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An analysis of the Impact of Political Regimes on the Economy: Understanding the Corruption-Growth Relationship

Aaima Khalid
Business graduate from Coventry University, UK

Abstract:- Corruption and economic growth are co-related. No theoretical evidence in the literature provides clear evidence of their relationship. Some researchers believe corruption increases economic growth while others say it negatively affects the economy. This paper aims to analyse the joint effect of corruption and the type of political government (i.e., democratic or autocratic) on economic growth to provide some clarity. Panel data (2000-2020) analysis of Pakistan and Saudi Arabia is used in this research paper to examine the relationship between corruption and the type of political government. GDP per capita is used as a dependent variable and economic factors are used as independent variables. A standard regression estimation approach is used. The relationship is estimated using econometric and statistical panel estimation techniques: FE, Two-stage least square and Dynamic-Panel-System GMM method. The data collected is from ICRG and WDI. The results show that corruption has a positive effect in autocratic systems than in democratic. Thus, it proves that the type of political government, corruption and economic growth are related.

Keywords:- *Corruption, Economic Growth, Democracy, Autocracy, Inflation, Government Expenditures, GDP Per Capita, Economic Development, Educational Attainment.*

I. INTRODUCTION

Corruption, defined as the misuse of power by authoritative public officials in power for their gains (Aidt, 2009), affects economic growth and is characteristic of developing nations (Abed & Gupta, 2002). No theoretical evidence in the literature provides clear guidance on the relationship between corruption and economic growth, i.e. How does corruption affect economic growth? One aspect of theoretical literature offers evidence that corruption increases economic growth because investors use speed money by avoiding administrative delays, which encourages low-income government employees to work hard by taking bribes (Lui, 1985; Egger & Winner 2005; Donaubauer et al., 2021). However, the other aspect of the literature argues that corruption decreases economic growth by reducing investment (Mauro, 1995) and misallocating government expenditure from the health and education sectors into large corruption-intensive infrastructure projects (Tanzi & Davoodi, 1997). Gründler & Potrafke (2019) also stressed the relationship between corruption and economic growth. They made it evident that corruption increases inflation and decreases FDI.

Similarly, there is a vast literature (with no clear theoretical guidance) that has examined the effects of democracy on economic growth. One strand of empirical literature uses cross-sectional data to prove that democracy harms economic growth (Tavares & Wacziarg, 2001). The other strand uses panel data to show a positive relationship between democracy and economic growth. Papaioannou & Siourounis (2008) estimate that democratic countries have a 1% increase in annual GDP per capita growth rate on average. Likewise, a recent economic working paper used annual panel data and the Generalised Method of Moments method from 1960 to 2010 for 175 countries and proves that democracy in the long run increases GDP per capita growth rate by 20% (Acemoglu et al., 2014).

This paper examines the joint effect of corruption and the type of political government (i.e., democratic or autocratic) on economic growth. To fulfil this objective, this paper makes use of panel data for Pakistan and Saudi Arabia from 2000 to 2020 which have different types of political governments to test the corruption-economic growth relationship. The proposed hypothesis is:

$$H_0 = Corruption, type\ of\ political\ government\ \&\ economic\ growth\ are\ related.$$

$$H_1 = Corruption, type\ of\ political\ government\ \&\ economic\ growth\ aren't\ related.$$

In this paper, the real GDP per capita is the dependent variable while corruption, democracy, educational attainment, ethnic tension and capital accumulation are independent variables. Data is collected using ICRG (International Country Risk Guide) and the World Bank's World Development Indicators (WDI) database.

The empirical results are taken out by using OLS regression, least square and FE method while robustness check is carried out by two-stage least square, System GMM and Hansen J statistic test. The results prove that corruption enhances growth in autocratic systems and deteriorates the economy in democratic systems.

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II. LITERATURE REVIEW

In this section, literature that shows the relationship between corruption, type of political government and economic growth has been discussed.

To talk or research on the unethical social behaviour that is corruption was a taboo for scholars but Leff (1964), an author from Harvard University, analysed the effect of bureaucratic corruption on economic growth and also clearly defined the difference between bureaucratic corruption and bureaucratic inefficiency. He explained that corruption is a practice of giving favours to bureaucrats who are accountable for formulating national economic policies or are in any administrative post of the government. For example, bribery for customs clearance, avoiding taxation or obtaining a license. He studied the effects these bribery payments have on economic growth and the empirical results proved that they were positively related. Then, Huntington (1968) mentioned the subject of corruption in his book 'Political Order in Changing Societies' which deals with the change in political systems and institutions. Krueger (1974) analysed that there is a monopolistic control of certain permitted importers due to which imports have quantitative limits and thus, openness to trade assists corruption. Bhagwati (1982) proposed the un-productive profit-seeking economic activities which also included the rent-seeking activities mentioned by Krueger (1974) in his paper.

Later, Klitgaard (1988) proposed that corruption redistributes economic resources from poor people to the elite class and encourages rent-seeking when political officials become corrupt for economic gains. In a corrupt political system, bureaucrats are competing for powerful positions in terms of economic power and hence they devote their energy to pursuing rents. North and Weingast (1989) studied the relationship between institutions and political regimes which were a result of evolution of constitutional measures in England after 1688 Glorious revolution. They interpreted the changes in institutions based on goals and argued that now the government is allowed to commit rent-seeking work due to property rights. They stated that importers might earn more profit through government intervention.

Mauro (1995) found the effect of corruption on economic growth using empirical calculations which showed that corruption decreases investment which lowers economic growth. Rose Ackerman (1996) studied the existence of opportunities for illegal gains in all the countries around the world. He examined the determinants of corruption, and the frequency of bribe payments, and analysed the political and economic consequences of corruption. He found out that there are mainly two reasons for taking bribes: (1) to avoid any additional cost and (2) for personal/government gains. There was almost no evidence found on how often do officials take bribes but it was evident that corruption is prevalent in autocratic governments.

Barro (1996) studied the effects of democracy on economic growth. He used cross-sectional data of 84 countries along with averaged GDP per capita for three periods: 1965-1975, 1975-1985 and 1985-1990. His result suggested that they have a weakly negative relationship. Tanzi and Davoodi (1998) indicated that corruption decreases investment. Their study identified that due to corruption there is an increase in complex and expensive projects which leads to budget constraints and ultimately decreased productivity. In addition, there is also a decrease in public expenditure in the health and education sector. Consequently, the economic growth rate is negatively affected due to corruption.

Mauro (1998) again tried to empirically research this un-examined relationship between corruption and government expenditure so he used more cross-sections of countries. He found that corruption decreases government spending on the education and health sector which delays economic growth. Ades and Di Tella (1999) evaluated that a situation with low competition has more space for officials to create an opportunity for seeking rent. So, people must increase their inspection of such government or customs officials that are involved in pursuing activities with rent.

However, there was hardly any literature that presented how economic growth, political regime and corruption are linked to each other. So, Ehrlich and Lui (1999) studied endogenous balanced growth models to fill this gap in research. The analysis focused on the long-term effects on investments and capital accumulation under different types of political governments. Arduz (2000) highlighted a parallel custom structure in Bolivia in which customs officials impose their private custom duties instead of official trade taxes and tariffs which clearly shows the occurrence of corruption. He identified that this activity was being carried out by misclassification and mislabelling of import items without being reported. Andving and Fjeldstad (2000) argued that economic policies, government institutions, rules and regulations are accountable for corruption worldwide. Acemoglu and Verdier (2000) pointed out that government intervention is a cause of corruption. There is a vast room for corruption while transferring resources from one party to the other during government interference. Although, the government might try to prevent it but that costs them a heavy amount of money so they allow certain bureaucrats to accept bribes.

Lui, Xu and Zou (2000) used Mauro's (1995) framework and study to examine the effects of corruption on income distribution and economic growth using 47 countries. Their results found that: (1) there is an inverted-U shaped curve for the effect of corruption on income distribution, (2) corruption is an explanation of differences in Gini coefficients of countries, (3) after adding the error term and correcting the result it is evident that corruption decelerates economic growth. Wei (2000) while flying to the United States on a plane from China found a piece of interesting news in the magazine about high corruption levels in China and decided to study the reasons and effects of corruption. He examined that corruption is a matter of cost and benefit for organisations. Some of the states are more exposed to corruption due to the openness of trade due to a favourable location.

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Khan and Jomo (2000) investigated in their paper that it is unlikely in an autocratic political system for corruption to negatively affect economic growth. Bongalia, Macedo and Bussolo (2001) highlighted that openness is a major factor that is responsible for corruption in any country. They tested a hypothesis on whether there is an effect of globalisation on governance or not. To be specific they tested how openness to trade and quality of government institutions affect economic growth. After surveying and empirically testing a sample of various countries for a period of about 20 years, it was evident that import openness can decrease corruption but it is crucial for the government. Mo (2001) evaluated that 1% corruption leads to a 0.72% decrease in economic growth rate.

Tavares and Wacziarg (2001) prolonged Barro's (1996) study using cross-sectional data as well and found out that democracy and economic growth are weakly negatively related to one another. Gyimah-Brempong (2002) also supported that corruption adversely affects economic growth by making use of panel data from African countries. His calculations show that marginal growth in corruption reduces the annual GDP growth rate by 0.8% and GNI by 0.4%. Knack and Azfar (2003) argued that many authors claim that less populated and more trading activity countries have less corruption by the government but empirical results show that there is a strong relationship between trade intensity and corruption. However, if new corruption indicators are used to collect data, then this relationship disappears because of missing data hence, the selection of the sample is biased.

Pellegrini and Gerlagh (2004) examined the corruption-economic growth relationship by making use of growth regression analysis. Their results state that if there is a marginal increase in standard deviation increase in CPI (Corruption Perception Index) then investment decreases by 2.46% which leads to a 0.34% decrease in annual economic growth rate. Gatti (2004) analysed the association of corruption and international trade barriers. It was evident that the incentive of devious behaviour of custom officials and individuals was the main reason of increasing corruption due to trade barriers. In addition, corruption decreases pressure on the domestic sector to perform well by weakening foreign competition through restrictive trade policies. Meon and Sekkat (2005) evaluated that poor governance is a major reason that is responsible for the negative impact of corruption on economic growth.

Mendez and Sepulveda (2006) studied the inter-relationship between the type of political system, corruption and economic growth using quantitative analysis and cross-sections. They found out that corruption and economic growth have a non-monotonic relationship as corruption accelerates economic growth at low levels but is detrimental at a higher level but such a relationship is only found in a 'free' political system i.e., democratic.

Ndikumana (2006) highlighted the fact that corruption leads to misallocation of government expenditure. He argued that corruption leads to a decrease in investment, public expenditure, infrastructure, taxation revenues and capital accumulation which in return decreases economic growth. His study was based on African countries and focused on the effect of corruption on poverty. The results indicated that corruption accelerates poverty by reducing public expenditures, biased policies and by artificial shortages that are created as a result of misallocation of government expenditure. Drury, Krieckhaus and Lusztig (2006) identified that corruption has direct effect on economic growth, unlike democracy. Democratic political governments have an indirect effect on the economic growth of a country. They used cross-sectional time series data for more than 100 countries from the period ranging from 1982-1997. The results showed that there was no effect of corruption on economic growth in democratic political systems while autocratic political systems had detrimental effects. Congdon Fors (2007) studied that with political factors, economic factors such as openness are equally responsible for corruption in any country.

As there was an increase in the use of ICT, Charoensukmongkol and Moqbel (2012) identified the negative and positive effects of investment in Information and Communication Technology (ICT). They found that although investment in ICT provides more advanced technology and can be used to monitor economic activities to control corruption, there is still room for officials with opportunities for corruption due to misuse of technology. Assiotis and Sylwester (2014) found out that corruption do have a negative effect on economic growth in an autocratic political system.

Lučić, Radišić and Dobromirov (2016) highlighted the prominent time frame of the corruption-economic growth relationship. They used CPI (Corruption Perception Index) and annual GDP per capita (as a measure of economic growth) from 1995 to 2011 by dividing the data set into three zones. The empirical results suggested that there is a strong causality between corruption and economic growth in the medium time frame (zone 2).

Arif and Shabbir (2019) studied the historical background and analysed data to investigate that incompetent government is due to corruption which delays economic growth, and public and foreign investment. Torcal and Christmann (2021) tested the significance of economic performance and corruption to explain how political trust evolved in Spain from 1997 to 2019. They studied two longitudinal datasets: (1) cross-sectional data and (2) individual panel data. Their results suggested that corruption has a great impact on political trust than on economic performance.

Uberti (2021) made use of newly developed indicators of corruption from V-Dem (Varieties of Democracy) to observe the relationship between corruption and economic growth. V-Dem is recorded for all countries' political and historical institutions from either the 1900 or the French Revolution. He presented evidence of a negative relationship between corruption and economic growth along with the effect of the type of political government which has heterogenous effects. To be more specific, it was found that corruption had more harmful effects in democratic countries

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than in autocratic ones because corruption is decentralized in democratic political systems.

III. THEORETICAL FRAMEWORK

Corruption-growth relationship is explored by various economists. Husted (1999) empirically studied the role played by corruption in trade, and public and private investments. He included other variables like literacy rate, Gini coefficient, government spending and openness and took out results using Tobit Model of Regression. His results indicated that there is a relationship between corruption and economic growth. Myint (2000) suggested that corruption is present in all sort of economies but rises quicker in developing countries than in developed countries. His results made it clear that economic variables are correlated to corruption and they do affect economic growth. His study focused on the variables: government expenditure, Gini coefficient, trade, investment and corruption. Hence, we can see from Figure 1 that economic growth is dependent on economic variables.

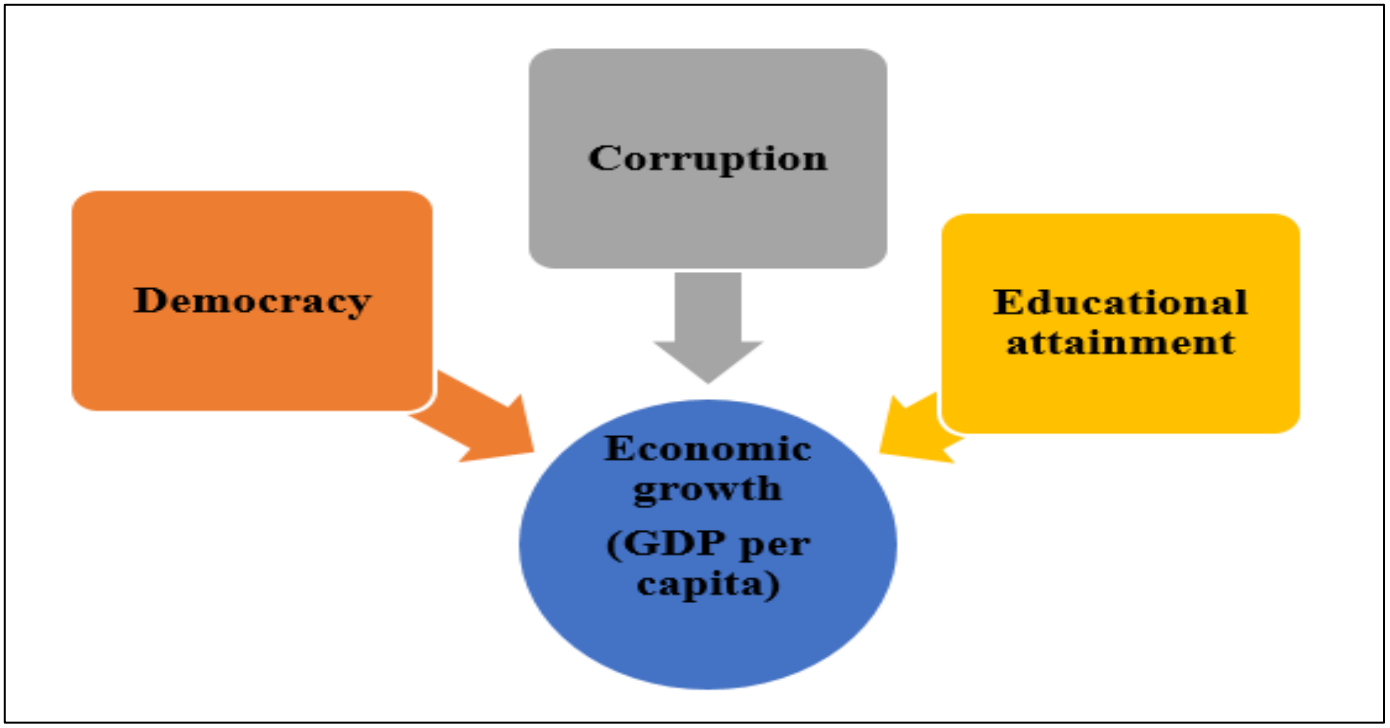

Fig 1: Economic Growth is Dependent on Corruption and Democracy

Scott (1972) studied that there is a low level of corruption in an equally distributed income country due to the generation of the middle class. Similarly, You and Khagram (2005) examined that in a country having more poverty due to inequal income distribution the elite class or rich people have an incentive to take bribes or seek rents. Whereas, Shen and Williamson (2005) identified that people get involved in corruption or illegal activities in the struggle for survival.

If we look at theoretical literature then there is no clear evidence as to how does corruption-economic growth relationship differ in autocratic and democratic political governments. One strand of literature shows that corruption has a significantly negative effect on economic growth in a democratic system than autocratic system if the centralised government of that political period seeks rents to carry out economic activities (Ehrlich & Lui, 1999). Thus, the structure of political institutions and political practices are two main determinants of corruption because weak governance show more association with high levels of corruption. This is why third world and developing countries experience more corruption (Shleifer & Vishny, 1993). While, the other strand of literature claims that there is a secrecy in corruption in an autocratic political system as there is a decrease in investment of growth-enhancing projects because they are not corruption intensive and more focus is given on less valued defence or infrastructure projects (Campos & Giovannoni, 2017).

Aidt, Dutta and Sena (2009) provide a theoretical model to show that in autocratic political systems where the public cannot hold political leaders accountable for anything, there is a high level of corruption because political leaders take this as an opportunity to accept as many bribery payments from the formal sector as possible. This leads to an increase in the informal sector which consequently have negative effects on economic growth.

Solow (1965) also provided a theoretical model to test the theory of economic growth using a neo-classical growth model. He used Harrrod-Domar's growth model to shape the production function and solved it using basic differential equations. The key parameters were the savings ratio, capital-output ratio and rate of labour force. If the magnitudes of these parameters increase then inflation can rise and so will unemployment. He used income or output as a dependent variable and factors of production as an independent variable.

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Neo-classical models with diminishing capital returns, also used by Cass (1965), show that a country's per capita growth is negatively related to an individual's income. Therefore, it is evident that economic shocks are a reason for convergence. Hence, Barro (1991) used economic shocks in his model while researching using cross-sections from over 100 countries in the post-WW2 era.

In this paper, we extend Solow's model and use real GDP per capita as our dependent variable and macroeconomic factors (Corruption, Democracy, Educational attainment, Capital accumulation per capita) as independent variables; and, also follow Barro's model by generating an augmented growth model and including economic shocks that are: democracy, corruption and an interaction term (Corruption x Democracy) to examine the joint effect of democracy and corruption on economic growth.

Saha and Gounder (2014) also theoretically analysed the role that democracy plays in corruption and economic growth. She used EMCCA member countries with the time period 2002-2020 using 7-year averaged panel data. The empirical results were found out using GMM method (Generalised Methods of Moments) which is a dynamic panel estimation technique. The results proved that they have an inverse relationship with each other. Basu, Bhattarani and Gatechew (2019) used fixed panel data estimation method in their research to study the inconsistency of convergence estimator which occurs due to a short time period even with a large sample of countries. For this purpose, they used the Ramsey growth model to adjust the cost of capital in the long run and examined the fixed effect (FE) estimator. The results came out to be biased so they added an instrumental variable to mitigate this bias. A similar use of instrumental variables in the two-stage least square method was used by Mauro (1995).

In this paper, Saha and Gounder's average panel data technique is followed by using a 5-year average and a 3-year average. FE method is applied following Basu et al. and instrument variable is added following Mauro while performing a TSLS for robustness check. The following schematic diagram (Figure 2) shows what theoretical frameworks are used in this paper.

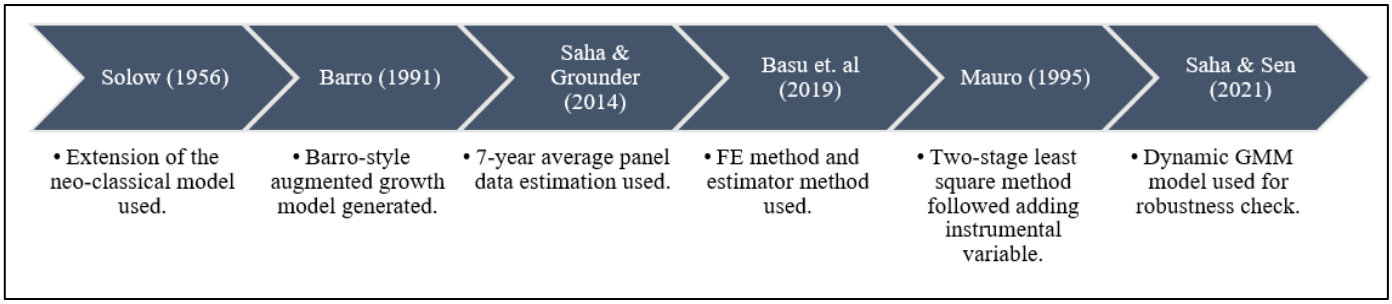

Fig 2: Schematic Diagram of Theoretical Frameworks used in this Paper

This paper makes use of data from Pakistan and Saudi Arabia. Figure 3 makes use of the Polity IV dataset to show that Saudi Arabia is an autocratic country, however, democracy has evolved in Pakistan over time from 2000 to 2018.

Fig 3: Evolution of Democracy in Pakistan and Saudi Arabia
Source: (World Bank, 2022)

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- Note: The Polity Index measure of democracy is used (Polity IV Project). -10 to -6 score indicates autocracy, -5 to +5 indicates anocracy while +6 to +10 indicates democracy.

Theoretical frameworks show that GDP decreases with the increase in democracy. We use data for Pakistan in Figure 4 to see the joint effect of corruption and economic growth over the period 2012-2020.

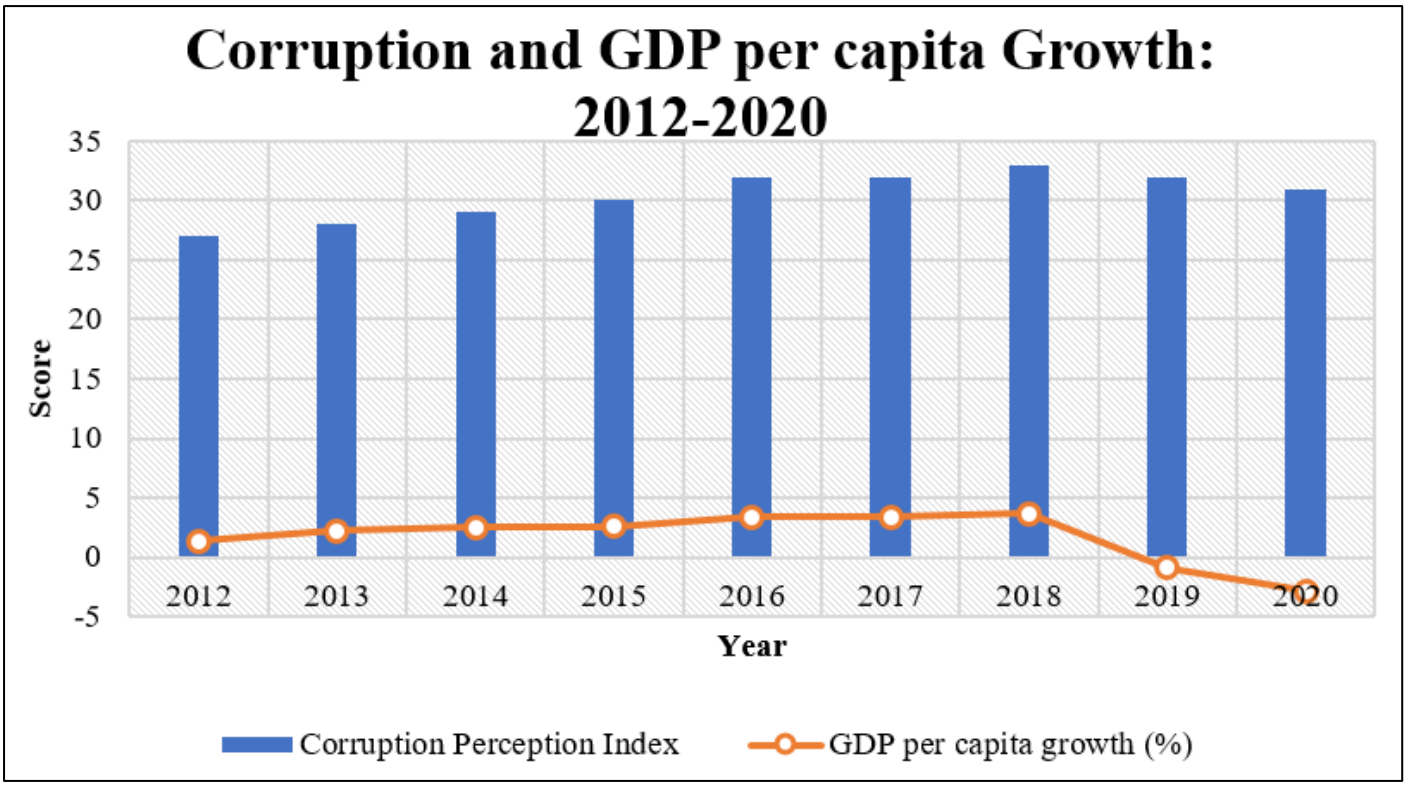

Fig 4: GDP (%) and CPI Score-Pakistan (2012-2020)
Source: (World Bank and Transparency International, 2022)

IV. MODEL, METHODOLOGY AND DATA

A. Model:

This paper uses panel data analysis based on a standard economic growth model. GDP per capita (taken as a measure of economic growth) is taken as a dependant variable on various economic factors such as educational attainment. To examine the relationship between corruption and type of political government, standard regression estimation approach is used. As an extension of Solow (1956) growth model, a Barro-style augmented growth model is developed. Solow's model actually has income or output as a dependant variable and factors of production as an independent variable. But we extend his model by following Barro (1991) and adding democracy, corruption and an interaction term to measure the joint effects of the type of political government and corruption on economic growth.

➢ *The Structure of the Base Model Over the Period 2000 to 2020 is as Follows:*

$$LRGDPPC_{it} = \propto_0 + \propto_1 CORR_{it} + \propto_2 DEMO_{it} + \propto_3 CORR_{it} \times DEMO_{it} + \propto_4 log\left(\frac{CAP}{POP}\right)_{it} + \propto_5 EDU_{it} + \varepsilon_{it}$$

Where LRGDPPC is the log of real GDP per capita, CORR represents Corruption, DEMO is democracy indices, CAP is capital accumulation per capita, EDU is educational attainment, ε is the error term. The subscripts i and t represent country and time. $\propto_3$ is the interaction term.

Panel data is used for Saudi Arabia and Pakistan from 2000 to 2020 with GDP per capita as a measure of economic growth and a dependent variable. The estimation is made using OLS regression.

B. Methodology:

To test the generated hypothesis, panel data is used for Saudi Arabia and Pakistan from 2000 to 2020 with GDP per capita as a measure of economic growth and a dependent variable. The estimation is made using OLS regression. The first step is to employ OLS with average values from 2000 to 2020. I followed Saha and Gounder (2014) and Saha & Sen (2021) who used a seven-year average panel period (i.e., 5-year average for 2000 to 2018 and a 3-year average for 2018 to 2020) to estimate to eliminate any effects of the business cycle that are assumed to be present in annual data. Then, the FE (fixed effect) model is examined to test the relationship

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between corruption and economic growth. The results are then compared with the results of random effect model with the help of Hausman test to test the validity. According to Basu et. al (2019) and Baltagi (2008), all the estimators of the fixed effect model are consistent as time (t) increases and approaches to ∞. However, in a random effect model, the error term includes all the missing factors. Later, the results are corrected with standard errors.

It is important to note that the simple-least square method can produce biased estimates because of the endogeneity between economic growth, democracy and corruption which can cause a correlation between the error term and dependent variable (GDP per capita). This means that the issue of reverse causality is raised between institutional/ independent variables: democracy, corruption and the interaction term) and dependent variable: GDP per capita (economic growth). Usually, this endogeneity problem is solved by applying the stage least square method (TSLS). So, following Mauro (1995), TSLS is applied using an instrumental variable that is Ethnic tension (ET). Ethnic tension basically focuses on the degree of tension in any country due to racial, national and language differences. While, Mauro used ethnolinguistic fractionalization as an instrument variable.

Another robustness check is also carried out using System-GMM Dynamic Panel that uses System-GMM estimator to address endogeneity issue. At last, the validity of this instrument is tested by Hansen's J statistic for identifying restrictions.

C. Data:

There are three types of data employed in this paper: macroeconomic data, corruption data and democracy indices. (1) Corruption data: Using the International Country Risk Guide (ICRG) as a source, Corruption index (CORR) data constructed by Political Risk Services is collected. It measures corruption within a government in any country that has detrimental effects on investment which distorts the economy. Transparency International's CPI (Corruption Perception Index) is also used in the robustness check. (2) Democracy indices: ICRG Democratic accountability (DEMO) measure is used as a measure of democracy. A higher value signals high democracy. In addition, the Polity2 institutionalised data for a measure of democracy is also collected from the Polity IV dataset as an alternative. (3) Macroeconomic data: GDP per capita (dependent variable), capital accumulation and educational attainment are collected from the World Bank's World Development Indicators (WDI) database. As Ethnic tension (ET) is used as an instrumental variable, this data is taken from the ICRG index. Table 1 shows the data description and summary statistics for Pakistan.

Table 1: Descriptive Statistics (5-Year Average Panel)-Pakistan

	GDPPC	CORR	DEMO	EDU	CAPPC
Mean	3031.77	0.483	-0.79	21.59	321727.3
Median	2956.45	0.5	-0.82	15.75	182535
No. of Observations	20	30	58	20	10
Maximum	4896.4	0.64	32.02	49.8	905690
Minimum	118.9	0.33	18.84	3.2	45586
Standard Deviation	1669.518	0.087223	0.089443	16.83742	325620

V. RESULTS

Kernel-fit scatter plot is first made to investigate the relationship of real GDP per capita with corruption and democracy. By looking at Figure 5, it is evident that corruption decreases per capita income. On the other hand, Figure 6 shows a U-curved relationship between democracy and real GDP per capita.

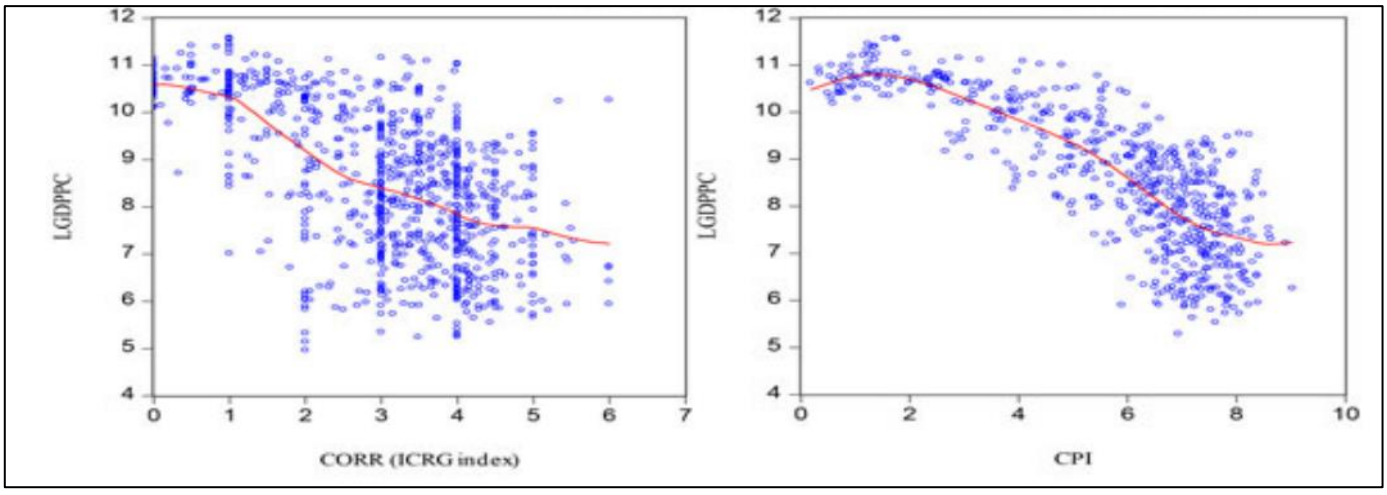

Fig 5: Relationship between Corruption and Economic Growth

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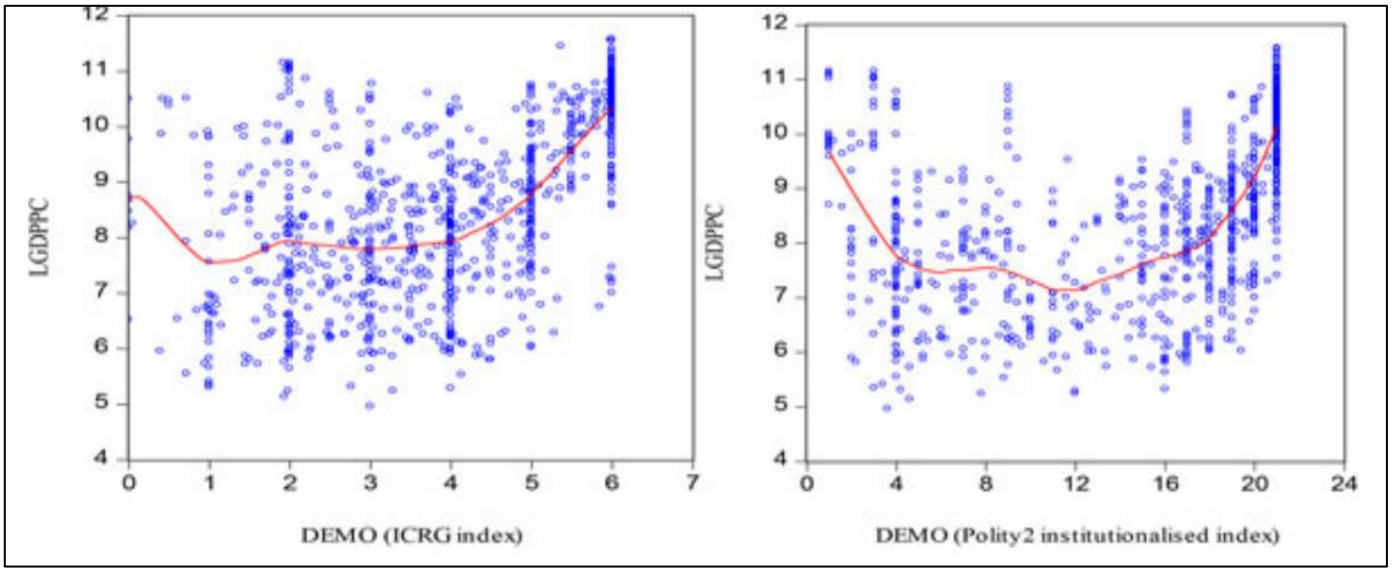

Fig 6: Relationship between Democracy and Economic Growth

Table 2 shows the estimated regression coefficient for the model generated in section 4 using data for two countries: Pakistan and Saudi Arabia. Seeing column 1 without control variables the results suggest that the corruption coefficient is significant and negative but for democracy, it's insignificant and positive. But, looking at column 2 after adding control variables the OLS regression results suggest that the coefficient of corruption is insignificant and positive. However, the coefficient of democracy is positive at a significance level of 5% which indicates that democracy increases economic growth. From the results of panel least square method and Fixed effect with or without control variables in column 4-5 and 7-8 it can be identified that corruption enhances growth in autocratic political system (e.g., Saudi Arabia according to our paper). It can also be seen that magnitude of interaction terms co-efficient increases after adding control variables that are: capital per capita and educational attainment.

Table 2: Regression Results

ICRG Democracy index									
	OLS (averaged)			**5-year average panel least square**			**5-year average panel fixed effects**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
CORR	-0.891	0.051	0.032	-0.087	0.204	0.206	0.06	0.144	0.149
DEMO	0.089	0.497	0.480	0.585	0.625	0.626	0.009	0.087	0.093
CORR x DEMO	0.010	-0.155	-0.151	-0.097	-0.155	-0.154	-0.04	-0.025	-0.027
CAPPC		0.049	0.054		0.031	0.33		0.283	0.281
EDU		0.183	0.184		0.145	0.146		0.008	0.007
Constant		2.653	2.744	7.568	3.463	3.433	8.053	5.544	5.533
No. of Obs.	136	108	108	894	480	480	856	410	410
Adjusted R^2	0.482	0.562	0.536	0.406	0.537	0.538	0.515	0.769	0.771
Wald statistics	102.7	55.2	47.57	99.12	47.63	42	24.5	32.69	30.99

After performing regression, two-stage least square estimates show that lagged variables and ethnic tension are insightful predictors of corruption. This is also confirmed by the results of least square and FE that the joint effect of corruption and democracy on economic growth is negative. The results indicate that the ET coefficient is positive at a 1% significance level which makes it evident that corruption increases if there is an increase in ethnic tension in Pakistan.

Table 3 shows the results of the System-GMM which is performed for robustness check. The results identify that in autocratic countries like Saudi Arabia higher corruption means high economic growth. It can be seen from Columns 1-4 that interaction term coefficients are significant and negative for both ICRG and Polity index as a measure of democracy which confirms that corruption enhances growth in autocratic political systems. The model also passes Hansen *J* test because the AR (2) error term is not present.

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Table 3: Results using System-GMM

Dependent variable- GDPPC	ICRG Democracy Index		Polity 2 Measure of Democracy Index	
	(1)	(2)	(3)	(4)
Lagged RGDPPC	0.2082	0.181	0.5624	0.3598
CORR	2.0519	3.4074	0.9881	2.5785
DEMO	2.3889	3.0790	0.2793	0.7059
CORR x DEMO	-0.5535	-0.7190	-0.0910	-0.1633
CAPPC		0.1050		-0.0188
EDU		0.0133		0.0124
Government expenditure (% of GDP)		-1.4668		-2.1579
Inflation		-0.2948		0.0654
Constant	-8.5705	-22.194		-22.5699
Autocorell p-values	(0.020)	(0.021)	(0.058)	(0.001)
Hansen *J* statistic (p-value)	(0.119)	(0.181)	0.230	(0.447)
Wald Statistics (p-value)	(0.00)	(0.00)	(0.00)	(0.00)

VI. CONCLUSION AND RECOMMENDATION

A vast literature has examined the effects of corruption on economic growth. In this paper, the only difference is that the corruption-economic relationship was examined in Pakistan (democratic) and Saudi Arabia (autocratic) to evaluate whether they have the same or different relationships in democratic and autocratic political systems. For this purpose, panel data of both the countries are used from 2000 to 2020. The relationship is estimated using econometric and statistical panel estimation techniques: FE, Two-stage least square and Dynamic-Panel-System GMM method. The data collected is from ICRG and WDI. The data for democracy and corruption variables have been collected using different measures to obtain accurate results. The study found that corruption has a positive effect in autocratic systems than in democratic. Thus, we accept the hypothesis that the type of political government, corruption and economic growth are related.

To mitigate the negative effects of corruption on economic growth in democratic countries like Pakistan there is a need to eradicate corruption because low economic growth means low domestic savings and investment. The reduction in investment also reduces large push investment which according to Big Push theory is necessary to uplift economic growth of the country. Therefore, there is a need to increase net wages which will positively affect investment and will disincentivise officials that are indulged in corruption. World Economic Forum states certain measures that can be taken to curb corruption. A higher level of accountability, investment in the health and education sector and awareness of ethical social responsibility of administration are some that are recommended. Other recommendations include empowerment of the masses, encouraging transparency in political institutions, and financial management and bringing reformation in public administration and governance.

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