

Research Article

Analyzing the effects of corruption on the economic growth: A cross-sectional regression analysis on SAARC Region

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The impact of corruption in economic development is one of the widely studied topics in economics worldwide. This study is an attempt to understanding the relationship between the level of corruption and economic growth of the SAARC region. SAARC stands for South Asian Association for Regional Cooperation. There are currently eight member countries in the SAARC namely, Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. The SAARC consists of 3% of the world area, 21% of the world population and 3.8% of the global economy. All of the member countries of SAARC are developing countries. Taking into account the data of level of corruption in SAARC region (as measured by the CPI) and economic growth (as measured by Gross Domestic Product per year), for time period 2000-2017, this research seeks to impact of corruption on a country's GDP while holding other determinants exports, unemployment rate, population growth, years of schooling and capital formation constant. The research will be based on the literature review and empirical analysis of the articles dealing with the economy and corruption of the SAARC region. The result of the research reveals that there is a negative relationship between economic growth and level of corruption. The author tries to provide some relevant policy implications for SAARC countries based on our research and findings.

Key words: Economic, policy, socio-economic

INTRODUCTION

Corruption is a widespread concept and defined by many scholars, policy makers, and others. There exists a mixed views regarding the effect of the corruption in the economic growth of the nation. Some economists argue corruption as the good has beneficial/positive impact on economic growth while other economists argue corruption has detrimental effect and it impacts economic activities negatively thus hindering the economic growth.

Corruption is the abuse of entrusted power for private gain as defined by (Transparency International). It can be divided as grand, petty and political depending on

the amounts of money lost and sector where it occurs. Corruption is certainly a global issue and it impacts development of many countries for many reasons. The corruption is high in developing countries thus influencing many socio-economic and political activities. The sale of government property by public administrators, misuse of public assets, bribery and discrimination are the examples of corruption. Due to corruption more than one trillion US dollars are vanished annually reflecting almost 5% of the world gross domestic product, reported by World Bank (2000). There are many ways corruption hinders growth like; smuggling, black market, rent seeking, tax frauds, conspiracy, nepotism, favoritism, dishonesty and others.

SAARC stands for South Asian Association for

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Regional Cooperation and it is the regional union of eight south Asian countries founded on 1985. The main objective behind the establishment of SAARC was economic and regional integration. Afghanistan, Bangladesh, Bhutan, India, Sri Lanka, Maldives, Nepal and Pakistan. SAARC comprises 3% of the world's area, 21% of the world's population and 3.8% of the global economy as of 2015. There have been many ups and downs in each SAARC countries due to civil war, religious war, terrorism, illegal money laundering and many others. SAARC has faced problems in the past, mostly attributed to India- Pakistan hostilities. India's problems with Pakistan over Kashmir, terrorism, and nuclear issues have affected the working of SAARC since its inception. There doesn't exist many studies regarding factors that impact economic growth in the SAARC region like corruption, exports/imports and other various factors. This study tries to find the existing literatures on SAARC region studying the factors affecting economic growth and corruption. The SAARC countries are suffering from the weak system of governance and worst case scenario of corruption.

It is critical to know the relation between economic growth and other factors that impact growth directly and indirectly. It is commonly seen that most of the SAARC member nations are developing and they are not able to develop economic growth significantly. There has been some news report that the head of government of these nations have been accused of being corrupt themselves. Most of the national agency to monitor and punish like Commission for the Investigation of Abuse and Authority are nominated by political parties and they support and misuse power themselves. It is widely popular phrase that those commissions only go after small fishes but ignore and support big fishes. The international community and other society can't help if the ruler of the countries is responding seriously or finding ways to solve/combat corruption. This study can be useful for SAARC secretariat and member nations to devise research committee to find more accurate relation between economic growth and level of corruption and come up with the better policy to raise voice against corruption from the country level.

The following sections of the paper is arranged as follows; Literature Review, Conceptual framework, model and data, estimation results, analysis and policy

implication and conclusion.

LITERATURE REVIEW

Corruption is an abuse of the public office for private gains. Some economists and scholars argue that corruption has a beneficial and positive overall impact on growth, whereas some economists argue corruption as highly detrimental, creating a negative effect on growth. As more and more researchers are interested in estimating the relationship between corruption and economic growth, the outcomes are both positive and negative. Corruption is in several forms like dishonesty, fraud, bribery, embezzlement, blackmailing, nepotism and favoritism, etc. (Mauro, 1995) and (Bardhan, 1997) argued that corruption is harmful to the development and growth by lowering the quality of infrastructure projects and public services; (Leff, 1964) and (Huntington, 1968) stated that corruption brings a positive impact on the economic growth through efficiency in the economy. The crime can be favorable in those nations where they lack good government practices and are fragile. (Lui, 1965) agreed with the positive impact of corruption as corruption reduces the waiting cost, time and gets the work done fast increasing efficiency.

Even though corruption can act either as a grabbing hand or helping hand to facilitate economic growth, it is most likely to be the grabbing hand, and it negatively impacts the economic growth affecting the opportunities for development (Quazi, 2014). Corruption imposes additional costs on the growth process as it diverts scarce resources from the investment. It increases the uncertainty and risk associated with investment and drives away new investment relevant to the findings of Mauro in his paper Corruption and Economic growth. (Fabayo et al., 2011). The idea of corruption as a greaser of growth might not apply to countries (India and Nigeria) with weak government institutions based on the Ordinary Least Square (OLS) regression (Obamuyi, Olayiwola, 2019).

(Saha et al., 2017) examined the effects of the corruption on economic development for 16 Middle Eastern and North African (MENA) countries over the period 1984-2013. They concluded that low-income countries are more likely to have more corruption than high-income countries. It is also the result of Ahmad et al. (2012) in which the authors analyzed the impact of

corruption in the economic growth of 71 developed and developing countries. The authors used the panel data from the International Country Risk Guide corruption index, institutional quality, and political indices to show the relationship between corruption and economic growth. It is tough to generalize the relationship between corruption and economic growth as some East Asian countries, like China, Korea, Indonesia, Japan, and Thailand, have a steady GDP growth rate but a high level of corruption as indexed in Transparency International report (Rock & Bonnett, 2004). (Murshed et al., 2015) in a cross-country panel regression, stated that there is no significant negative relationship between corruption and economic growth for 68 developed and developing countries between 1995-2012 using the International Country Risk Guide (ICRG) data. (Huang 2015) investigated whether corruption negatively impacts the economic growth in thirteen Asia-Pacific countries over the 1997-2013 period. The result of the study showed that there exists a significantly positive causality between corruption to economic growth in South Korea, a significantly positive causality running from economic growth to corruption in China, and no significantly positive causality for remaining countries. It can be said that the relationship between corruption and economic growth varies according to the country, and other different related factors and variables are taken into consideration.

The results of the Corruption Perception Index which covers 180 countries, scoring them on a scale from 0 (highly corrupt) to 100 (very clean), reveal that Nepal, India, Pakistan, Maldives, Bangladesh, Afghanistan, Sri Lanka have scored below 42 except for Bhutan which has scored 68, the least corrupted nation in the SAARC region. (Awan et al., 2018) studied the impact of governance and corruption in the economic growth of selected SAARC countries using the panel data for the period 1996-2014. Some of the examples of corruption prevalent in the SAARC region are a sale of government property by public administrators, misuse of public assets, bribery, discrimination, tax & accounting frauds, and others. The economic growth and financial performances of South Asian countries have increased. Still, other factors like political instability, weak institutions, and bad governance are reasons behind the economic growth being not as expected (Devarajan,

2005).

While corruption is one of the factors affecting economic growth, other factors have a similar impact on economic growth. In the investigation of a wide range of economic research literature, it seems that the relationship between corruption and economic growth is still not clear either being positive and negative. Though corruption is a global problem, the cost of corruption in the SAARC region is growing and impacting the development of the entire area. The major corruption scandals among the public officials at all levels in India and other SAARC countries in the past decades suggest that corruption is a prevalent aspect of the SAARC political and bureaucratic system (Debroy, Bhandari, 2011). There exist excessive regulations and authorizations requirements, complicated taxes and licensing policies, mandated spending programs, monopoly of services provided by the government, lack of strong laws that promote corruption. This paper aims to analyze the impact of corruption in the economic growth of corruption in the SAARC region based on the literature review and empirical data analysis.

MATERIALS AND METHODS

Conceptual framework

The main interest of the paper is to analyze the impact of corruption in the economic growth of the SAARC region. Though there is variation among the scholars regarding the impact of corruption, most of them believe that corruption negatively impacts the economic growth of the region. There is causality between corruption and economic growth.

Hypothesis: The increase in the corruption index, encouraged by different socio-political factors, increase the economic growth of the nation/region. There is a negative impact of corruption in economic growth due to increased rent-seeking, higher transaction costs, and greater uncertainty, lower investments, and misallocation of economic factors of production. The corruption Perception index (CPI) from Transparency International, growth or decline in exports, per capita income, human index, GDP measures the economic growth. The general production function gives the growth mechanism.

$$Y = T_f(K, L)$$

where Y is the total output level, T is the total factor productivity, K and L are Capital and Labor respectively (Mo, 2000).

The total differentiation of Y gives:

$$dY = f dT + T(f_k dk + f_L dL).$$

Also according to Schumpeter Model of Economic development,

$$GR = F[\beta, IY, dLL]$$

where GY and β are the growth rate of real GDP and total factor productivity, IY is the investment ratio output and dLL is the growth rate of labor. The production of economy depends upon the rate of change of productive forces (Land, Labor, Capital) and the rate of change of technology and rate of social set up change (Economicsconcept.com).

The innovative activities and technologies require more government support and help, and it is impacted by corruption as people start taking bribery and hinder technological advancement. Also, corruption creates inequality in society and favors a certain group of people. There is a rare chance of high foreign investment in the area where there are high inequalities, favoritism, and social tension. The people's skill and labor will be based and defined to rent seeking activities impacting productivity and economic growth. The social set up (culture and tradition) degrades and creates social tension among the community. The corruption impacts the productive forces, technological changes, and social culture, which ultimately hinders economic growth. It is expected that the correlation between economic growth and corruption index is negative, meaning corruption has a negative impact on economic growth. All the factors like productive factors, technological factors, and social set up are negatively impacted heavily on the SAARC region, and we can expect the negative relation between corruption and economic growth in the SAARC region.

Model and data

Elaboration of model: The main model

$$\text{Loggdp} = \beta_0 + \beta_1 \text{CPI Index} + \beta_2 \log \text{exports} + \beta_3 \text{unemployment} + \beta_4 \text{popngrowth} + \beta_5 (\text{schooling}) + \beta_6 \text{capitalformation} + e$$

The main regression equation contains all the variables that impact GDP per capita growth, and it includes the level of corruption, as measured by the Corruption Perception Index (CPI), unemployment, population growth, FDI inflows, and Government effectiveness. It is not possible to take the natural log

of the negative numbers, so the model doesn't use log for population growth, FDI Inflows, and Government effectiveness since these parameters contain negative values in Table 1.

We expect the negative relationship between GDP per capita and the level of corruption. Several other regression analyses are analyzed in the estimation process using fixed-effect models. The fixed-effect model is the best in this regression analysis as it helps to control country effect variables. The results are presented in the estimation results in Table 2.

Description of data

The data for the GDP per capita, Population growth rate, Foreign Direct Investment Inflows, Government Effectiveness are from The World Bank Database for World Development Indicators from 2000 to 2017. The CPI Index values are downloaded from Transparency International for the years 2000 to 2017. The scope of the study is limited to the SAARC nations; Afghanistan, Bhutan, Maldives, Bangladesh, Nepal, India, Sri Lanka, and Pakistan. All the data collected and analyzed have been sorted and filtered to represent the values for the respective SAARC region. - Gross domestic product (GDP) is the sum of value added by all resident producers plus any product taxes (fewer subsidies) not included in the valuation of output. GDP per capita is gross domestic product divided by midyear population (World Bank). The population growth rate is the increase in the number of individuals in a population.

Unemployment refers to the share of the labor force, who is actively looking for employment. Foreign Direct Investment (FDI) flows record the value of cross-border transactions related to direct investment during a given period, usually a quarter or a year. Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Estimate gives the country's score on the aggregate indicator in units of a standard normal distribution, i.e., ranging from approximately -2.5 to 2.5 (World bank).

The Corruption Perceptions Index (CPI) is an index published annually by Transparency International since

1995, which ranks countries by their perceived levels of public sector corruption, as determined by expert assessments and opinion surveys. The CPI currently ranks 176 countries “on a scale from 100 (very clean)

to 0 (highly corrupt). Further information about the data sources can be found in Supplementary Table 1.

All the raw data for all countries in SAARC region can be found in Supplementary Table 2.

Table 1. Descriptive statistics

	GDP PC(\$)	Corrupt	Unemployment(%)	Population growth(%)	FDI inflows(-BILLIONS)	Government eff	Entisols (18%)
k'Iean	1640.20	30.07	9.38	1.60	4.50	-0.47	Entisols (18%)
kledian	988.75	28.00	4.18	1.29	0.48	-0.46	Entisols (18%)
Maxim um	9801.62	67.00	45.74	4.43	44.50	0.63	Entisols (18%)
Minimum	242.03	4.00	1.56	-0.27	-0.02	-1.50	Entisols (18%)
Std. Dev.	1793.67	12.76	10.70	0.91	10.50	0.53	Entisols (18%)
Obs ervations	113.00	113.00	113.00	113.00	113.00	113.00	Entisols (18%)

Table 2. Impact of level of corruption on GDP growth of SAARC region

Variables	I Log(GDP PC)	II Log(GDP PC)	III Log(GDP PC)	IV Log(GDP PC)	V Log(GDP PC)
Log Corrupt	0.661*** (0.156)	0.700*** (0.159)	0.602*** (0.164)	0.462*** (0.154)	0.462*** (0.156)
Log Unemployment	-0.141	-0.126	-0.059	-0.058	
Population growth		(0.111)	(0.109) -0.207*** -0.207***	(0.102) -0.141 (0.095)	0.103 -0.1410 (0.0957)
FDI Inflows				0.00*** (0.00)	0.00*** (0.00)
Government eff					0.0274 (0.3130)
Constant	4.831*** (0.520)	4.831*** (0.0519)	5.476*** (0.6011)	5.658*** (0.555)	5.668*** (0.568)
No of observations	113	113	113	113	113
R2	0.7975	0.800	0.808	0.839	0.839

Note: ***p<0.01, **p<0.05, *p<0.

The descriptive statistics table provides summary statistics for each variable. This table includes mean, median, maximum, minimum, standard deviation, and others for each variable. Many data are missing in each variable, so there are 113 observations in the data.

The GDP per capita is gross domestic product divided by midyear population, and the average GDP per capita of the SAARC region is \$1640.200. The CPI_INDEX measures the corruption perception index, and the average CPI for the SAARC region is 30.067. Unemployment measures the share of the labor force without work but available and actively looking for jobs. The average unemployment rate of the SAARC region is 3.05%. The POPNGROWTH measures the population growth of the nations, and the average population growth rate is 1.6% for SAARC nations. The FDI inflow measures the value of cross-border transactions, and the average FDI inflows for the SAARC region are \$4.50 Billion. The government effectiveness measures perceptions of the quality of public services and government effectiveness, and the average government effectiveness of the SAARC region is -0.467.

RESULTS

Though some variables have data from 1960 onwards and other variables have data for a limited year, the regression is based on the dataset for the year 2000 to 2017. These variables contained incomplete data, and some of the missing data are omitted during the regression analysis. The log (GDP PER CAPITA) is the dependent variable. The controls are the level of corruption, Unemployment, Population growth, FDI-Inflows, and Government effectiveness.

The regression analysis is used to analyze the relationship between GDP per capita and level of corruption, and the output is shown in the table below.

The CPI Index, Unemployment, Population growth rate, FDI Inflows, Government effectiveness are independent variables. The fixed-effect model was used in this regression analysis model. In regression (I), only corruption was included in the regression. In regression (II), corruption and unemployment were included in the regression equation. The population growth was added in the regression (III). The FDI inflows were added to the regression equation in regression (IV). Finally, government effectiveness was added in the regression

(V). The R^2 is higher when all independent variables were included in the regression model

It can be seen that corruption has an identical effect across the various fixed effect regressions models. An increase of 1 percentage on the Corruption Perception Index (being less corrupt) relates to a 0.462 % increase in GDP per capita, and a decrease of one percent on the Corruption Perception Index (being more corrupt) is related to 0.462 % decrease in GDP per capita. The model doesn't show any impact of FDI inflows on the GDP per capita of the SAARC region. The model is not able to explain the impact of unemployment, population growth, and government effectiveness for the SAARC region.

Analysis and policy implication

We have seen that there exists a negative relation between the level of corruption and the economic growth of the SAARC region. There are many potentials for the economic growth of the SAARC region to develop, but the corruption should be controlled first. As the SAARC is the government level regional cooperation entity, the main agenda of the SAARC should be to eradicate corruption as the collaborative effort. Though we have seen and realized SAARC not being effective holistically, the head of the eight-member nations of SAARC should play the respective role from their position. It is not uncommon for Pakistani and the Indian government to boycott each other and not to participate in meetings. Still, this situation is creating trouble ineffectiveness of SAARC as an organization.

The average corruption of the SAARC region is 31 – lower than any other sub-region in the world, which indicates the whole region is highly corrupted. In the report published by Transparency International, it is noted that more than 40 percent of the world's poor live in South Asia despite having 6 percent average economic growth in the past 20 years. The only region for the region with strong economic growth to have a high level of poverty and poor people is corruption. The countries and people are poor except for some handful of politicians and businesspeople protected by those corrupted leaders. Despite economic growth averaging 6 percent a year over the past 20 years, 31 percent live on less than \$1.25 a day, according to the World Bank. The infrastructures are poor, little to no development, and new projects, highly corrupted and inefficient leaders

are ruling the nation. The high-level governmental executives are politically appointed and thus tied back to the order and interest of the political parties. The time has come for the leaders and governors of developing countries to stand together and fight against corruption.

Each country should make its public bodies charged with stopping corruption more independent and powerful, and they should be allowed to work without any intervention. It may take some time and effort, but the people and media should play an important role in warning officials and leaders. The need for a mediator should be stopped entirely, and the public employees (bureaucracy) should be monitored and warned against any misconduct and insincerity. As most of the citizens are not literate, the campaign of mass awareness about corruption and ways to report them should play an active role. The medias regarded as the fourth pillar of democracy should inform people and expose all the positive and negative things happening in the country, especially about corruption. The role of an international organization like Transparency International, World Bank, Asian Development Bank, United Nations, and other regional organizations will help reduce corruption and move towards transparency significantly. There is also a possibility of the joint anti-corruption movement in SAARC countries being successful than each country fighting against corruption individually. It may be useful when the large international donors set some high ambitious but fair criteria for donation and loan money. The country may not be able to receive loan/donation/foreign aid unless it can be transparent or reduce corruption and submit detailed reports within a specified period.

The SAARC should be the standard platform for coordination between governments and international organizations. Nobody can force or stop corruption but the particular government and commissions themselves. Undoubtedly, the outcome of reduced corruption will be fruitful and beneficial for the entire SAARC regions and related Non-Governmental Organizations (NGOs) and International Non-governmental organizations (INGOs).

DISCUSSION AND CONCLUSION

The research has shown that there is a negative correlation between the level of corruption as measured

by (Corruption Perception Index) and the economic growth as measured by Gross Domestic Product per capita of the SAARC region. The topic under analysis is vast and complex and includes different parameters from different periods. Though the model used in this research doesn't cover every possible factor of economic growth, the study provides estimation about the impact of corruption on the economic growth of the SAARC Region. It is found that an increase of one percent on the Corruption Perception Index relates to a 0.462 percent increase in GDP per capita, and a decrease of one percent on the CPI is related to 0.462 percent decreases in GDP per capita. Based on the empirical model used in the paper, this research also finds other factors like Foreign Direct Investment inflows do not impact economic growth.

This research paper has a limited time frame, so the scope and extent are devised accordingly. The data are not available for all countries in all factors(variables), and thus the author couldn't analyze the impact as initially planned. There exists some controversy about the credibility of the CPI and the values of the level of the index. If there has been enough time to review more literature and previous articles, the level of corruption could be verified using other available data sources, and more variables can be added to the model giving accurate results.

This result is preliminary, and the SAARC region should do a more rigorous and detailed study to come up with appropriate solutions to enhance economic growth and develop a better South Asian economy.

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