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Inward foreign direct investment impact on stock market development in Pakistan

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ABSTRACT

The literature shows that the transformation effect of the inward foreign direct investment on stock market development is indirect. Because of this the FDI influence on stock market development can be neutral or expansionary. This study investigates the inward FDI impact on stock market development in Pakistan using data over the period 1993 to 2018. For results estimation, Johnson Cointegration, Fully Modified Least Squares (F.M.O.L.S) and Canonical Cointegrating Regression (C.C.R.) techniques are applied to the data. The findings reveal that FDI promote the stock market development in Pakistan in the long run. The findings suggest that attracting foreign direct investment in the country is dependent on effective policies, which can develop the stock market and ultimately boost the economic growth.

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1 Introduction

One of the major benefits of the foreign direct investment inflow is the sharing of technology between countries, which in process increases the supply of professional labor and promotes the products and services of the recipient countries (OECD, 2008). Foreign Direct Investment (FDI) brings more supply of capital to recipient countries. This is the reason that massive growth in inward FDI flow has been noticed in developing countries like Pakistan during the last decade. Similarly, a stable financial market and strong market capitalization help in stabilizing the economy and improving the standard of livings of the people. Securities exchange is a fundamental piece of capital market and it is connected with the reserve funds, speculations and monetary steadiness and its importance cannot be denied for any country. Stock market performance can be affected by numerous factors including exchange rate, political stability, foreign direct investment (FDI), and relaxation in economy (Gay, 2008; Adam et al, 2009). It has also been noticed in many countries that FDI has encouraging effects on stock market development (Mohtadi & Agarwal, 2001).

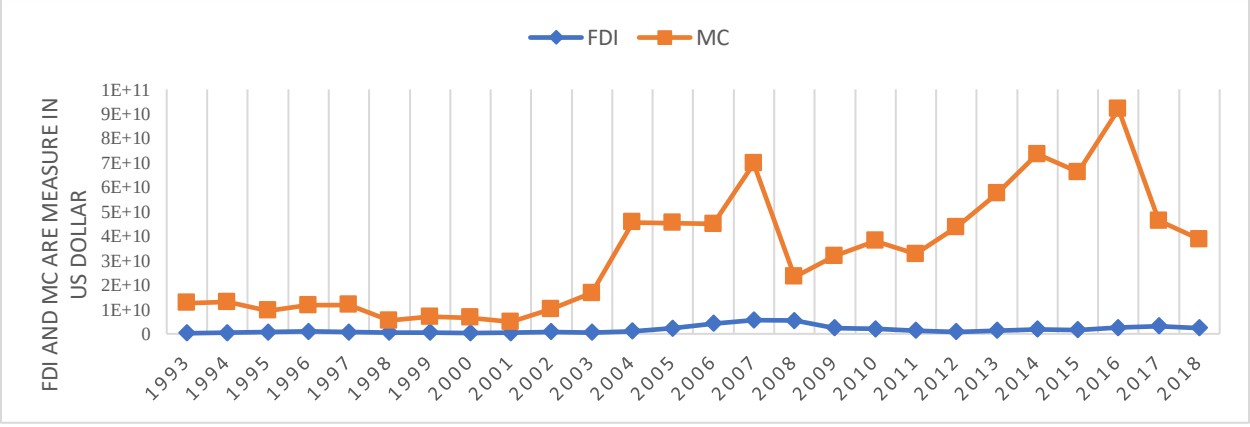
FDI is a prime supplier of capital influx in utmost of under developed economies, wherein it bridges the space of capital, administrative ability, technology, human capital formation and extra modest commercial enterprise environment. A series of literature is available on the function of FDI in economic improvement. On the one side, it is reported that FDI transfers company know-how and technology in increasing countries (Romer, 1993). Again,

some forecast that FDI would harm beneficial allocation of resources and subsequent slow net profits in the presence of pre - established trade, financial, price and other mischaracterizations (Brecher & Diaz-Alejandro, 1977; Brecher, 1983; Boyd & Smith, 1992). Similarly, Other research shows that no independent motivation for economic growth is given by FDI (Carkovic& Levine, 2005). FDI flows have a positive impact on the economic development of the host country in non-developed but not industrialised economies (Johnson, 2006). Therefore, theory disclosed vague estimates near to the growing effects of FDI. The role of FDI to upgrade the stock markets of undeveloped economies is measured very robust. It is discovered that FDI accelerates GDP. Similarly, GDP applies positive effects on stock market development and due to this FDI in turn encourages stock market development (Adam *et al.,* 2009). After the giving background, the objective of the current study is to explore the fundamental contributive aspects of FDI to the enhancement of the Pakistan stock market.

The Karachi stock exchange (KSE) of Pakistan established in September 1947. With time after KSE the Lahore stock exchange (LSE) came into being in 1974 and later in 1997 the Islamabad stock exchange (ISE) founded. Earlier Pakistan's capital markets remained comparatively slender due to non-conducive economic surroundings however as the security scenario extended and investors' self-assurance regained, the capital market disclosed gainful performance. The Securities and Exchange Commission of Pakistan (SECP) has endured to push with the reform schema to tackle the challenges of a fast-growing market at some period in the ultimate 5 years. Therefore, stimulation of investor's self-assurance has been captured via higher returns on investment in the Karachi stock market. The market persevered its upward inclination and attaining to all time high. KSE 100 witnessed its maximum level 52,876.46 index on 24, May, 2017 within the history. Considering that January eleven, 2016, the three stock exchanges (Karachi, Lahore and Islamabad) have been merged into Pakistan Stock Exchange (PSX), which is here and now offering a single platform to investors mainly the external investors (Pakistan Economic Survey 2017-18).

Figure 1 is used to understand the market capitalization (MC) and foreign direct investment (FDI) data represented in the US$ regarding Pakistan, from 1993-2018. The purpose of Figure 1 is to understand that MC and FDI values in general.

Figure: 1 Foreign direct investment and stock market development during 1993 to 2018



Source: World Development Indicators (2020)

The commencing of the fiscal year in 2008 seemed capable for Pakistan's capital markets but the sub-prime calamity escalating its clutch on monetary structures throughout the world. The collapsing of the US sub-prime market and world financial crisis has had thoughtful effects no longer only for the settled world's economy but for the unindustrialized markets too. The Pakistan's stock markets published suited profits and the KSE-100 index expended 11.6 % through mid of April 2008 and moved to the uppermost level of 15,676 points on April 18, 2008 with an advantage of 1,747 points. Following to this excessive time, however, the fairness marketplace has visible an occurrence of quick deterioration: the KSE-100 index has dropped by over 62 % (as on December 31, 2008) since moving to its topmost in April 2008.While problems associated to the macroeconomic situation and an unhinged political setting drove unease between the depositor municipal and donated to the reduction in value, a drought of suitable corporate supremacy procedures serious the condition. Enhancing the all-embracing weakness was the cause of falling overseas attention in the Pakistan' equity markets (Pakistan Economic Survey 2008-09.) Pakistan stock change (PSX 100 Index) become ranked pleasant market in Asia and fifth quality acting stock marketplace inside the international in the year 2016 by way of Bloomberg and was calculated to have furnished overall return of forty six percent for the year. In contrast with the PSX popular returns of 20 percent over the past 10 years and average return of 24 percent over the past 2 decades, the PSX go back of 46 percent also marked out because the best in MSCI Frontier Markets (Pakistan Economic Survey 2016-17).

The PSX 100 index which turned into at 37,783. 54 level as on 30, June, 2016 gained 13,152 points and persisted at the level of 50,935.91 as on 8, May, 2017 displaying an increase of 34.8 percentage. The period from July - march FY2018, the capital market operated in a huge variety. Throughout the period beneath evaluate, the marketplace remained risky. Till august 2018, it reached the height of 47,084 index on August 03, 2017, after then it commenced moving down touched the bottom 37,919 index on 19, December, 2017(Pakistan Economic Survey 2017-18).

Bano et al. (2019) suggested that that FDI inflow is central part for economic progress in wholly nations, particularly emerging ones. In several unindustrialized states, FDI influxes have improved for the previous 20 years. Though, in Pakistan FDI inflows are not expands over the past era. This paper examined motives for diminishing FDI influxes to Pakistan, seeing the key problems, like energy shortages, terrorism, political and financial uncertainty. This research paper investigated on pre- and post-international financial calamity events. Used ARDL for co-integration between variables. The outcomes display that energy deficiencies, financial uncertainty, and political uncertainty have opposing effects, and FDI influxes significantly affected by terrorism in Pakistan earlier the financial disaster in the long-period. Though, the post-financial disaster period shows that energy shortages as well as terrorism are the foremost motorists of deterioration in FDI influxes to Pakistan. FDI inflows positively affected by Inflation, Market size, and exchange rates. This investigation is supportive for the Pakistani Govt as it goes to design valuable strategies for appealing FDI.

The main feature of the undergoing study will lead to identify the effect of FDI, inflation and remittances on stock marketplace development of Pakistan. It is necessary to know about stock market development and its features which support the stock market development of a country. The time series data has been taken from 1993-2018. The Augmented Dickey Fuller (ADF) and PP tests are used for checking whether the variables are stationary or not and then the methods of FMOLS and CCR are employed.

The question now arises that up to what extent FDI will be effective on stock market development. The study initially presents reviews of prior studies and also interprets the dissimilar concepts of FDI influx, developed hypothetical model followed the methodology procedure of econometrics, empirical manifest and at the end of the day close up by suggesting some polices and testimonial.

2 Literature Review

Many prior studies carried out to investigate the connection between stock market growth and inward FDI flows for other countries. For example, Adam and Tweneboah (2009) studied that the effect of FDI on stock market growth in Ghana. Applying multivariate cointegration and innovation accounting approaches the finding showed that There is a strong long-term correlation between FDI and growth in the stock market. Arčabić et al. (2013) examined the long run and short run association between stock market development and FDI in Croatia. The focal Hypothesis for the long run is that the trend in FDI represent stock market through economic development and short run rising trend on SMD determine the positive effect on FDI. Applied cointegrations approaches for testing the long run connection while two variable VAR model used for the purpose of short run. According to this study it is observed that stock market development could be improve by FDI in short run.

Acheampong and Wiafe (2013) disclosed the effect of FDI on SMD Via ARDL model and employed quarterly data of time series from "International Financial Statistics and Bank of Ghana" from (1990 -2010). This study suggested that FDI had encouraging impact in the short run on SMD. Similarly, additional variables of this study, Exchange rate and Inflation had also a positive impact on development of the stock market. On the other side it has been observed that there is a bi-causality among FDI and SMD and suggested that régime should upkeep sensible macroeconomic policies to generate permissible situation to inspire the flow of FDI and increase the re-investment so that SMD and economic progress could be amended.

Faezet al (2014) explored the influence of FDI on SMD of Iran. The crucial attention rotates about the substituting or harmonizing part of FDI in the SMD of Iran. This paper also observes the other foremost causative factors to the expansion of stock market. An ARDL bound testing method is applied for long-run association between variables and the error correction model is applied for short run dynamics Outcomes: it is found that the FDI role in Iran's SMD is complementary and additionally macroeconomic variables influencing SMD are domestic savings, inflation and GNP per capita.

Azam and Ibrahim (2014) observed the inflow of FDI and its influence on stock market development in the case study of Malaysia. GDP, Inflation, domestic saving and investment additionally added to the model and employed annually data from 1988-2012. ARDL bounds test is applied to evaluate the co-integration of variables. ARDL outcomes indicated that stock market significantly affected by FDI influx. The suggestion of the study is to improve FDI and domestic savings. Similarly, inflation should be controlled in order to enhance economic activities.

Olugbenga and Grace (2015) inspected the influence of FDI on Nigerian capital market development. Applied Johansen co-integration and ADF unit root test to investigate the impact. The data covered from "Central Bank of Nigeria statistical bulletin" from 1970 to 2010. The finding of no co-integration among FDI and market capitalization up-to-date the possibility to OLS regression outcome that displays that FDI effect positively and expressively on market capitalization of Nigeria. Though, the absence of co-integration proposes the importance of foreign direct investment and shows a way of encouraging long run development in the underdeveloped country like Nigeria.

Aayale (2017) investigated the FDI impact on Morocco's Casablanca stock exchange. The results showed that FDI inflows played a negative role in the expansion of stock exchange and concluded that Morocco's Casablanca stock exchange is negatively affected by FDI and the obtaining result opposing the study hypothesis. Time serious data assembled from 1993 to 2013, used OLS and an empirical model is proposed to provide an explanation for the exposed association. Additionally, explanatory variables show positive effect on the improvement of Morocco's Casablanca stock exchange as compared to the target variables.

Al Samman and Jamil (2018) investigated the role of FDI in "Gulf corporation council (GCC)" countries. The study used yearly statistics for six GCC states (Bahrain, Kuwait, Qatar, Saudi Arabia, the United Arab Emirates and Oman) for 2002 to 2015.The findings showed that in the long-run the stock market development of GCC countries was significantly affected by FDI in all countries Furthermore, the results of short run showed that stock market development affected by FDI positively but insignificantly.

Nwosa (2019) studied the Nigerian's stock market development and FDI inflow since 1986-2016. The purpose was to investigate the causal nexus among these variables. Used Pair Wise Granger Causality method and detected that there is no causality among stock market development and FDI. Further, exposed the presence of unidirectional causality from stock market development to inward FDI and determined that stock market development stock market development affects the FDI.

Literature on Pakistan

Raza et al. (2012) empirically inspected the importance of FDI in under-developing countries like Pakistan and analyzed whether the developing country stock market is positively affected by FDI or not. Covered data from 1988 to 2009 and applied Ordinary least Square approach. The estimated results according to the hypothesis and revealed that stock market development is positively affected by FDI and suggested that Government should motivate the FDI and provide good platform to attract foreign investors.

Malik and Amjad (2013) inspected the FDI influence on Pakistan's stock market development and used secondary data since 1985 to 2011. The obtained results indicated that stock market development is significantly affected by FDI and depicting that FDI is playing a complimentary part in the Pakistan's stock market development. Shahbaz et al. (2013) analyzed that what is the impact on Pakistan's stock market development due to FDI inflow. The "international equity market" improved the developing countries economics progress by getting advance capital influx. Co-integration approach employed through ARDL bounds test and determined that FDI plays a complementary role on stock market development in "the case study of Pakistan". Similarly, the stock market is also affected by other variables in Pakistan such as inflation, saving and income.

Haq (2019) examined the FDI effect on the "stock returns" in the case of the Pakistan's market. Pakistan is an evolving economy of Asia. This paper used data from diverse dependable sources. The FDI data covered from "Pakistan Statistical bureau" and used yahoo Finance source to cover data for stock returns for the period of 2005 to 2014. Employed the regression analysis and disclosed the positive connection among FDI and Pakistan's stock returns.

The main point is to study the effect of FDI on Market capitalization (which is the proxy of stock market development. The additional aim is to evaluate the association between stock market development, remittances and inflation.

Following are the hypothesis

$H_{o:}$ FDI inflow is not affecting stock market development

H_1: FDI inflow is affecting stock market development

3 Methodology and Data

The current study econometric model is grounded on the linear regression and mainly focusing on the target variable that is market capitalization (MC) which is proxy of stock market development and is expressed symbolically as below. Several previous used similar empirical model (Ho & Iyke, 2017; Azam et al. 2016; Tweneboah & Adam, 2009; Shahbaz, et al. 2013; Aayale, 2017; Haq, 2019).

$$LMC_t = \beta_0 + \beta_1 LFDI_t + \beta_2 INF_t + \beta_3 LR_t + \varepsilon_t \qquad (1)$$

Whereas,

LMC= Log of the Market capitalization used a

LFDI= Log of the Foreign direct investment

INF= Inflation rate

LR=Log of Remittances

ε= Disturbance term.

B_0 = Intercept

B_1, $B_2$and B_3 are the relevant coefficients

$\varepsilon t$is the error term

For the period 1993-2018, time series information is used. The FDI effect on stock market development is positively associated because when there is more inflow there is more stock market development. The effect of foreign capital influxes on stock market development is positive and it is evident that stock market development could largely be improved by more inflow of FDI (Tweneboah & Adam, 2009).

Every country likes to protect its economy from inflation because it degrades the economic activities and creates major causes which are not desirable for global economy. That's why inflation is negatively related with stock market development and due to increase in inflation the marginal effect of inflation rapidly decreases the performance of stock market development. Thus, it is necessary to control inflation in order to boost stock market development (Azam, & Ibrahim, 2014).

Billmeier & Massa, (2009), additionally investigated the role of remittances in relation to stock market development. The study found that remittances is also one of those variables which is positively affecting stock market development and plays vital role in growth of stock market.

Estimation Techniques

The current study applied the Johansen and Juselious (1990), cointegration technique. The comprehensive argument can be found in (Johansen & Juselius, 1990, Johansen, 1992a, Johansen, 1992b).

The current study also uses FMOLS and CCR cointegration approaches for robustness check out. FMOLS, CCR and cointegration techniques complete Discourse can be found, Fully Modified Ordinary Least Squares (FMOLS) (Saikkonen, 1992; Stock & Watson, 1993) and Canonical Cointegration Regression (CCR) (Park, 1992) approaches. Similar empirical methodology also executed by many prior studies including (Yien et al., 2017; 2019, Azam & Rashid, 2019, Bahattab et al. 2016, Azam & Raza, 2018, Prabhakar et al. 2015, Shah et al. 2016, Azam 2016; 2019 Abdullah et al. 2019).

4 Results and Discussion

The results section is consisting of five parts. First, descriptive statistics and correlation matrix have been computed. Secondly applied ADF and PP test are used for detection of the unit root in the data variables. In the third step, "Johansen cointegration "test to scrutinize the long run association among the variables has been applied. After finding cointegration through Johansen, FMOLS and Canonical Cointegrating Regression (CCR) tests to examine the effect of variables in long run are used. Finally, diagnostic tests have been computed.

Table 1 shows the summary of descriptive statistics for all the variables. The results showed that the average value of SMD is 23.9266 and FDI average value is 20.9096. The maximum values of SMD and FDI during the study period are 25.2435 and 22.4442 and minimum values are 22.3131 and 19.5456. The standard deviation of SMD and FDI during the study time are 0.9321and 0.8566. Skewness value of SMD and FDI and all other variables are zero that depicts that the data is normally skewed. Similarly, the Kurtosis values of all variables is less the 3 (< 3) showing platykurtic. On the other side the correlation matrix discloses that FDI is strongly correlated with SMD with a coefficient value of 0.7823 showing positive connection between the two variables. With a value of -0.0031, inflation is negatively associated with the growth of the stock market.

Table 1: Descriptive Statistics Plus Correlation Matrix

Variables	LMC_t	$LFDI_t$	LNF_t	LR_t
Mean	23.9266	20.9096	8.1656	22.2926
Median	24.1960	20.9201	7.6454	22.2669
Maximum	25.2435	22.4442	20.2861	23.7769
Minimum	22.3131	19.5456	2.5293	20.7192
Std. Dev.	0.9321	0.8566	4.3389	1.0721
Skewness	-0.2656	0.1412	0.7533	-0.0417
Kurtosis	1.6573	1.9800	3.3698	1.5394
LMC_t	1.0000			
$LFDI_t$	0.7823	1.0000		
$LINF_t$	-0.0031	0.2552	1.0000	
LR_t	0.9030	0.7015	-0.0260	1.0000

Testing unit root in time series data is an important step before the use of any econometric technique. It not only helps to define the order of integration of the sequence but also in application of appropriate technique to the data. The PP and ADF tests results showed that at first discrepancy, both variables are stationary, indicating Johansen co-integration as the required technique.

The ADF and PP results are given in Table 2. Similarly, the Co-integration test outcomes are given in table 3 and table 4. In table 3 trace statistic results are given. Whereas, in table 4 Maximum-Eigenvalue values are given.

The Table 3 shows Trace statistics and Table.4 indicates maximum Eigen-value statistics. Max-Eigen and Trace statistics in Table3 and 4 are showing that there are three co-integrated equations in vector. The hypothesis of

"Trace and Max-Eigen" statistics supported that there are at most three cointegrated vectors equilibrium in long run and determining the long-run association among the variables.

FM-OLS and CCR Results

The outcomes of Co-integration test are related to current study supporting the presence of long-run symmetry associations among the model's variables. Cointegration analysis directed for the period of (1993 to 2018) and aiming to get more robust outcomes applied Johansen, FMOLS and CCR approaches to explore the cointegration of study variables and evaluate the long-run association of the coefficients. Table 5 revealing the results of FMOLS and CCR analysis. It is clear from Table5 that FMOLS and CCR outcomes depicting a significant positive long run influence on stock market development.

For the purpose of empirical investigation, a balance time serious data is applied for the period of 27 years "in the case study of Pakistan". A brief summary in the form of descriptive statistics is showed in Table1 and depicting that the results which is obtained from the current study model are expected and supports the hypothesis of this research. The time series data is used because it is more relatively suitable for the purpose of the empirical investigation.

Foreign direct investment

The leading goal of current investigation to overcome the connection between the FDI influx and stock market development in the case study of "Pakistan". To achieve the desirable outcomes, the study specifies the models with several control variables within a time series basis. The results show a positive connection between the FDI and the stock market development. Our regression detailed description for design criteria suggest generally expected results and according to prior study hypothesis that FDI exposing a positive effect on stock market development. Former studies, such as (Tweneboah & Adam, 2009; Shahbaz, et al. 2013; Azam et al. 2014) suggested that FDI is positively affecting Stock market development. Our result is near to prior studies results.

Inflation

The rate of inflation is counted in the study model to estimate the macro-economic volatility. Inflation is one of the important elements which represents the feeble governance and dejects economic stability. The study result carries the probable negative sign and supports the hypothesis that the influence of inflation is negative on stock market development. The negative coefficient of inflation is -0.0432which is statistically significant at the level of -2.6362. The result disclosed that if inflation is upgraded by one unit, so that will degrade stock market development by 0.0432 units. The study outcome reveals the strong and negative influence of inflation on stock market development and consistent with the previous studies like (Ho & Iyke,2017; Azam & Ibrahim,2014).

Remittances

The result about remittances in relative to stock market development supports the study hypothesis and indicating significant impact on Stock market development, the estimated coefficient value is 0.7116 and t-statistic 2.9070. The remittances outcome is consistent with the prior study results such as, (Billmeier & Massa,2009; Raza, et al. 2015).

Diagnostic test results

The application of diagnostic test is important for getting reliable and robust results. The Serial Correlation LM test purpose is to disclose whether the study data is suffering from serial correlation or not. Table 6 result is depicting that the data is free from serial correlation.

CUSUM Stability test

CUSUM test examine whether there are structural breaks in the data or it is free from the structural breaks. The figure shows that blue line is located within the red lines i.e. lower and upper bounds showing that all the parameters are stable.

Table 2: Unit Root Test Results

Variables	Augmented Dickey- Fuller		Phillips-Perron	
	Level	First Diff.	Level	First Diff.
LMC	-0.9610	-5.3962*	-0.9047	-5.3962*
LFDI	-1.6291	-3.8631*	-1.7724	-3.8583*
LINF	-2.0993	-6.1408*	-2.0389	-6.1408*
LR	-0.2554	-4.0063*	-0.1904	-4.0063*

*Level of Significance is 5%

Table 3: Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.9096	119.5049	47.8561	0.0000
At most 1 *	0.8796	66.6169	29.7970	0.0000
At most 2 *	0.5976	20.0365	15.4947	0.0096
At most 3	0.0002	0.0050	3.8414	0.9424

Trace test shows 3 co-integrating equations at the level of 0.05

Table 4: Unrestricted Co-integration Rank Test (Maximum-Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.9096	52.8879	27.5843	0.0000
At most 1 *	0.8796	46.5804	21.1316	0.0000
At most 2 *	0.5976	20.0314	14.2646	0.0055
At most 3	0.0002	00.0050	03.8414	0.9424

Max-Eigenvalue test shows (3) co-integrating equations at the level of 0.05

Table 5: Results of FMOLS and CCR estimators

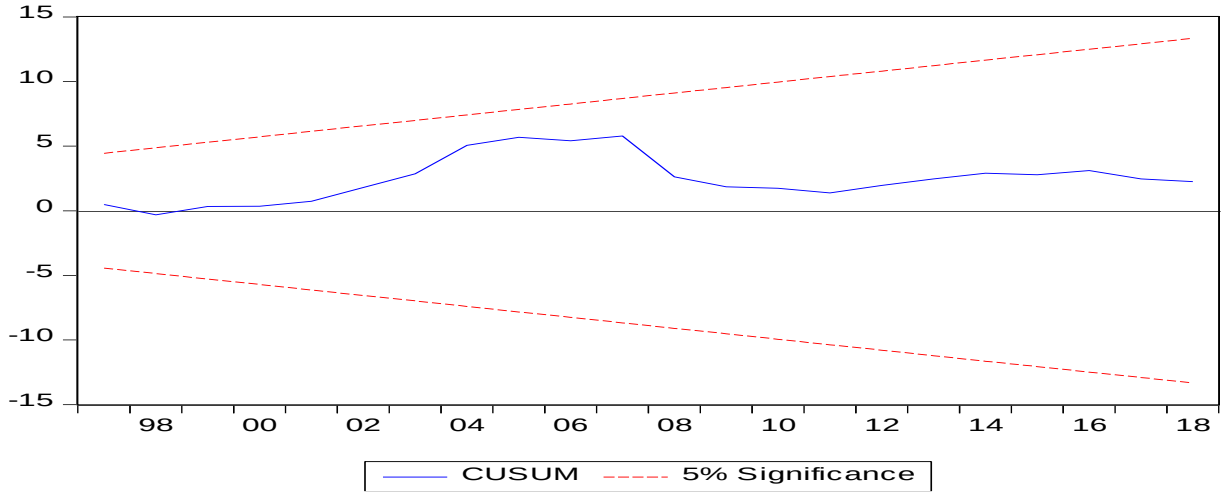
Fully Modified Least Square (FMOLS)		Canonical Cointegrating Regression (CCR)	
$LFDI_t$	[0.3233]	$LFDI_t$	[0.3364]
	(2.4926) *		(2.0602) *
LR_t	[0.7161]	LR_t	[0.7813]
	(2.9070) *		(2.7220) *
$LINF_t$	[-0.0432]	$LINF_t$	[-0.0429]
	(-2.6362) *		(-1.6400)

Note: [ ] indicating coefficient value and ( ) indicating t-statistic value. *Level of Significance is 5%

Table 6: Null hypothesis: "No serial correlation"

Lag	LRE* stat	df	Prob.	Rao F-stat	Df	Prob.
1	19.8470	25	0.7548	0.73848	(25, 31.2)	0.7799
2	28.3858	25	0.2904	1.17817	(25, 31.2)	0.3288

Figure 2: CUSUM Stability test



5 SUMMARY AND CONCLUSION

The research evaluated the effect of FDI inflows on the growth of Pakistan's stock market. In addition, other variables inflation and remittances have also been added as additional variables. The present study covered the period from 1993 to 2018.Johensan co-integration, FMOLS and CCR tests are applied for the estimation of results. The study display that in long-run stock market development was positively affected by FDI inflows in Pakistan. In other variables remittances showed strong and positive impact on stock market development. While, inflation impact on stock market development remained negative.

It is suggested that better domestic security system, motivating and encouraging foreigner for investment, controlling inflation and greater remittances inflows can promote stock market development. If the government significantly enhances these macroeconomic variables, it will ensure economic growth and prosperity.

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