



## Case Study

# Long run relationship among Gross Domestic Product (GDP), Foreign Direct Investment (FDI) and exchange rate of Pakistan: a case of Pakistan 1981-2016

Ghulam Mustafa Shaikh<sup>1\*</sup>, Niaz Hussain Ghumro<sup>2</sup> and Allah Ditta Nawaz<sup>3</sup>

<sup>1</sup>Dept. of Business Administration, Sindh University Campus Larkana, Sindh, Pakistan

<sup>2</sup>Dept. of Business Administration, Sukkur IBA University, Sukkur, Sindh, Pakistan

<sup>3</sup>Sukkur IBA University, Sukkur, Sindh, Pakistan

gm.shaikh@usindh.edu.pk

Available online at: [www.isca.in](http://www.isca.in), [www.isca.me](http://www.isca.me)

Received 18<sup>th</sup> September 2017, revised 22<sup>nd</sup> December 2017, accepted 12<sup>th</sup> January 2018

## Abstract

*The main purpose of this study is to empirically analyze the long run relationship among some macroeconomic variables in Pakistan. The annual time series data of variables; gross domestic product, exchange rate and foreign direct investment has been taken for the period of 1981-2016. The Augment Dicky fuller test, co-integration method and vector error correction model were applied. The existence of long-term casual links among studied variables have been confirmed in the result. Moreover, It has been also confirmed a positive association between foreign direct investment with gross domestic product and negative association of exchange rate with gross domestic product. We infer that foreign direct investment is an optimistic force towards economic growth Pakistan.*

**Keywords:** Exchange rate, gross domestic product, foreign direct investment, Pakistan.

## Introduction

Developing countries like Pakistan faces the challenge of savings investment gap that is identified as not having enough domestic savings in the economy to meet the massive required investments mainly because of the undeveloped financial system of the country and lower attractiveness of other macro-economic variables. The one way to bridge the gap is to attract the foreign direct investment to meet the extensive investments<sup>1</sup>. This study focuses on the factors that affect the FDI inflows in the country. Foreign exchange rate and Gross domestic production are among them which design the environment for the FDI in any economy and deeply analyzed by the foreign investors. Along with them there are factors that are not easily quantifiable such as interest rate, inflation, political stability, trade openness and environmental soundness which also impact the decision making for FDI.

The recent China Pakistan Economic Corridor (CPEC) is the evidence that government of Pakistan has been introducing the investment favorable policies to attract the foreign investors and promote the foreign direct investment in the country. Muhammad Bilawal<sup>2</sup> investigated the impact of macroeconomic variables that government needs to control for the positive contribution in the foreign direct investment. Exchange rate of the host country is a major determinant of the FDI, when the foreign investors don't get that much return in their country they move to other countries where comparatively higher exchange rate are offered. In this connection the gross domestic

production of the host country has its importance while cross-border transactions are made. If a country's gross domestic production is increasing but still exchange rate could contribute negative in it<sup>3</sup>.

Apart of financial factors that affect the foreign direct investment of any country there are other variables those have a big impact on FDI of the host country. Variables like; inflation, interest rate, trade openness and corruption. The corruption is classified as either increasing transaction costs which is grabbing hand or by helping hand which could facilitate the foreign direct investment<sup>4</sup>. The increasing role of the FDI in emerging economies has created the space for the researcher to derive all the considerable factors that can impact the FDI positive or negative in any manner. All the macroeconomic variables are the determinants of the FDI but this research has taken gross domestic production and exchange rate into account for analyzing their specific impact on FDI, is the other side of the picture which has a significant effect positive and negative.

**Exchange Rate:** Exchange rate is basically the price of one currency in terms of foreign currency driven by the normal forces of supply and demand. It is considered as one of the major force to an open economy which has a direct effect on macroeconomic factors of an economy like FDI (Foreign direct investment) and GDP (Gross domestic product) in country<sup>5</sup>. While making investment in international market, exchange rate of country has been considered first by policy makers and investors and then they move towards their investment in

focused country. Investors perceived that increase in exchange rate causes competitive advantage in international trade<sup>6</sup>. Stated that exchange rate is how the unit of domestic currency can be change with the foreign currency unit.

Exchange rate is considered as one of an important factor in an economy that influence the macroeconomic variables in country like trade, foreign direct investment, inflation, foreign reserve, gross domestic production and remittances etc. Economists consider that when value of domestic currency of country is increasing it brings competitive advantage in international trade<sup>7</sup>. For the developing economies like Pakistan exchange rate contributes crucial role in international trade along with FDI and ultimately the GDP of country.

Initially (Before World War I) value of world's major currencies was fixed in terms of gold, then US Dollar was set as base of valuing the currencies specially after World War II. After the establishment of Pakistan till 1970, Pakistani rupee was linked with British pound but later on from 1971 it is linked with the dollar of United State of America (US Dollar) because of the increasing influence of US currency in world economy. Pakistani rupee was stabilizing with US dollar till year 1982 but after that during the period of General Zia-Ul-Haq from 1982-1988 the currency depreciated to 38.5%<sup>8</sup>.

**Gross Domestic Product:** Gross Domestic Production is a process to identify the health of country's economy; GDP is the one of primary source used to determine the fitness of economy. Gross Domestic Production (GDP) is the one of primary source used to determine the fitness of economy<sup>9</sup>. Gross Domestic Production is considered as one of the utmost widely used measures of an economy's production or fabrication. The process which is used by economists to analysis that is in particular time period (weekly, monthly, quarterly or yearly), the total value of goods as well as services produced by an economy.

According to Noble laureate (Paul Samuelson); (economist William Nordhaus) the perfect sign of an economy's size is its GDP, whereas GDP growth rate is probably the single best indicator of economic growth. While GDP per capita has a close and parallel linkage with the trend in living standards over time, and the GDP along with rest of the national income accounts may seem to be hidden concepts, they are truly among the great inventions of the 21<sup>st</sup> century<sup>10</sup>.

**Importance of GDP in Economy:** According to Samuelson and Noedhaus neatly, role of GDP is to give representation of state economy to that of a dependency in space that can survey the weather across an intact continent. GDP enables the policy makers as well as the central bank to identify the economic indicators weather the country's GDP boost or to lead threat of recession. Samuelson in his "Economics" seminal textbook also mention that to measuring GDP allows policy makers and business analyst to analysis the impact of micro and macro variables like monetary and fiscal policy, economic shocks, tax etc.

To identify the growth in GDP can be measures either through the expenditure approach or income approach, expenditure approach to examine the results through (the sum total of what everyone in an economy spent over a particular period) or other way to examine the results through (the total of what everyone earned).

GDP changes because of the business cycle. The GDP's movement enables economic wealth, when an economy is booming and GDP is rising in hat amount of other factors contributes to add some value there draw closer a point when inflationary weights build up quickly as both labor as well as productive capacity near to full utilization. This clues the central bank to begin a cycle of tighter monetary policy to cool down the overheating economy and control inflation<sup>11</sup>. Here is the concept and difference of real GDP and nominal GDP; the result antreal GDP is consider in account inflation (fixed price) but nominal GDP is opposed of that and only reflects changes in prices (Market price).

As interest rate rises, on one hand, companies as well as consumers, they amend in their respective spending pattern, and on the other hand the economy is going to be slow down. This slowing in demand allows companies to make redundant employees, which additionally influence the confidence of consumer and demand. In order to breakdown this vicious circle, the central bank of an economy needs to formulate such a monetary policy continuously which hits the economic growth as well as employment until and unless the economy is coming back to reach at boom once again.

**Foreign Direct Investment:** FDI (Foreign Direct Investment) is of mainly two types; Greenfield Investment when a company build a new manufacturing plant or a branch of the business in the foreign country and second type is acquisition and merger in which a company acquires or goes into the merger with a foreign company. OECD (2013) has defined that the most of developing economies focus on the foreign direct investment for their economic growth with inflow of cash, managerial skills, capital equipment, employee trainings and the technology<sup>12</sup>. The "absorptive capacity" of the host country has a major importance in getting the maximum benefits out of FDI<sup>13</sup>. Absorptive capacity is defined as the host country's capability of getting the advantage from FDI which might be limited due to the undeveloped financial markets and educational level of the businessmen. Economic growth is benefited from the FDI with trade openness and the favorable policies by the government of host country<sup>14</sup>.

**Role of FDI in Economic Growth of Pakistan:** Since FDI in Pakistan has been declining after the 2007-2008 fiscal year, government has taken some serious steps for attracting the foreign investors and developing policies favorable to trade openness. Developing countries like Pakistan have many benefits from FDI inflows including new long-term employment opportunities, development of infrastructure, managerial skills

and the transfer of new technology. FDI has major contribution in the improvement of economic growth of a developing country. According to BOI (Board of Investment in Pakistan) the FDI was recorded \$485 Million in 2001-2002 which rapidly increased to \$5409 Million in 2007-2008 within six years containing the Greenfield investments and the privatization proceeds<sup>15</sup>.

Globally FDI has been decreasing after 2007-2008 but comparatively Pakistan has suffered more from it due to natural disasters, terrorism and off course the World Financial Crisis of 2007-08<sup>16</sup>. The FDI inflow is expected to rise at lifetime record in the end of this year following the mega \$46 Billion Project of China-Pakistan Economic Corridor which is started early this year which covers Energy projects, Infrastructure and development of Gawadar port and others. Government of Pakistan needs to continue initiating such projects that have a major impact on the economic growth of Pakistan. The fluctuation in the FDI is due to many factors that contribute in it positive or negative. This paper has examined the impact of three key economic variables (Exchange rate, Interest rate and Corruption) on the flow of the FDI in Pakistan. After analyzing the different literature review and observing the previous research, following are the objectives of our study: i. To examine the long run relationship among GDP (Gross Domestic Product), FDI (Foreign Direct Investment) and ER (Exchange Rate) in Pakistan.

Our study would be supportive for the government, policy makers, and management of financial institutions to formulate the policies for effective decisions making through understanding the impact of FDI and ER (macroeconomic indicators) GDP of the country.

## Literature Review

Literature review is intended to serve the actual purpose of the research conducted along with this it increases the current knowledge that includes the findings of the previous researches in the same area and the methodology in which research is conducted in the same area, the theoretical background and its support to the current research. Literature is describing that Exchange rate and foreign direct investment inflows are seen as independent variables contributing in Gross Domestic Production of the economy.

Various studies advocated a relationship between exchange rate and GDP of the country.

The controversial views are available by economists related with the relationship between exchange rate and GDP. Exchange rate means the one unit of foreign currency can be bought with one unit of home currency. Whereas, exchange rate volatility relates with demand and supply of it. According to Farroq positive relation existing between exchange rate volatility and GDP in the long run<sup>3</sup>. R. Tyers who conducted

research in china on China's economic growth and its real exchange, he argued that China adopted policy of fixed exchange rate and made rapid economic growth<sup>17</sup>. This policy of fixed exchange rate cause the promotion of long-run productivity in China. The work of Abu Bakaar was related with the effect of exchange rate (real) on economic growth of Sierra Leone. He used quarterly data for 1990-2006 period. In his study, he used granger causality test and found positive relationship between real effective exchange rate and economic growth of Sierra<sup>18</sup>.

FDI is an essential facet that influences the economic growth and development. Such as, Najid Ahmad who works on "time series data from 1971-2011, in which he concluded that the relationship between GDP and total investment in the country is significantly positive, and the investment is an essential for the economic growth of Pakistan<sup>19</sup>. Moreover, he describes that the major source of Pakistan prosperity is investment of foreign investors. In this connections numerous researchers are agreed that FDI works as an engine for economic growth of an economy. Their views are, without the sufficient amount of FDI it may not possible to make sustainable growth in a country. According to Nuzhat Falkishe pointed out the impact of FDI on Economic Growth of Pakistan with the help of time series data from 1980 to 2006. She employed regression analysis on domestic capital, labor force and foreign owned capital as independent variables with GDP as dependent variable<sup>20</sup>. As per her results, negative in-significant relationships existing in between GDP and FDI inflows in Pakistan. The Foreign Direct Investment has a significant impact on Gross Domestic Products of SAARC countries. SAARC Foreign Direct Investment from outside is more essential as compare to investments of in intra region.

Muhammad Bilawal, analyzed the impact of exchange rate on FDI in Pakistani perspective. His study was based on two variables, exchange rate as independent variable and FDI is as dependent variable. Secondary and time series data of 32 years from 1982 to 2013 was analyzed by using tests of correlation and regression analysis and test the relationship among variables. Results of correlation showed significant positive relationship among the variables, whereas R-square value of regression analysis shows that exchange rate has 0.679 means 68% impact on FDI. The conclusion of this study was exchange rate and its instability has significant effects on foreign direct investment inflows in Pakistan<sup>21</sup>.

Samiullah, investigates the effect of exchange rate volatility on foreign direct investment in Pakistan. His objective of the study was to determine the relationship of foreign direct investments with exchange rate and exchange rate volatility. Annually time series date for 1980 to 2010 periods of studied variables were taken as research sample. Collected data of defined variables was run by different time series econometrics techniques including unit root test, co-integration techniques and causality analysis. Results of study concluded that foreign direct

investment is positively associated with depreciation of Rupee and exchange rate volatility discourages FDI inflow in country. Foreign direct investment of Pakistan increase by 0.61 units in response to 1 unit increase in exchange rate, whereas depreciation of Pakistan's rupee is attracting factor for foreign investors as their relative value of assets increase<sup>22</sup>.

Khandare, studied the impact of exchange rate on FDI in economies of India and China. The study was conducted to analyze the impact of exchange rate on FDI inflows. To conclude the results of study, techniques of correlation and regression were used. Data from 1991 to 2014 was taken. Correlation analysis showed that in India there is positive relationship between exchange rate and foreign direct investment, in China correlation has a negative relationship. In India one unit increase in exchange rate raise FDI by 0.605 units, but in China one unit increase in exchange rate lead to 0.2503 unit decrease in FDI. P value 0.0017 of coefficient indicates that in India exchange rate is highly significant with FDI. In case of China P value of 0.238 showed that exchange rate does not have significant influence on FDI. Study observes that in India exchange rate is highly correlated with FDI inflows so China should adopt such fluctuated exchange rate policy like India<sup>23</sup>.

### Methodology

The study covers 36 years of annually data for the period of 1981 to 2016. Gross Domestic Production, Exchange Rate and Foreign Direct Investment variables have been collected from World Data Indicator (WDI) and State Bank of Pakistan (Central Bank) websites, tests of ADF unit root, Johnson Co-integration and Vector Error Correction Model (VECM) have been employed by using E-Views 9.0.

### Model Specification

$$LGDP = f(LFDI, LER) \tag{1}$$

The description about the variables in equation (1) is given bellow as: LGDP = Log Gross Domestic Product, LFDI = Log Foreign Direct Investment, LER = Log Exchange Rate.

### Results and discussion

This research aims to find out the long run relationship among Gross Domestic Production (GDP) and Exchange Rate (ER) and Foreign Direct Investment (FDI). The outcomes of research are generated with the help of E-Views 9.0, described below.

**Descriptive Data:** The results of descriptive statistics are showing summary of the statistics variables taken in the study. All variables are being converted into Log form which makes more robust interpretation and meaningful. Mean value of Log Exchange Rate is 3.67 and median is 3.85 which indicate the center of data located. Maximum value of LER is 4.651 which is the highest exchange rate during the data period. Similarly, all

variables highlight their respective minimum, maximum, mean and other essential values. For Normality of the data, JarqueBera (JB) statistics with its respective p values infer that all variable are normal distributed such as LGDP has JB value 2.8778 with its p value more than 5% which does not reject the null hypothesis that data is normal distributed. Same for LFDI and LER with p values of 0.732 and 0.2703 respectively.

**Table-1:** Descriptive statistics.

	LGDP	LFDI	LER
Mean	25.06142	20.09653	3.67368
Median	24.86873	20.09403	3.854843
Maximum	26.37104	22.44424	4.651759
Minimum	24.05906	17.19844	2.292535
Std. Dev.	0.741775	1.304112	0.713318
Skewness	0.354504	-0.16028	-0.29955
Kurtosis	1.810088	2.441765	1.823023
Jarque-Bera	2.877873	0.62157	2.616286
Probability	0.23718	0.732871	0.270322
Sum	902.2112	723.475	132.2525
Sum Sq. Dev.	19.25808	59.52477	17.80879
Observations	36	36	36

**Lag Length Selection:** We will check co-integration among LGDP, LFDI and LER which explores the long-run equilibrium relationship among them. Usually, it seems problem that how many numbers for lag length would be taken. There are certain criteria for selection such as Akaike Information Criterion (AIC), Final Prediction Error (FPE), Schwarz Information Criterion (SIC), Hanna-Quinn Information Criterion" (HQ) etc. Mostly, researchers used AIC to decide the best lag length selection. Here, we also used AIC, as Table-3 shows, to select optimal lag length. The star sign with value in Table-3 reflects the optimal lag. In AIC column 5 is optimal lag of our model, this value is minimum among all values in this column of AIC.

**Co-Integration Test (Long run relationship test among GDP, FDI AND ER):** In order to check whether long run relationship exist or not, non-differential VAR model estimation has been used to select optimal lag length through AIC criterion as shown in Table-3. Five periods with an appropriate lag length has been proved. The next step is to check co-integration test of Johansen and Jeselius (1990), among GDP, FDI and ER by using given equation:

$$LGDP = \alpha + \beta_1 LFDI + \beta_2 LER + \varepsilon \quad (2)$$

In the test of co-integration we found, Trace statistics and Max-Eigen statistics, both are criteria that can be used to decide the existence of co-integrating equations for GDP, ER and FDI at 1% and 5% level of significance.

After conducting the Johansen co-integration test, results are summarized and reported in Tables-4 and 5. Trace Eigen statistic as well as Maximum Eigen value test statistic indicate co-integration is exist in long-run relationship among GDP, FDI and ER of Pakistan.

Co-integration equation has following form:

$$LGDP = 2.32085LFDI - 3.11843LER + \varepsilon \quad (3)$$

(0.5451)                      (0.8661)

The above equation shows that if FDI increased by 1 unit then there is an increase in GDP of 2.3208 units. For exchange rate, if exchange rate is increased by 1 unit then there would be 3.1184 units decrease in GDP.

**VECM (Vector Error Correction Model):** The Co integration test reflects the long term dependence among variables; however, it leaves aside the opportunity of the short-term fluctuation among examined variables.

VECM is applied in order to detect that fluctuation during co-integration. This technique is helpful to analyze short-term deviations necessary to get long-term balance between two variables<sup>24</sup>. The equation for Vector Error Correction Model is:

$$\Delta LGDP_t = \text{lagged} (\Delta LGDP, \Delta LFDI, \Delta LER_t) + \lambda \mu_{t-1} + V_t \quad (4)$$

The lagged reflects a particular number of delays explaining variables. AIC determines the optimal number of delays. The first difference of the variable is denoted by  $\Delta$ , whereas  $\mu_{t-1}$  is estimated residual components of long term relationship that has been established by co-integration test.  $1 < \lambda < 0$  reflects rate of return to long-term balance whereas  $V_t$  shows random component of white noise. The results of the VEC model are shown in Table-6.

**Table-2:** Results of ADF unit root test.

Variables	Level			1 <sup>st</sup> Difference		
	t-statistic	Critical value at 1%	p-value	t-statistic	Critical value at 1%	p-value
LGDP	-1.9128	-4.2436	0.6266	-5.8407	-4.2528	0.0002
LER	-2.5788	-3.6329	0.1068	-4.5219	-3.6394	0.001
LFDI	-3.7462	-4.2732	0.0334	-5.1728	-4.2528	0.001

**Table-3:** Optimal results of lag length selection.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-49.52016	NA	0.006656	3.501344	3.641463	3.546169
1	80.17021	224.7966	2.14E-06	-4.544681	-3.984202	-4.365379
2	95.9095	24.13358*	1.40E-06	-4.993967	-4.013128*	-4.680188
3	106.9135	14.67203	1.29E-06	-5.127568	-3.726371	-4.679313
4	117.8508	12.39563	1.26E-06	-5.256723	-3.435166	-4.673991
5	130.0315	11.36858	1.22e-06*	-5.468764*	-3.226848	-4.751556*
6	137.0338	5.135019	1.91E-06	-5.335584	-2.673309	-4.483899

\*indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level).

**Table-4:** Johnson Co-integration Test (Trace Value Statistics).

Hypothesized		Trace	0.05	
No. of CE(s)	Eigen value	Statistic	Critical Value	Prob.**
None *	0.571719	36.00731	29.79707	0.0085
At most 1	0.24754	10.56804	15.49471	0.2395
At most 2	0.065609	2.03582	3.841466	0.1536

Trace test indicates one co-integrating eqn(s) at the 0.05 level, \*denotes rejection of the hypothesis at the 0.01 level.

**Table-5:** Johnson Cointegration Test (Maximum Eigen Value Statistics).

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigen value	Statistic	Critical Value	Prob.**
None *	0.571719	25.43927	21.13162	0.0116
At most 1	0.24754	8.532219	14.2646	0.3271
At most 2	0.065609	2.03582	3.841466	0.1536

Max-eigen value test indicates one co-integrating eqn(s) at the 0.05 level, \*denotes rejection of the hypothesis at the 0.05 level.

**Table-6:** The VECM Model.

Error Correction:	D(LGDP)	t-statistic	p-value
CointEq1	-0.07803	-2.45256	0.0291
D(LGDP(-1))	-1.01451	-3.56202	0.0035
D(LGDP(-2))	-0.907297	-2.4297	0.0303
D(LGDP(-3))	-0.832061	-2.37318	0.0337
D(LGDP(-4))	-0.511079	-1.671	0.1186
D(LGDP(-5))	-0.266017	-1.37992	0.1909
D(LFDI(-1))	-0.133468	-2.02875	0.0635
D(LFDI(-2))	-0.160744	-2.95914	0.0111
D(LFDI(-3))	-0.121022	-2.12621	0.0532
D(LFDI(-4))	-0.085243	-1.74436	0.1047
D(LFDI(-5))	-0.031229	-0.76304	0.4591
D(LEXCHR(-1))	-1.17149	-4.03284	0.0014
D(LEXCHR(-2))	-1.103587	-2.63438	0.0206
D(LEXCHR(-3))	-1.00158	-2.31054	0.0379
D(LEXCHR(-4))	-1.060622	-2.670381	0.0193
D(LEXCHR(-5))	-0.476465	-1.28656	0.2207
C	0.692342	3.71507	0.0026
R-squared	0.782727		
Adjusted R-squared	0.515314		
F-statistic	2.927038		
Prob(F-statistic)	0.028488		
Durbin-Watson stat	2.085949		

In the perspective of Pakistan, GDP dependent, the results of adjusted coefficients are not so high which shows 7.8% of short term deviations from the balance of condition are adjusted by changes in the model dependent variables with the lag length five periods. The convergence rate towards equilibrium also satisfied in this case.

## Conclusion

The main aim of this study is to examine the long run relationship among gross domestic product, foreign direct investment and exchange rate in Pakistan. Annually data was used from 1981-2016. Initially, all variable were transformed into log form and order of difference has been checked for stationarity. All variable were become stationary at 1<sup>st</sup> difference by using ADF test. In order to check whether long run equilibrium relationship exists or not, non-differential VAR model estimation has been used to select optimal lag length through AIC criterion. Johnson co-integration was carried out which showed co-integration among GDP, FDI and ER is exist. Co-integration equation highlighted a positive relationship between gross domestic product and foreign direct investment. Whereas, negative association has been found in between gross domestic product and exchange rate. The given result infers that foreign direct investment is a positive force towards economic growth of Pakistan. Finally, as the order of all variables to get stationarity is same that is I(1), and Johnson test reflected that cointegration among variables then the analysis has been continued towards Vector Error Correction Model (VECM). Its result uncovers that approximate 7.8% rate of convergence to long term balance in relation to make short term shocks. This may conclude that the rate of convergence toward long term equilibrium is not so high, it is a satisfactory.

## References

1. Adom A.D. and Elbahnasawy N.G. (2016). Saving-investment Gap and economic growth in developing countries: Simulated evidence from selected countries in Africa. *American Historical*, 2200.
2. Bilawal M., Ibrahim M., Abbas A., Shuaib M., Ahmed M., Hussain I. and Fatima T. (2014). Impact of Exchange Rate on Foreign Direct Investment in Pakistan. *Advances in Economics and Business*, 2(6), 223-231.
3. Javed Z. and Farooq M. (2009). Economic growth and exchange rate volatility in the case of Pakistan. *Pakistan Journal of life and social sciences*, 7(2), 112-118.
4. Quazi R.M. (2014). Corruption and foreign direct investment in East Asia and South Asia: An econometric study. *International Journal of Economics and Financial Issues*, 4(2), 231.
5. Khan (2012). Impact of Exchange Rate on Foreign Direct Investment in Pakistan. *Advances in Economics and Business*, 2(6).
6. Bilawal M., Ibrahim M., Abbas A., Shuaib M., Ahmed M., Hussain I. and Fatima T. (2014). Impact of Exchange Rate on Foreign Direct Investment in Pakistan. *Advances in Economics and Business*, 2(6), 223-231.
7. Khan R.E.A., Sattar R. and Rehman H.U. (2015). Effectiveness of exchange rate in Pakistan: causality analysis. *Pak. J. Commer. Soc. Sci.*, 6(1), 83-96.
8. Zada B. (2010). An Analysis of Factors Affecting Exchange Rate of Pakistan 1979-2008. (unpublished master thesis). Hazara University, Pakistan.
9. ur Rehman M. and ur Rehman S. (2002). Relationship of Exchange Rate With Various Macro Economic Variables.
10. Samuelson P.A. and Nordhaus W.D. (2012). *Economics* (19<sup>th</sup> ed.). New Delhi: Tata McGraw Hill Education Private Limited.
11. Froyen Richard T. Macmillan (1983). *Business and Economics*.
12. Foreign Direct Investment for Development - OECD (2013). <https://www.oecd.org/investment/investmentfordevelopment/1959815.pdf>
13. Alfaro L., Chanda A., Kalemli-Ozcan S. and Sayek S. (2006). How does foreign direct investment promote economic growth? Exploring the effects of financial markets on linkages (No. w12522). *National Bureau of Economic Research*.
14. Khan M.A. and Naeem-Ur-Rehman K. (2009). Effects of economic factors on Foreign Direct Investment inflow: evidence from Pakistan (1971-2005). *Sarhad Journal of Agriculture*, 25(1), 135-140.
15. Khan M.A. (2007). Foreign direct investment and economic growth: the role of domestic financial sector (No. 2007: 18). *Pakistan Institute of Development Economics*.
16. Zeb N., Qiang F. and Rauf S. (2013). Role of foreign direct investment in economic growth of Pakistan. *International Journal of Economics and Finance*, 6(1), 32.
17. Tyers R., Golley J., Yongxiang B. and Bain I. (2008). China's economic growth and its real exchange rate. *China Economic Journal*, 1(2), 123-145.
18. Abu Bakaar (2010). Real effect of exchange rate on economic growth of Sierra Leone.
19. Ahmad N. and Luqman M. (2012). A dynamic analysis of the relationship among inflation, investment, population growth, export and economic growth in Pakistan. *Asian Journal of Research in Business Economics and Management*, 2(8), 175-182.
20. Falki N. (2009). Impact of foreign direct investment on economic growth in Pakistan. *International Review of Business Research Papers*, 5(5), 110-120.

21. Bilawal M., Ibrahim M., Abbas A., Shuaib M., Ahmed M., Hussain I. and Fatima T. (2014). Impact of Exchange Rate on Foreign Direct Investment in Pakistan. *Advances in Economics and Business*, 2(6), 223-231.
22. Ullah S., Haider S.Z. and Azim P. (2012). Impact of exchange rate volatility on foreign direct investment: A case study of Pakistan. *Pakistan economic and social review*, 50(2), 121-138.
23. Khandare V.B. (2016). Impact of exchange rate on FDI: A comparative study of India and China. *IJAR*, 2(3), 599-602.
24. Cipra T. (2008). Financial econometrics. *Ekopress, Prague* (in Czech).