over media content", "economic influence over media content" and "repressive actions" as compiled by Freedom House. These four part index and a collective index of press freedom all impact harmfully on the level of corruption in various condition. Gupta et al. (1998) argued that corruption increases income inequality, as measured by the Gini coefficient. In a cross-section of 37 countries, found a significant positive impact of corruption on inequality, while taking into account various other exogenous variables. The authors find further verification that corruption increases inequality in education.
and land distribution. Since these variables contribute to income inequality (and had been controlled in the first regression) overall impact of corruption on income inequality may even be stronger.

Mauro (1998) finds that corruption lowers expenditure on education, disagreeing that other expenditures recommend public servants enhanced opportunities to save bribes. His results hold for a variety of condition but may bear a little from the low descriptive power of the regressions.

Alesina and Weder (1999) investigated whether corrupt governments attract or discourage aid from OECD countries and also make use of a variety of different measures of corruption and investigate different samples of countries. Testing for various specifications of regressions, the authors do not find evidence that corrupt countries are discriminated against by foreign donors. Some results suggest that corrupt countries are even more appropriate to attract foreign aid from OECD countries. Fisman and Gatti (1999) make use of variables on decentralization, but tests whether outcome is strong to inclusion of other variables. For a wide range of specifications they find a strong negative relationship between fiscal decentralization in government expenditure and corruption. Lambsdorff (1999) present linking corruption to capital productivity. The ratio of GDP to capital stock is interpreted as a macroeconomic measure of the average capital productivity. The capital stock is determined as accumulated and depreciated investments. In a cross-section of 69 countries a significant negative impact of corruption on this ratio is found, while controlling for the total capital stock and testing for various other variables. Leite and Weidemann (1999) argue that plenty of natural resources create opportunities for rent-seeking activities and increase to corruption. The results emerge to be strong for a diversity of specifications. Treisman (1999) concerned with the impact of decentralization on corruption, has been involved in theoretical discussions telling conflicting viewpoints. He found significant verification that federal states are more
corrupt than national ones. But this relationship fell to irrelevance when other variables had been incorporated. Therefore, while the dummy variable measuring federalism was shown to compare with corruption, this conclusion was not strong to the addition of other variables. Above that, a dummy variable may not effectively imprison all facets of decentralization.

Weder (1999) conduct regressions of corruption on FDIs in a cross section of countries test a range of different terms and explanatory variables. They terminate that for almost no specification the impact of corruption is significant at conventional levels. In addition the indication of an impact of corruption on FDIs is diverse. Wei (1999) reviews the practical work and provides new proof on the association among corruption and growth. The conclusion to be resulting from Wei’s study is that countries with high levels of corruption be inclined to trace poor economic performance. The unfavourable effect of corruption on growth and development are reported to answer from reduced domestic investment, discourage foreign direct investment, extravagance in government and indistinct work of government spending. He discusses a variety of policy options, as well as reforming the government’s role in economy; merit-based enrolment and support of civil servants; paying civil servants a spirited salary in relative to related jobs in the private sector; and international force on countries with high levels of corruption.

Mo (2000) investigated the impact of corruption on economic growth and channels during which it affects growth with data similar to Mauro (1995). He establish that a 1% boost in the corruption level reduces growth rate by regarding 0.72% and most significant channel is political instability, accounting for regarding 53% of whole result. He also establishes that corruption lowers level of human capital and share of private investment. Pulok (2000) study the long run relationship between economic growth and corruption in Bangladesh over the period 1984-2008. He included corruption into the augmented model by a definite functional
form for total factor productivity and three other channels to demonstrate impact of corruption on real GDP per capita. To examine empirically the survival of a long run relationship between corruption and real GDP per capita, author use Auto-Regressive Distributed Lag (ARDL) Bounds Test method. The outcomes of co-integration test verify that there is a long run relationship between corruption, GDP per capita and other determinants of GDP over study period. The long run estimation specifies that corruption has direct negative impact on per capita GDP i.e. economic development of Bangladesh. Brempong (2001) examine the effects of corruption on economic growth and income distribution by using panel data from African countries and a dynamic panel estimator. Author finds that corruption reduces economic growth directly and indirectly through reduced investment in material capital. A unit rise in corruption decreases the growth rates of GDP and per capita income among 0.75 and 0.9 percentage points and between 0.39 and 0.41 percentage points per year correspondingly. The outcome also specifies that improved corruption is positively linked with income inequality. The joint effects of reduced income growth and increased inequality propose that corruption harms the poor more than the rich in African countries.

Fisman and Svensson (2001) apply firm-survey data of predictable corrupt expenses of Ugandan firms to learn the correlation between corrupt expenses to government officials, taxes and firm growth which expose that both rate of duty and bribery are negatively connected with firm growth. For complete data set, 1 percentage point boost in the bribery rate is connected with a decrease in firm growth of 3 percentage points, a result that is about three times larger than that of taxation. Mo (2001) anticipated a direct and indirect effect of corruption on economic growth by means of along expression growth rates of per capital GDP from 1970 to 1985. Author recognizes three transmission controls that is, investment, human capital and political stability. A regression is run by means of corruption perception index of Transparency International, variables calculating three transmission channels and other manage varia-
bles. The result specifies that one unit raise in the corruption index decreases growth rate by about 0.545 percentage point. However, the direct effect of corruption turns into insignificant in both ordinary least squares (OLS) and two-stage least squares (2SLS) estimation after calculating further variables. Easterly (2003) demonstrates that practical inefficiency caused by corruption affects growth not directly by lowering investment rate and directly by primary to misallocation of investment between sectors. For example, a one standard deviation development in the bureaucratic efficiency indicator is linked with a 1.3 percentage point boost in the yearly growth rate of GDP per capita. Pellegrini and Gerlagh (2004) study the effects of corruption on investment, schooling, trade policy and political stability, and approximate the contribution of a variety of channels to general negative effects of corruption on growth. They conclude that the effects of corruption on growth are equally straight and not direct through its impact on investment, schooling, trade openness and political stability.

Abbey (2005) demonstrates that corrupt politicians, with facilitate of dishonest bureaucrats, over the world be inclined to prefer investment projects not on foundation of their inherent economic value but on chance for bribes and kickbacks these projects near and the final wounded are ordinary people. So, political corruption has long-term impact on economic growth because politicians are imaginary to guide the country for economic wealth. Akai et al. (2005) measures the rate of economic growth for different time duration—short (1998–2000), middle (1995–2000) and long (1991–2000)—using earlier uninvestigated state-level cross-section data for the United States. Our two-stage least square (2SLS) estimate with a carefully preferred set of implements show that the effect of corruption on economic growth is definitely negative and statistically significant in the middle and long durations but insignificant in short span.
Dreher and Herzfeld (2005) analysis the empirical literature on the economic costs of corruption. Corruption affects economic growth, the level of GDP per capita, investment activity, international trade and price stability negatively. They estimate the effect of corruption on economic growth and GDP per capita as well as on six probable transmission controls. The outcome of this study permits to estimate the total effect of corruption: A raise of corruption by about one index position decreases GDP growth by 0.13 percentage points and GDP per capita by 425 US$. Méon and Sekkat (2005) explain relationship between impact of corruption on growth and quality of governance in a sample of 63 to 71 countries during 1970 to 1998. Result shows that there is negative relation between corruptions with economic growth. Mironov (2005) investigates the effect of corruption on economic growth in 141 countries from 1996 to 2004. Author discovers that bad corruption, or corruption which is related with poor organizations, has a negative effect on GDP growth. However, residual corruption, or corruption which is uncorrelated with other governance individuality is positively associated to GDP growth in countries with poor organizations. A study of financial data from more than 9000 companies in 51 countries brings related outcomes: residual corruption is positively associated with capital accumulation and productivity growth in developing countries.

Brempong and Camacho (2006) reveal that there are statistically important local differences in income and growth presentation due to corruption. For example, 1 percentage raise in corruption decreases growth rate of per capita income by about 1.7% in OECD and Asian countries, by about 2.6% in Latin American countries, and by 2.8% in African countries. 1 standard deviation boost in corruption increases the Gini coefficient of income inequality among 0.05 and 0.33 points. So, corruption increases the variation among rich and poor which is a main reason of common conflict in rising countries. Buse and Hefeker (2006) investigated relations between institutions, political threat, and foreign direct investment inflows by both cross-sectional and cross-sectional time-series
investigation. The sample size covers 83 developing countries in period 1984-2003. Their conclusion showed that government stability, internal and external conflict, corruption and ethnic tensions, law and order, democratic accountability of government, and quality of bureaucracy are extremely important determinants of foreign investment inflows.

Drury et al. (2006) analysed that political processes such as democracy and corruption are significant aspects in determining economic growth. They show that democracy has only indirect effects on growth, while corruption is generally a direct and negative impact on economic performance. They disagree that one of democracy's indirect benefits is its capability to lessen harmful effect of corruption on economic growth. While corruption definitely occurs in democracies, electoral mechanism slow down politicians from engaging in corrupt performs that spoil generally economic performance and thereby expose their political survival. Using time-series cross-section data for more than 100 countries from 1982–97, they show that corruption has no significant effect on economic growth in democracies, while non-democracies bear significant economic destruction from corruption. Farida and Esfahani (2006) study the impact of corruption on economic growth in Lebanon. Using a neoclassical model, they hypothesize that corruption decreases the country’s standard of livelihood as calculated by real per capita GDP. They explain that corruption discourages growth not directly through falling the factor input efficiency in a Cobb-Douglas production function. They present pragmatic proof signifying that corruption increases inefficiencies in government expenditure and decreases investment and human capital productivity, leading to a negative impact on output. The implications of the analysis are explored.

Mendez and Sepulveda (2006) study the special effects of corruption on long-run growth by including procedures of political liberty as a input determinant of the connection. They establish facts of a non-monotonic connection among corruption and growth after calculating
for a number of additional economic variables. They prove that corruption has a positive impact on long-run growth at low levels of occurrence but is negative at high levels, representing that the growth-maximizing level of corruption is considerably larger than zero. This result, however, was established to be strong only in a sub-sample of countries that have attained a high level of political freedom.

Mendez and Sepulveda (2006) calculated the effects of corruption on long-run growth by incorporating procedures of political liberty as a key determinant of the association. They establish verification of a non-monotonic relationship between corruption and growth after calculating for some other economic variables. They explain that corruption has an advantageous impact on long-term growth at low levels of occurrence but is critical at high levels, representing that the growth-maximizing level of corruption is considerably greater than zero. N’zue and N’guessan (2006) analyze the connection among corruption, poverty and growth in a panel of 18 African countries for 1996-2001 time periods. Indicators of poverty and corruption were recognized and tests of the causal relationship among these variables were performed using panel data study. The empirical results propose that, it is poverty that causes growth but not the further way around. This means that past sequence of position of human development help advance calculation on growth; it is the state of growth that causes corruption and inequality; It is corruption that causes inequality; corruption and poverty together cause growth; poverty and growth together cause corruption; and finally, inequality together with growth cause corruption.

Dreher and Gassebner (2007) investigates impact of regulations on entrepreneurship depends on corruption. Empirical analysis shows that corruption is beneficial in highly regulated economies. So, corruption significantly increases entrepreneurial activity. Results show that there is positive relation between corruption and economic growth. Obayelu (2007) gives a general thought of the Nigeria’s current incident on cor-
ruption in perspective of economic reforms programme. It discusses possible causes and effects of corruption, which are seen to be embedded in socio-cultural practices and political and economic situation of the country. Data were drawn mostly from news stories, and commissions of enquiry, interviews of Nigerians with appropriate information and personal knowledge of Nigeria. The results of study show that there have been significant reductions in level of corruption in the country through introduction of government anti-corruption instruments and also found a negative relationship between levels of corruption and economic growth thus making it complicated for Nigeria to develop fast. Shaw (2007) prepares a macroeconomic model to discover impact educational corruption may have on growth, educational achievement, and education wage premium. He finds that model can create a negative correlation among economic growth and educational corruption as well as a positive correlation among education wage premium and educational corruption. Results conclude that borrowing constraints can worsen the impact educational corruption has on economic growth, the wage premium, and educational achievement rates.

Aliyu et al. (2008) examine the impact of corruption on economic growth in Nigeria from 1986 to 2007. A Barro-type endogenous growth model was assumed. The Engle-Granger (1987) cointegration and error correction mechanism (ECM) techniques were engaged to unit root properties of variables, their long run relationship and to establish principles of long run factors. The outcome explain that corruption apply important direct effect on economic growth and not directly through some significant variables observed which consist of Government Capital Expenditure, Human Capital Development and Total employment. They find out that about 20% of raise in government capital expenditure split ends in confidential pockets. Ali (2008) use available corruption index as measures of corruption in a corruption-growth model that is useful to cross-sectional data covering 141 countries in 1996, corruption is originate to have a significant positive relationship with economic growth for
two of corruption index. However, no particular significant correlation is found to exist for East Asian countries within sample. The corruption index are then joint to generate a single index of corruption which is then used in a corruption-growth model and apply to panel data covering 33 countries over a 20 years period from 1984 to 2003. This time corruption variable is found to have a significant positive correlation with economic growth for East Asian countries (excluding Singapore) during 1986-1996.

Podobnik et al. (2008) examine the reliance of the Gross Domestic Product (GDP) per capita growth rates on changes in the Corruption Perceptions Index (CPI). For the period 1999–2004 for all countries in the world, they find on common that a raise of CPI by one unit lead to an increase of the annual GDP per capita growth rate by 1.7%. By retreating only the European countries with evolution economies, they find that a raise of CPI by one unit produces an increase of the annual GDP per capita growth rate by 2.4%. They establish a new measure to calculate the relative corruption among countries based on their individual wealth as calculated by GDP per capita. Asiedu and Freeman (2009) apply firm-level data on investment and measures corruption at the firm and country level, and allocate the result of corruption to differ by area. Dependent variable is firms’ investment growth and they use six measures of corruption from four dissimilar basis—two firm-level measures and four country-level measures. They find that effect of corruption on investments differs significantly across areas: corruption has a negative and significant effect on investment growth for firms in changeover countries but has no significant impact for firms in Latin America and Sub-Saharan Africa. Additionally, for Transition countries, corruption is mainly significant determinant of investment.

Ling and Nordahl (2011) investigate the levels of supposed corruption in a cross-section of countries have affected their economic growth rates over the years 2004-2008. The study is approved with four regressions on a sample of 123 countries and eight variables for the time
period. The models are created on the origin of both the neoclassical growth theory and the endogenous growth theory. The establish outcomes disagree with the predictable outcome; it explains that the supposed levels of corruption are considerably and positively associated with economic growth. It is however establish that countries with common corruption, in universal developing countries, have knowledgeable high economic growth in excess of these years. Vaal and Ebben (2011) study the effects of bureaucratic corruption on economic growth in a structure that takes into account that corruption also affects growth throughout its impact on institutions. They use a proper growth structure in which corruption affects growth negatively because of individual rent-seeking and theft of public goods, but where corruption may provide a positive role by taking over the position of institutions. They find that overall effect of corruption on economic growth is extremely dependent on the institutional setting of a country. Mostly in conditions where institutions are not well developed corruption may be favourable to economic growth.

Igwike et al. (2012) observed the relationship among corruption and economic development with help of some empirical tests. They composed data from about 100 countries for the period 2000 to 2009 and engaged the annual growth rate of gross domestic product to measure economic development and Corruption Perception Index accumulated and available by Transparency International to measure corruption in selected set of countries. The result of selecting some variables and years is pooled data set. They used fixed effects and random effects models to check the relationships. They found that corruption has a negative impact on economic growth and also hold for the fixed effects model and partial verification of a two-way relationship among the variables. Otahal and Grochova (2012) explain theoretical structure that is related to problem of corruption and expose its purpose difficulties. They dispute that corruption in common is problem of lawful setting and its enforcement and, if poorly recognized, it does not support economic development. They present empirical test
presenting whether corruption harms or not economic growth in Central and Eastern Europe. They use Granger causality test to show that corruption leads economic growth in Central and Eastern Europe which means that lawful setting and its enforcement slightly permit for rent-seeking than support economic growth. They highlight the requirement to focus on institutional structure to fight corruption and maintain economic growth.

Corruption has been around for a very long time and will be around in the future unless governments figure out effective ways to combat it. Various anti-corruption strategies have been designed and implemented.

Data Source and Methodical Framework

Time series data was used for per capita GDP, domestic investment, government expenditures, population growth, education expenditures and corruption index in Pakistan. All the data was obtained from World Bank Development indicator (WDI, 2010), Economic survey of Pakistan (various editions) Transparency International (TI) and IFS (2010).

To estimate impact of corruption on growth, data over annual frequencies from 1990-2010 was used on various variables that was obtained from said sources. Sample size was reduced to only 21 observation because lack of data arability from available sources.

Theoretical Model

Neoclassical model of economic growth explicitly include effects of corruption on economic growth. This modelling approach helps to compute effect of corruption on economic growth perhaps better than preceding studies that employ variety of approaches that pay no attention to the potential effects of corruption on economic growth and development.
Our theoretical model suggests that output and growth are influenced by the level of corruption (Farida and Esfahani, 2006).

Since the seminal works by Kormendi and Meguire (1985), Barro (1991) and, The modern growth literature even though fairly broad, has focused on the same specification. Institutional and political determinants of growth have also extensively used the identical technique (Mankiw et al. 1992). It has then become standard to articulate growth rate of a specified period as a blend of a few explanatory variables. The economic variables that are typically included to explain this relationships are: domestic investment, population growth, government expenditure etc.

\[ Y = f(K, PG, GE, \ldots) \]  

Where

\[ Y \]  

is average growth rate of per capita income over the period

\[ K \]  

is domestic investment

\[ PG \]  

is population growth

\[ GE \]  

is government expenditure

Depending on the rationale of the empirical analysis additional explanatory variables can also integrated. The objective of the present study is to examine how corruption effect economic growth. Hence, two additional sets of explanatory variables are also considered. One refers to corruption indices while the other concerns measures education expenditure.

\[ Y = f(K, PG, GE, CO, EDE) \]  

where

\[ Y \]  

average growth rate of per capita income
K  domestic investment in US $ million.
PG  population growth rate
GE  government expenditures as percentage of GDP
EDE  education expenditures as percentage of GDP and
CO  corruption index

The cross-state indicator of corruption is attained from Boylan and Long (2002), who presented a survey of state house reporters’ perceptions of public corruption in their state in 1998. State house reporters were asked to rate the level of corruption between all employees in the state government (as well as selected officials, political appointees, and civil servants) on a scale from one to seven (least corrupt to most corrupt). The standard of such “local” reporters’ views is used as a measure of corruption in each state. Note that the Corruption Index is calculated in 1998. Basically, however, the Corruption Index is calculated only once in a particular year throughout the period of research. This index is found on state house reporters’ perceptions, which may be formed by observations and practices over more than any particular year.

In line with studies by Mo (2001) and Anorou and Braha (2004) in which they recognized the effects of corruption on economic growth which is in line with specification of Barro’s model, we adopt the endogenous growth model as it was said prior the model authorizes the inclusion of more policy variables in economic growth equation. Specifically, the model was modified to include the corruption index as one of its explanatory variables. As corruption is taken as an index so we didn’t use log and difference with corruption. Then the estimated equation will be specified as:
\[ \log(\text{GR}) = \beta_0 + \beta_1 \log(\text{K}) + \beta_2 \log(\text{PG}) + \beta_3 \log(\text{GE}) + \beta_4 \log(\text{CO}) + \beta_5 \log(\text{EDE}) + \mu \]  

(3)

where

\[ \beta_0 = \text{is constant} \]

\[ \beta_1 = \text{is coefficient of } \log(\text{K}) \]

\[ \beta_2 = \text{is coefficient of } \log(\text{PG}) \]

\[ \beta_3 = \text{is coefficient of } \log(\text{GE}) \]

\[ \beta_4 = \text{is coefficient of } \log(\text{CO}) \]

\[ \beta_5 = \text{is coefficient of } \log(\text{EDE}) \]

\[ \mu = \text{Error term} \]

We estimate the above equation using Ordinary Least Square (OLS) following Mo (2001) and Anorou and Braha (2004) to capture the effect of corruption on growth rate.

As the data we used in time series which exhibit property of non-stationarity, as we examined it by using ADF test (Gujrati, 2004). The resulting ADF test shows that all the variables are non-stationary 1(0) at levels and stationary at first difference 1(1). So we modify our estimated equation as follows.

\[ \Delta \log(\text{GR}) = \beta_0 + \beta_1 \Delta \log(\text{K}) + \beta_2 \Delta \log(\text{PG}) + \beta_3 \Delta \log(\text{GE}) + \beta_4 \log(\text{CO}) + \beta_5 \Delta \log(\text{EDE}) + \mu_1 \]  

(4)

where

\[ \Delta \log(\text{GR}) = \text{first difference and } \log(\text{GR}) \]

\[ \Delta \log(\text{K}) = \text{first difference and } \log(\text{K}) \]
\[ d\log(PG) = \text{first difference and } \log(PG) \]
\[ d\log(GE) = \text{first difference and } \log(GE) \]
\[ (CO) = \text{Corruption Index} \]
\[ d\log(EDE) = \text{first difference and } \log(EDE) \]
\[ \mu = \text{Error term} \]

After estimating the above models, we subjected them into a number of tests for the detection of econometric problems. ARCH, Histogram, CUSUM, CUSUM of squares, Breuschk-Godfrey Serial Correlation LM Test was used for the detection of econometric problems.

**Results and Discussions**

We started with testing the data for stationarity, unit root test was used to observe the stationarity of time series data. Often time series data show the property of non-Stationarity i.e. mean, variance and autocovariance does not stay same no matter at what point we calculate them, the regression of this non-stationarity data will be spurious and we can study its actions only for the time period under contemplation. So data of all the variables was tested for stationarity to convert them in a probable position and hence forecasting may become possible.

The data was experienced for unit root (non-stationary) by using the Augmented Dickey-Fuller (ADF) test. Through Augmented Dickey-Fuller and Phillip-Perron test, the stationarity of each variable can be checked. The standard regression method can be applied if the variables are found to be stationary. If the variables are non-stationary in their levels, then the regression will generate spurious results. The results from Augmented Dicky-Fuller unit root test (see, Table 1) are indicative of the fact that
all the variables are non-stationary at level while stationary at first difference.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Level</th>
<th>Order of cointegration</th>
<th>1st difference</th>
<th>Order of integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDE</td>
<td>-1.183</td>
<td>I(0)</td>
<td>-3.710*</td>
<td>I(1)</td>
</tr>
<tr>
<td>GE</td>
<td>-1.656</td>
<td>I(0)</td>
<td>-6.099*</td>
<td>I(1)</td>
</tr>
<tr>
<td>K</td>
<td>-1.285</td>
<td>I(0)</td>
<td>-4.837*</td>
<td>I(1)</td>
</tr>
<tr>
<td>PG</td>
<td>-0.664</td>
<td>I(0)</td>
<td>-8.346*</td>
<td>I(1)</td>
</tr>
<tr>
<td>CO</td>
<td>-1.780</td>
<td>I(0)</td>
<td>-4.607*</td>
<td>I(1)</td>
</tr>
<tr>
<td>Y</td>
<td>-1.359</td>
<td>I(0)</td>
<td>-5.384*</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Models are the direct and mathematical form of a statement. Models are used for future prediction and forecasting. By shifting the value of a factor (independent variable) we can predict its effects on output (dependent variable). The linear model specified in equation (3) has been used to approximate the impact of corruption on economic growth by using ordinary least squares (OLS) method. After building the data stationary we run the regression as per equation (3) for parameter estimates their relevant standard errors, t-ratios and P-values are given in the Table 2.

The results shows that government expenditures, education expenditures and population growth has a positive impact on per capita GDP, however, domestic investment and corruption has a negative impact on per capita income in Pakistan. It implies that corruption is a major factor impeding economic development. Corruption hampers economic growth, disproportionately burdens the poor and undermines the effectiveness of investment and aid. The results are inline with the previous studies of Obayelu(2007), Méon and Sekkat (2005) and Pulok (2000).
The empirical results, given in Table 2, appear to be very good in terms of the usual diagnostic statistics. The value of Radjusted indicates that 56.4% variation in dependent variable has been explained by variations in independent variables. F value is higher than its critical value suggesting a good overall significance of the estimated model. Therefore, fitness of the model is acceptable empirically. The Durbin Watson Test shows that there is no such autocorrelation problem exist in the model as its value is 2. LM test and ARCH test both suggests that there is no problem of autocorrelation and heteroskedasticity in the model.

### Conclusions

The primary objective of this study is to significantly evaluate the impact of corruption on economic growth in Pakistan. To accomplish this objective, the core channels through which corruption affects growth were recognized in both the literature and empirical studies. These channels include per capita GDP, population growth, domestic investment, education expenditures, government expenditures and corruption index.
This study uses the Ordinary Least Square method to estimate effect of corruption on economic growth equation. We have used the estimated OLS model to infer a long run relationship between economic growth and other variables including domestic investment, population growth, education expense, government expenditure and corruption index. This relationship is then used to estimate effect of corruption on economic growth in Pakistan. The study confirms the negative impact of corruption on economic growth in Pakistan over the period 1985-2010. The OLS model shows that 1% increase in corruption decreases the economic growth by 0.36% during the period under consideration. The existence of corruption is a subject of severe concern for the government and policy makers. The presence of corruption not only causes massive losses economy but also causes inefficiencies for policy makers.

Some of the important policy recommendations regarding to corruptions are:

1. In order to successfully combat corruption, there must be the proper mechanism that will transform dramatically the culture and legacy of corruption in Pakistan.

2. Government of Pakistan should take proper measures to keep check and balance on all the economic activities to avoid the corruption as it hinders the economic growth in the long-run.

3. The efficiency of the Judiciary should be enhanced through political support by government of Pakistan because lack of sovereign judiciary can enhance occurrence of corruption as such form of judicial system dishonoured by bribery deteriorate confidence in supremacy by facilitating corruption across all sectors of government.
References


