



Role of Foreign Direct Investment and Direct Investment in Economic Growth: A Case Study of Pakistan

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ARTICLE DETAILS	ABSTRACT
History Revised format: Feb, 2021 Available Online: Mar, 2021 Keywords FDI, DI, Annual Data, (OLS), ADF, Stability, CUSUM, CUSUM of Square.	By analyzing annual time series data from 1980 to 2020, the major purpose of this study is to examine the influence of Foreign Direct Investment (FDI) and Domestic Investment (DI) in Pakistan's economic growth. The study applied ADF Test for stationary purpose and Ordinary Least Square (OLS) method to estimate the association between dependent and independent variables. CUSUM and CUSUM of Square also applied for Stability purpose. The results of OLS method show positive impact of Foreign Direct Investment (FDI) and Domestic Investment (DI) on economic growth. While, Inflation and Rate of Exchange has negative and significant impact on economic growth. The study suggests that the government should provide safe atmosphere for foreign investors to invest in Pakistan.

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1. Introduction

Economic wellbeing is a main motive of any developing country. It is very important to determine the standard of living of its citizens. Different countries adopt different methods to achieve high economic growth. Many factors contribute to enhance the economic growth of any country. A key economic operator is foreign direct investment. Investments made by a company in another country are known as foreign direct investments (FDI). Current foreign direct investment levels are at an all-time high in emerging countries. It contributes significantly to the economic well-being of the host country, particularly if it has a high level of foreign commerce. FDI is the largest type of production in terms of technology transfer, unemployment reduction, skill acquisition, and market rivalry. Many researchers agree that, FDI has positive impact on economic growth. Khan (2007) examines that FDI plays a significant role to get better the economic growth of developing countries. FDI furnish resources to developing countries like technology, capital, ability of entrepreneurship, skills of managerial and much more needed. These are necessary, build up and generate more jobs and dropping poverty in developing countries. Pakistan is also a developing country like many other countries. Pakistan is also a labor intensive country. During 1990 to 1999 FDI improved significantly for Pakistan. Due to positive environment for investors Pakistan has

received larger amount of FDI from 1990 to 1999. The government has also authorised foreign direct investment in the industries of telecommunications, finance, agriculture, and energy, which were previously prohibited. FDI, however, remained low due to fast changes in the political environment and inconsistencies in policies. Many researchers indicate the positive impact of FDI on GDP growth. Gokmen (2021), Younsi (2021), Musa et al. (2021), Naik M, (2020), Susilio (2018) and Onuoha et al. (2018) while negative impact of FDI is investigated by Shabbir et al. (2020). The research has examined the impact of foreign direct investment (FDI) and domestic investment (DI) on Pakistan's economic growth between 1980 and 2020. The study also used other control variables like Exchange rate and Inflation rate. The present paper covered the Islamic Republic of Pakistan. The present research paper is organized as, its first section is Introduction, second section is relevant Reviews of Empirical Studies, third section is present the Theoretical Framework, fourth section provides Data and Methodology representation and fifth and sixth section provides Results and Discussion of Analysis and Policy Recommendation respectively.

2. Literature Review

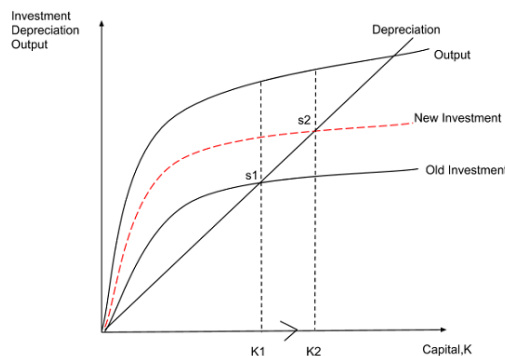
Gokmen 2021 aims to describe the relationship between foreign direct investment and economic growth in Turkey. By using the vector error correlation model, Granger Causality, impulse response function, and variance decomposition approaches. According to time series data from 1970 to 2019, there is a net positive impact on real GDP from net incoming foreign direct investment, which may be used to fund productive development departments, thereby maintaining real economic growth and attracting future foreign direct investment. Youns (2021) highlighted the relationship between FDI, domestic investment on economic growth in African economies. The data was considered from 1990 to 2016 for panel study. This research used Fixed effect (FE) and system-GMM methodologies. The results revealed that AID and FDI have positive significantly on growth that shows foreign direct investment is necessary for domestic investment while joint effects for both tells to describe low economic growth. So the overall results revealed the complementary association between FDI-ADI-DI have direct effect on growth of economy. Musa et al. (2021) analyzed the relationship between foreign direct investment, domestic investment on economic growth in Nigeria. The time series data was employed from 1981 to 2018 for analysis. This research study employed ARDL methodology. The result highlighted that on both the short- and long-term, FDI was found to be positively associated with economic growth, while domestic investment was negatively associated with economic growth. A study conducted by Shabbir et al. (2020) examined Pakistan's FDI, DI, and economic growth levels. Private and domestic investment influence on economic growth is a major focus of the study. ARDL approach was used to analyse time series data from 1980 to 2017. In the long run, local investment has a beneficial impact on economic growth, while foreign direct investment has a negative impact. Naik M, (2020) Described the association between foreign direct investment and economic growth in India. This dynamic study covered the time series data from 2000 to 2019 by applied simple linear regression and OLS methodologies. The empirical results revealed that there is significant of foreign direct investment on Gross Domestic Product of Indian economy. Sohail and Mirza (2020) defined the relationship between FDI on economic growth by taking time periods 1996 to 2015 with time series data. The study used correlation matrix and regression analysis with different variables application like FDI, exports, domestic, capital index of human capital and no of terrorist's attacks and GDP. Finding shows more exports leads to more Domestic capital that ultimate positive economic growth to attract FDI in country.

Susilio (2018) explored the pivotal impact of foreign direct investment on economic growth in United States that Trend pattern of this study used time series data from 2000 to 2017 by applying OLS and linear regression methodologies the bulk of these studies conclude that foreign direct investment have different beneficial effect for developed and developing countries. Yes; it is significant in United States that the economic growth in this economy derived from personal consumption. In West African economies, Onuoha et al. (2018) identified a simple correlation between economic growth and macroeconomic parameters. Panel data from 1990 to 2016 was used for the empirical investigation. According to the study's empirical findings, foreign direct investment has a considerable impact on economic growth, but also has a negative impact. Malikane and Chitambara (2017) examined connection between democracy , economic growth and foreign direct investment in Southern African economies. The study handed down panel data from 1998 to 2014. The research aim to hit the findings that an immediate direct and positive impact on economy's growth and explained a dependent effect on growth of democracy in host country. Pandya and Sisombat 2017 examined the dynamic relationship between foreign direct investments on economic growth, a case study in Australian economy. The study used multiple regression and regression analysis techniques by taking time series data from periods 2001 to 2013.by and large, analysis revealed that to observe absence and poor Association between foreign direct investment and economic growth. Mahmood (2016) examined the association of macroeconomics factors like democracy as a proxy of major foreign direct investments investing economies. This study applied pool mean group estimator from 1985 to 2014 with panel data. The results shows that trade openness, income levels of investors are positively related on FDI in long run while democracy influenced significant in short run. Zekarias (2016) determined the footprints of foreign direct investment on economic growth in different countries of Eastern Africa. The period of panel data spans from 1980 to 2013. This research found that the foreign direct investment has positive and significant impact while FDI and economic growth is diversified across countries. Mahmood and Chaudhary (2012) defined the relationship between FDI, DI and economic growth for Pakistan. The study used time series data from 1972 to 2010 periods by employed ARDL co integration technique. The empirical results found the negative link between FDI and DI . On the other hand FDI, DI found to be replaced in Pakistan but not necessary for each other. Olufemi 2012 seeks to explore the impact of energy resources and domestic investment on Nigerian economic growth. Using time series data from 1970 to 2010, the study used Co integration analysis of Johnson and vector error correlation model approaches. The findings highlighted the relative importance of energy and investment in economic growth. Among other things, energy and investment are important determinants of economic growth. Umoh et al. (2012) discussed the effects of foreign direct investment on Nigerian economic growth. Time series data from 1970 to 2008 were used in the empirical study. The research revealed a favourable and significant relationship between foreign direct investment and economic growth. Gudarot et al. (2012) examined the impact of foreign direct investment, inflation, and CPI on economic growth in Pakistan. The study applied a multivariate regression model on time series data from 1981 to 2010. The findings revealed an overall significant and positive relationship between gross domestic product and foreign direct investment, as well as a significant and negative relationship between GDP and inflation.. Rihab and lotfi (2011) investigated the link between FDI on different economic variables by using panel data from time period 2001 to 2006. This study found that the Human Research development has positively related with foreign direct investment. Emmanuel 2010 examine the impacts and effects of foreign direct investment on economic growth in Nigeria with chosen macroeconomic variables of gross domestic product inflation and exchange rate the OLS techniques is applied

by using time series data from 1986 to 2011. Results explained that the Gross Domestic Product, exchange rate and inflation reason to respond change in foreign direct investment, Gross Domestic Product and exchange rate have negative with FDI while inflation has positive impacted with it. Gross Domestic Product negatively influenced from foreign direct investment. Kim and Seo (2003) investigated the complementary or substitution Association between foreign direct investment and domestic investment in South Korea, by using time series data, the study used forecast error variance decomposition methodology. The innovations in domestic investment in is mainly Defined by itself past values, that followed by Gross Domestic Product and foreign direct investment. In these findings shows that the link between foreign direct investment, Gross Domestic Product and domestic investment are different and varies. Tang et al. (2008) described the association between world's fastest growing economies, foreign direct investment and domestic investment in world's developed country named China, by used time series data from periods 1988 to 2003. The study used VAR system and ECM methodologies that revealed the domestic investment has a great impact on itself. FDI has a huge influence on economic growth but less on a domestic investment while GDP has strong influenced on domestic investment than foreign direct investment. it means that impacts of gross domestic product and domestic investment on foreign direct investment are not significant in States, there is a statistically significant and beneficial relationship of foreign direct investment and gross domestic investment on domestic investment.

3 Theoretical Framework

FDI and economic growth are influenced by two basic primary hypotheses. Solow and Swan established the Neo-Classical Growth Model, which is a hypothesis of exogenous growth (Solow, 1956 and 1957). The Cobb-Douglas Production Function (Cobb & Douglas, 1928) model assumes that exogenous or external factors such as capital stock, technology, and labour can contribute to continuing growth.



In the graph image, a rise in investment will result in an increase in capital stock $K1$ to $K2$ and production, both of which will contribute to economic growth in the long term. In this way, the growth rate will be shifted from level $S1$ to level $S2$. In addition, FDI has positive externalities, such as the potential acceptance of new technologies or the transformation of knowledge about how to increase investment competence in the host nation. This will have a good effect on economic growth. According to the Neoclassical Growth Model, FDI can directly affect a country's economic growth through capital, technology, and input accumulations.

4 Data and Methodology

FDI and domestic investment in Pakistan's economic growth are the focus of this study. A time series of annual data from 1980 to 2020 was analyzed for this study. Foreign Direct Investment, Domestic Investment, Exchange Rate, and Inflation were employed as explanatory factors in the study. The World Development Indicator, a worldwide economic indicator, is the official website from where the data was collected. Ordinary Least Square (OLS) Technique The present study applied Ordinary Least Square (OLS) technique to find out the relationship between dependent and independent variables. OLS is a method of estimating the unknown parameters in a Linear Regression Model.

Log – Linear Model

If we used Log values of dependent variable and hold other independent variables in their original scale, this model is known as Log – Linear model. The present research study used Log Linear Model with time series analysis to analyze multiple regression models.

The estimated equation can be written as:

$$\text{LGDP} = f(\text{Foreign Direct investment, Domestic Investment, Exchange Rate, Inflation Rate,})$$

The Multiple Regression Model of the study is:

$$\text{LGDP} = \beta_0 + \beta_1\text{FDI} + \beta_2\text{DI} + \beta_3\text{ER} + \beta_4\text{INF} + \mu_i$$

LGDP = Log of Gross Domestic Product.

FDI = Foreign Direct investment

DI = Domestic Investment

ER = Exchange Rate

INF = Inflation Rate

μ_i = Error Term

3. Results and Discussion

In this section of the study, analysis of empirical data will be present.

Descriptive Statistics:

	LGDP	FDI	DI	ER	INF
Mean:	1.395029	0.897000	17.65954	56.49987	8.207073
Median:	1.578154	0.673000	18.01000	53.64819	20.28000
Maximum:	2.323955	3.668000	20.82000	160.0500	20.28000
Minimum:	-0.642454	0.103000	14.12000	9.900000	2.520000

Std. Dev:	0.639762	0.782711	1.638329	39.49279	3.809431
Skewness:	-1.299318	2.257946	-0.346312	0.787154	0.654290
Kurtosis:	4.418767	7.758496	2.197301	2.889565	3.625393
Observations:	41	41	41	41	41

Table: 5.1: Sources: Calculation by Using E-views 9

The summaries of descriptive statistics of observations of 41 are given in the table 5.1 above. The first row shows the mean of LGDP, FDI, DI, ER and INF is (1.395029), (0.897000), (17.65954), (56.49987) and (8.207073) respectively. The second row shows median value of the LGDP, FDI, DI, ER and INF is (1.578154), (0.673000), (18.01000), (53.64819) and (20.28000) respectively. Third and Fourth row present the minimum and maximum values of the data. The skewness values are shown in the table's third and final row. Skewness is the deviation from the mean of a data distribution's asymmetry and injustice. The data distribution is skewed if the mean is in the middle and top of the bell curve and the mean median and mode are the same. Here in the table we can see that, LGDP and DI are negatively skewed because Median value is greater than Mean value, and FDI, ER and INF are positively skewed because their mean value is greater than their median value. Second last row shows the values of Kurtosis, it shows the flatness and Peakness of the data to normal distribution. If probability distribution is highly peaked when the value of Kurtosis exceeds 3, the condition is termed as Leptokurtic. If the probability distribution displays flatness of the data and the value of Kurtosis is less than 3, the distribution is said to be Platykurtic. In the table below, we can see that the values of variables LGDP, FDI and INF are greater than 3, (4.418767), (7.758496) and (3.625393), so these variables are Leptokurtic and the value of variable DI and ER is less than 3, (2.197301) and (2.889565), it is known Platykurtic.

Pair – Wise Correlation:

The Pair – Wise coefficient of correlation is widely used to identify the problem of multicollinearity between variables. The presence of multicollinearity is demonstrated by the high values of the coefficient of correlation of more than one variable. The correlation matrix results are shown in table 5.2 below:

Variables	LGDP	FDI	DI	ER	INF
LGDP:	1.000000				
FDI:	0.141398	1.000000			
DI:	0.217233	0.186529	1.000000		
ER:	-0.534678	0.181064	-0.691838	1.000000	
INF:	-0.329347	0.363080	0.251808	-0.003031	1.000000

Table: 5.2: Sources: Calculation by Using E-views 9

The results show that FDI and DI are positively correlated (0.141398) and (0.217233) with dependent variable LGDP. While, ER (-0.534678) and INF (-0.329347) are negatively correlated with LGDP. The results confirm the absence of the problem of multicollinearity in the data.

Unit Root Test

The present study applied Augmented Dickey Fuller (ADF) unit root test to check the stationary of the data. This test is used to check whether given time series data is stationary or not. The results of the ADF unit root test are present in the table 5.3 below.

Variables	At Level		At 1 st Difference		Conclusion
	Intercept	Trend & Intercept	Intercept	Trend & Intercept	
LGDP	0.0855	-----	-----	-----	1(0)
FDI	0.0448	-----	-----	-----	1(0)
DI	-----	-----	0.0000	-----	1(1)
ER	-----	-----	0.0018	-----	1(1)
INF	0.0472	-----	-----	-----	1(0)

Table: 5.3: Sources: Calculation by Using E-views 9

The above table shows Augment Dickey Fuller Unit Root Test. In this table the variables LGDP, FDI and INF are stationary at Level Intercept, LGDP is stationary at 10% and FDI, and INF is stationary at 5%. So these variables integrated as 1(0). The variable DI and ER is stationary at 1st Difference and Intercept, and integrated as 1(1).

Ordinary Least Square Results:

The table 5.4 below shows the effect of independent variables on dependent variables.

Ordinary Least Square Method				
Dependent Variable Log of GDP				
40 Observation from 1980 to 2020				
Variables	Coefficients	Std. Error	t-Statistics	Prob.
FDI	0.119398	0.111126	1.074439	0.2902
DI	0.132426	0.073776	-1.794978	0.0816
ER	-0.010002	0.002933	-3.410550	0.0017
INF	-0.047535	0.022583	-2.104842	0.0428
C	3.960576	1.320073	3.000271	0.0050
GDP(-1)	0.415346	0.155514	2.670785	0.0115
R²:	0.998631	Durbin-Watson Test:		2.053384
Adjusted R²:	0.999312	Prob(F-Statistic)		0.000068

Table: 5.4: Sources: Calculation by Using E-views 9

The results show that the value of coefficient of variable FDI is positive and insignificant impact on GDP. It shows that one percent increase in FDI it will (0.119398) unit increase in GDP. This finding is supported by Gudaro, A. M., Chhapra, I. U., & Shaikh, S. A. (2010). This indicates that FDI increase GDP, but with high rate of exchange its shows insignificant for GDP. The value of coefficient of variable DI put positive and significant impact on economic growth. It shows that 1% increase in DI it will bring (0.132426) units increase in GDP. Saibu, O. (2012), also finds the positive impact, domestic investment enhance the economic growth of that country.

Bakari, S. (2017), domestic investment with labor force enhances the productivity and increase in exports. It shows positive impact on GDP growth. The value of coefficient of variable ER (-0.010002) put negative but significant impact on gross domestic product. It shows that, one percent increase in GDP per capita it will increase (0.139299) units in gross domestic product. This also supports by Ahmad, A., Ahmad, N., & Ali, S. (2013), shows negative but significant impact on GDP. High rate of exchange is harmful for economic growth and foreign investment, while stable rate of exchange is significant for GDO growth of Pakistan. The value of coefficient of variable INF (-0.047535) put negative but significant impact on gross domestic product. It shows that, one percent increase in GDP per capita it will increase (0.139299) units in gross domestic product. This also supports by Ahmad, A., Ahmad, N., & Ali, S. (2013), shows negative but significant impact on GDP. High rate of inflation slow down the economic performance. Durban-Watson value lies between 0 to 4. 2 is ideal value of Durban-Watson. If Durban-Watson value is greater than 2, In this case, autocorrelation is negatively correlated with each other. Autocorrelation exists when the Durban-Watson value falls below 2 and does not exist when the Durban-Watson value exceeds 2. As (2.053384) for Durban-Watson, there is no autocorrelation.

Auto – Correlation:

The autocorrelation problem is test by Breusch – Godfrey Serial Correlation LM test. The table 5.5 below shows the results of Breusch – Godfrey Serial Correlation LM test.

Breusch – Godfrey Serial Correlation LM Test	
F – Statistic	0.085023
Prob.	0.9187

Table: 5.5: Source: Calculation by Using E-views 9

The problem of autocorrelation is undertaken by taking lag of dependent variable. The probability value is insignificant (0.9187) it shows there is no autocorrelation.

Heteroskedasticity Test:

The problem of heteroskedasticity is test by Breusch – Godfrey test. The table below 5.6 shows the results of Breusch – Godfrey test for Heteroskedasticity.

Heteroskedasticity Test Breusch – Pagan – Godfrey	
F – Statistics	0.330405
Prob.	0.8911

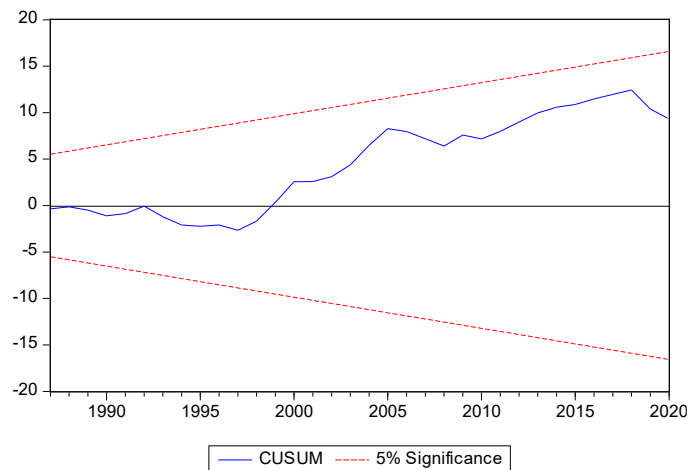
Table: 5.6: Source: Calculation by Using E-views 9

The above table shows the results of Breusch – Pagan – Godfrey test for heteroskedasticity. The probability value is insignificant (0.8911) which show that there is no heteroskedasticity in the data.

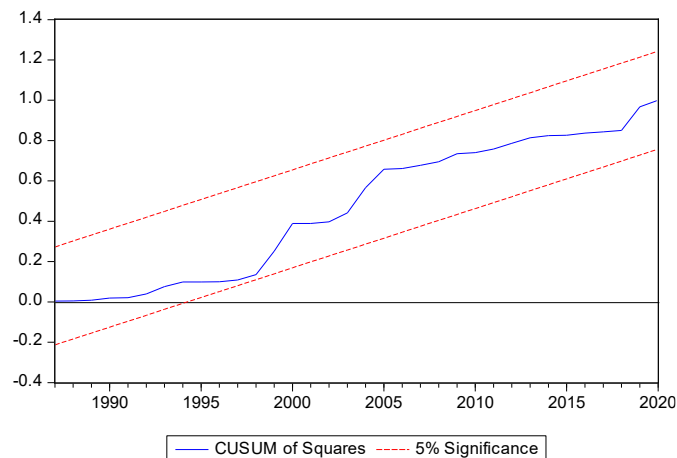
Stability Test

We plotted the cumulative sum of recursive residuals CUSUM and the cumulative sum of recursive residual square CUSUMSQ to investigate the stability of the estimated coefficients. The CUSUM and CUSUMSQ graphs are located between the upper and lower critical boundaries, ensuring the stability of the calculated model.

Plot of Cumulative Sum of Recursive Residual (CUSUM)



Plot of Cumulative Sum of Recursive Residual Square (CUSUM of Square)



5 Conclusion

Foreign Direct Investment (FDI) and domestic investment in Pakistan's economic growth are the primary objectives of the present study work. Annual Time Series Data from 1980 to 2020 were used for this investigation. FDI, domestic investment, exchange rate, and inflation rate were also utilised as dependent variables in the analysis. The study employed the Augmented Dickey Fuller (ADF) unit root test for stationary purposes. All variables are stationary at level and intercept, as well as at the first difference, trend, and intercept, according to the results. FDI and domestic investment (DI) have a beneficial impact on economic growth, but inflation and exchange rates have a negative impact. According to the report, a high exchange rate will negatively impact FDI and economic growth. At the completion of the investigation, stability tests were performed on the CUSUM and the Square CUSUM. The study offers several policy implications based on these findings. Defense and homeland security departments consume a disproportionate amount of government funds nowadays, as do ministries that are directly engaged in combatting terrorist operations. To combat terrorism, the government should pay special attention to distributing economic growth gains on an equal basis. As a result, the government must lower its anti-terrorist spending in order to attain the highest level of social welfare. Investors from outside Pakistan should be assured of a safe investment environment by the government.

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