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Charting Prosperity: The Ripple Effect of Inflation and Economic Growth on FDI

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Abstract:

The objective of this research study is to analyze the impact of inflation and economic growth on Foreign Direct Investment inflows in Pakistan. The data for economic growth, inflation and FDI have been taken from World Bank for the period of 2001 to 2022 and the collected time-series data has been analysed by using statistical software Stata. For checking stationarity of data, this study used ADF and PP unit-root test. The unit-root test showed mixed order of integration, therefore, this study used ARDL Model to examine the cointegration among variables. Moreover, Bound test has been applied to check whether cointegration exists or not, also various diagnostic tests such as Breusch-Pagan, Ramsey reset Test, Jarque-Bera, Breusch-Godfrey LM test etc are used in this study.

The long-run coefficient shows that there is positive relationship between economic growth &FDI and the relation is strongly significant, meaning that a 1% increase in economic growth enhances foreign direct investment by 2.251832% in the long-run. However, the estimated result highlights a negative and significant relationship between inflation rate and FDI,

showing that a 1% increase in inflation rate reduces the foreign direct investment by 0.0914571 % in Pakistan. Furthermore, short run-result shows that there is positive relationship between economic growth and FDI, but there is negative association between inflation rate and FDI and both are significant. The Granger Causality test shows uni-directional relationship between inflation rate and economic growth with FDI.Policy makers should devise an effective policy to boost agricultural outputs to control demand-pull inflation in the short-run and long-run. Also, government should introduce skilled learning programs in higher education as compulsory at both college and university level to equip skilled human capital to increase output in the future rather than producing graduates fully equipped with useless theories without practical implications.

keywords: Economic growth, Unit-root test, Inflation, FDI, human capital, stationarity, effective policy.

Introduction:

It is the primary objective of many countries to enhances economic growth and to maintain inflation rate at low i.e., stable macro-economic variables. The Pakistan Finance division has reported that the country inflation rate in may 2023 will be 36 % and GDP growth at the rate of 2.8%. Moreover, they also pointed out that the Foreign direct investment has reduced to $ 1170.1 million during Jul-April 2023, decreased by 23.2 %.

Pakistan Foreign direct investment from 2000 to 2022 has shown many ups and downs. World Bank reports that in 2000, the total FDI was $0.13 billion and which was 0.38 % of GDP. The economic growth rate in 2000 was 4.3% and inflation rate was 3.1%. As the economy grows faster Pakistan started gaining macroeconomic stability i.e., stable growth with low inflation, they succeed to attract more FDI in 2007 which were $5.59 billion and share of GDP increase to 3.36% from 0.38 % in 2000. In 2007 the country economy was growing at the rate of 7.5% with single digit inflation rate of 7.9%. As the economy grew slower and slower FDI share to GDP went lower and lower, then in 2020 when the growth rate was -1.3% FDI also toppled to $2.06 billion and the share plunged to 0.68% from 3.36% in 2007.

(Waqas, et al., 2015) studied the macroeconomic factors and foreign portfolio investment volatility: A case of South Asian countries. Their finding suggests that foreign investors focus

on the countries stable macroeconomic variables such as stable inflation, economic growth and interest rate. World Bank , writes that economic growth and political stability are interconnected. When a country has poor economic performance then the political environments are heated by protestors, leading to exert adverse impact of investment for both local and international investors. (Dua & Garg, 2015)explored the macroeconomic determinants of Foreign direct investment in India. They determined that macroeconomic factors such as a depreciating exchange rate, higher returns of domestic, higher domestic output are important factors for inflow of FDI towards India. On the other word, macroeconomic instability has negative effect on overall inflow of foreign direct investment towards India.

(Shahzad & Al-Swidi, 2013) studies the associations between macroeconomic variables and FDI inflow in Pakistan. The estimated result shows that increase in GDP has exert positive pressure on the inflow of FDI, however, an increase in inflation rate influence negative influence on the inflow of foreign direct investment. Moreover, their estimated result showed that GDP growth rate tends to be a significant factor of FDI inflow when the moderation impact of political stability is counted. (Naz, et al., 2015) explored the relationship between economic growth and FDI in the context of Pakistan and their result concluded that there is positive relationship between economic growth and foreign direct investment in Pakistan. (Saqib, et al., 2013) studied the effect of FDI on the hosts country i.e., Pakistan and he found that there is negative impact of FDI on Pakistan economy, meaning that the Pakistan economic performance has been adversely affected by the Foreign direct investment, while the there was positive relationship between economic performance with domestic investment. (Ali & Guo, 2005) studied the determinant's of FDI in China, the result highlights that for the US firm in China market size was the important determinants, but for the Asian low labour costs are the most important factors in China.

Objectives of the study:

- To investigate the short-run and long-run impact of Inflation on Foreign direct investment.
- To analyze the short-run and long-run effect of economic growth on Foreign direct investment.

- To state policy implication, keeping in view the statistical importance of the estimated results about the relationship between economic growth & inflation rate with FDI and its effects on the economy of Pakistan

This research paper has further divided into Literature review, Theory and Model, Econometric Model, Estimations and result, Conclusion and Policy implications.

Literature review:

Relation between economic growth & FDI:

(Borensztein, et al., 1998)investigated the relationship between economic growth and Foreign direct investment in a cross-country regression analysis. He concluded that play's crucial role for the transfer of sophisticated goods, thus leading to economic growth. They also noted that this transfer of technology would be beneficial, if the host country has minimum threshold human capital to absorb these technological changes. (Türkcan, et al., 2008) Examined that there is an endogenous association between FDI and economic growth. they investigated this relationship for 23 OECD countries for the period of 1975-2004. They found that economic growth affects FDI positively. (Chowdhury & Mavrotas, 2003) highlighted the relationship between economic growth and FDI for Chile, Malaysia and Thailand. The estimated result showed that GDP growth causes FDI. (Tiwari & Mutascu, 2011) adduced the relationship between economic growth and FDI for the period of 1986 to 2008 by using panel data framework for Asian countries. They determined the positive and significant relationship between economic growth and FDI. (Wijeweera, et al., 2010) investigated the association between economic growth and FDI, for the period of 1997 to 2004 by using stochastic frontier analysis and coving 45 countries. They found that FDI inflow impinged a positive effect on economic growth there the hosts country has skilful human capital. (Fadhil & Almsafir, 2015)estimated result showed that FDI inflows along with development of human capital exerts positive economic growth in the context of Malaysia for the years 1975 to 2010. (Supravat & Manikal, 2014) concluded that the increase in FDI did not have significant affect on economic growth rate in case of India.

(Iamsiraroj & Doucouliagos, 2015) examined that economic growth is one of the most important determinants of FDI. They showed that economic growth determinants such as Tax rate and lag growth, affects economic growth, which in turn hamper FDI inflow. According to

them, the increase in tax rate and low previous growth rate discourages foreign investors to invest in the host country. (Al Nasser, 2010) determined this effect with the help of Granger causality, he found unidirectional relationship between economic growth and FDI. He concluded that economic growth causes positively FDI, meaning that the increase in the economic growth leads to the increase in the FDI inflow in case of Asian countries. (Zhao & , 2007) determined bi-directional causality between economic growth and FDI in China, which was not highly significant. Moreover, the FDI inflow exerts economic growth to some extent but it was insignificant. (Cleeve, 2008) studied that those determinants of economic growth such as infrastructure development, increase in market size, human capital and tax holidays positively affects FDI inflows in case of Sub-Saharan Africa. (Phung, et al., 2022) estimated that a positive relationship between FDI and progress of green growth for the countries of South-East Asian economies. (Kosztowniak, 2016) examined the verification of the association between FDI and GDP in Poland. They confirmed bi-directional relationship between GDP and FDI, but he found that the effect of increase in GDP on FDI inflow was greater as compared to the effect of FDI on economic growth.

Relation between Inflation and FDI:

(Agudze & Ibhagui, 2021) investigated the negative relationship between inflation and FDI in industrialized country and developing economies. They found that inflation in developed countries affected FDI negatively after exceeding the threshold level, however, it affected FDI negatively in developing countries before the threshold point. (OMANKHANLEN, 2011) studied the effect of inflation and FDI in Nigeria. He found that inflation has no effect on FDI in Nigeria over the period of thirty years. (Valli, et al., 2014) estimated the effect of inflation rate on the FDI inflow in case of South-Africa for the period of 1970 to 2012. Their result shows that there is long-run negative relationship between inflation and economic growth in South-Africa, meaning that a rise in the inflation rate impasse FDI inflow in South Asia and it is detrimental to FDI inflow. (Tsaurai, 2018) examined the effect by using Pooled, fixed and random effect model for Southern African countries By using pooled effect model, they found that there is negative and significant effect of inflation on FDI inflow, however, by using fixed and random effect model, there was positive and insignificant relationship. (Kiat, 2008) examined the effect of inflation on FDI for South-African market

by collecting data from 30 countries and via interviewed from experts of this field and determined the effect. His formulated result gave the relation as negative and significant, explain that growth in inflation is baneful for FDI inflow. (Anon., 2019)he investigated this relationship for Sri-Lanka and found that the association between inflation and FDI has negative and significant relationship. This shows that increase in the inflation rate hindrance flow of foreign investment and thus, affecting economic development and growth in Sri-Lanka.

(Boateng, et al., 2015) he studied the factors that effects the inflow of investment from foreign countries in the context of Norway. Their estimated result highlighted that increase in inflation has significant and negative relation on the inflow of foreign investment. (Kamal, et al., 2022) explored the impact of inflation on FDI in the Indian economy for the period of 1980 – 20220 by ARDL model. He finding implied that there is negative relationship between inflation and FDI but the relationship is statistically insignificant. (Udoh & Egwaikhide, 2008) examined the effect of fluctuation in exchange rate and inflation uncertainty impact on FDI in Nigeria. His result indicated that the uncertain inflation rate has significant and negative impact on the foreign direct investment of Nigeria. (COBAN & YUSSIF , 2019) explored the relationship between inflation and Foreign Direct Investment for Ghana, for the period of 1980 to 2017. He found that inflation and FDI has negative association, the relationship is statistically significant. (Sekmen & Gökirmak, 2020) indicated the long-run relationship i.e. negative and significant between inflation and foreign direct investment in case of Turkey for the period of 1974 to 2018.

(Musyoka & Ocharo, 2018)explored time series data for the period of 1970-2016 for determining the impact of inflation on FDI in Kenya. His study concluded the negative and significant influence on FDI but the relationship is in this case is insignificant. (Ho, et al., 2011)investigated the significant relationship for five ASEAN countries i.e., Indonesia, Malaysia, Philippines, Singapore and Thailand for the period of 1975 to 2009. They concluded that inflation plays a crucial role for the inflow of foreign direct investment in case of Thailand. (Martin & P, 2015) explored the relationship for Rwanda for the period of 1970-2013 foreign direct investment has positive effect on inflation but this relationship is insignificant in case of Rwanda.

Theory and Model:

Neo-classical Theory of Foreign Direct Investment:

Neo-classical theory is an economic theory which explains the factors which gives motivation and encourage to foreign investors to invest in a country, and the pattern of Foreign direct investment flows based on this principal. This theory explains that why investors in foreign countries need prefer incentives like tax holidays, acquire assets and engage in other type of investment in other countries. These advantages may be ownership advantage such as innovation, skilled labours etc which can be possible with the increase in the economic activity in a country. On the other hand, increase in inflation reduces the ownership advantage which in turns reduce the chance of foreign investment. Moreover, the other advantage could be location-specific advantages such as cost-efficient raw materials, market size etc. When countries economy grows, it means the inflation rate is clement in that country so the cost of resources is also low. Besides, due to fast economic growth market expands as well, which attracts foreign investors to invest in a country.

Methodology and Data:

This research study used time series data which is collected from World-Bank and in this study, data for the year from 2001 to 2022 for the variables i.e., Inflation, Economic growth and FDI has been accrued. In this study the dependent variable is FDI, and independent variables are inflation and economic growth. The collected data has been analysed with the help of Statistical software i.e., Stata.

Different research previously has estimated or determined the relationship between economic growth, inflation and FDI such as (Borensztein, et al., 1998), (Anon., 2019), (Boateng, et al., 2015), (Iamsiraroj & Doucouliagos, 2015), (Wijeweera, et al., 2010), (Chowdhury & Mavrotas, 2003), (Fadhil & Almsafir, 2015), (COBAN & YUSSIF , 2019), (Udoh & Egwaikhide, 2008), (COBAN & YUSSIF , 2019), (Cleeve, 2008), (Fadhil & Almsafir, 2015), (Udoh & Egwaikhide, 2008) and (Supravat & Manikal, 2014) and our model becomes,

$$\boldsymbol{FDI_t} = \text{f}(\boldsymbol{GDP_t}, \boldsymbol{CPI_t}) \quad (1)$$

FDI: foreign direct investment, net inflows (% of GDP)

GDP: Gross Domestic Product, (annual growth %)

CPI: Inflation rate, (cpi ,2010=100)

t : Time period from 2001 to 2022

Econometric Model and Estimation:

In time-series data it is important to check stationarity of variables because there will be possibility of spurious regression otherwise. Therefore, in this research study, we will use ADF and PP unit root test to check the stationarity of variables at both level and first difference.

Augmented- Dickey-Fuller (ADF) Test:

The functional form of ADF is,

$$\Delta \boldsymbol{X_t} = \boldsymbol{\delta X_{t-1}} + \sum_{\boldsymbol{j=1}}^{\boldsymbol{q}} \emptyset_j \Delta \boldsymbol{X_{t-j}} + \boldsymbol{e_{1t}}$$

$$\Delta \boldsymbol{X_t} = \boldsymbol{\alpha} + \boldsymbol{\delta X_{t-1}} + \sum_{\boldsymbol{j=1}}^{\boldsymbol{q}} \emptyset_j \Delta \boldsymbol{X_{t-j}} + \boldsymbol{e_{2t}}$$

$$\Delta \boldsymbol{X_t} = \boldsymbol{\alpha} + \boldsymbol{\beta t} + \boldsymbol{\delta X_{t-1}} + \sum_{\boldsymbol{j=1}}^{\boldsymbol{q}} \emptyset_j \Delta \boldsymbol{X_{t-j}} + \boldsymbol{e_{3t}}$$

The null and alternative hypothesis are,

Ho: $\delta = 0$ series have unit root or non-stationary time series

Ha $\delta < 0$ stationary time series.

PHILLIPS AND PERRON (PP) UNIT ROOT TEST:

The Phillips-Perron (PP) test is based on the augmented Dickey-Fuller (ADF) regression equation. The ADF regression tests whether a time series variable has a unit root (non-stationarity) by examining the coefficient of the lagged variable in the regression equation. The Phillips-Perron test builds upon the ADF test by accounting for serial correlation and heteroskedasticity.

$$y_t = D_t + z_t + e_t$$

Here,

- D_t : is the deterministic component (trend, seasonal component, etc.)
- z_t : is the stochastic component.
- e_t : is the stationary error process

Autoregressive Distributed Lag Model (ARDL):

The root test has shown that our model consists of mixed order of integration, and if any model contain mixed order of integration, then ARDL model is the most apposite model. However, before using ARDL model, it is important to check the cointegration among variables. For this purpose, Bound test has been tested, the F-statistics has then compared with the upper critical bound and lower critical bound. Table 1.4 shows that the F-statistics = 15.81, which is greater than the upper critical boundaries at 1%, 5% and 10% significance level. Therefore, it is proved that there is the existence of cointegration among variables.

The ARDL equation is,

$$\Delta l_n FDI = \alpha_\circ + \sum_{h=1}^{p} w_h^\circ \Delta l_n FDI + \sum_{j=0}^{p1} \beta_j \Delta l_n GDP_{(t-1)} + \sum_{k=0}^{p2} \beta_k \Delta l_n INF_{t-1} + {}^{\gamma}{}_1 l_n FDI + {}^{\gamma}{}_2 l_n GDP + {}^{\gamma}{}_3 lnINF + u_t$$

For analysing the short run association among the variables Vector Error Correction Model is used. Its equation is given as,

$$\Delta l_n FDI = \alpha_\circ + \sum_{h=1}^{p} w_h^\circ \Delta l_n FDI + \sum_{j=0}^{p1} \beta_j \Delta l_n GDP_{(t-1)} + \sum_{k=0}^{p2} \beta_k \Delta l_n INF_{t-1} + \rho_1 ECT_{t-1} + u_t$$

The ECT is the Lagged Error Correction, where as ρ_1 is the speed of adjustment from short run to long run.

Data Analysis and Result interpretation:

Unit Root Test:

The left side table (1) shows unit root test for ADF and PP at level and the right-sidetable (2) unit root test shows the unit root test at first difference. In table 1. Only CPI is stationary at level, therefore, we reject the null hypothesis of unit root in case of CPI only, and we fail to reject null hypothesis in case of others at level. On the other hand, in table 2. Shows the ADF and PP unit root test at first difference and shows that FDI and GDP are stationary at first difference so we reject the null hypothesis of unit root for these variables. Besides, the sign in the bracket (*) shows that null hypothesis of root unit has been rejected.

Table 1 Variables	ADF AT LEVEL	PP AT LEVEL
Ln FDI	-0.921	-1.142
Ln CPI	8.183 *	6.482 *
Ln GDP	-1.016	-3.185

Table 1.1 variables	ADF	PP
Ln FDI	-4.177*	-4.194*
Ln CPI	-0.001	0.308
Ln GDP	-5.247*	-5.212*

Descriptive statistics:

The descriptive statistics of the variables shows that FDI average growth for the period of 2001 to 2022 is -2.756047. Moreover, GDP growth and increase in inflation grew at the mean growth of 2627.457 and 31.14955. Also, skewness shows that all of the variables are rightly skewed. Kurtosis shows that the variables are normally distributed.

Table 1.1

Stats	FDI	GDP	CPI
Sum	-2.756047	2627.457	31.14955
Mean	-.1252749	119.4299	1.415889
Max	1.299735	262.6183	2.021132
Min	-1.033912	44.77841	.4741753
Sd	.6655594	62.14127	.4379441
Skewness	.9002399	.5426383	-.7183628
Kurtosis	2.870373	2.457695	2.552417
p50	-.3344709	117.3341	1.515579

Corelation Matrix:

Table 1.2, shows the correlation matrix among variables and showing that CPI has negative relationship with FDI. Furthermore, GDP has positive relationship with FDI but have

negative relationship with CPI. Hence this matrix is showing both positive and negative relationship between the given variables.

Table 1.2

	FDI	CPI	GDP
FDI	1.0000		
CPI	-0.4780	1.0000	
GDP	0.3721	-0.1663	1.0000

VAR Lag Order Selection Criteria:

Table 1.3 shows the VAR lag order selection criteria, the table shows that the optimal lag order selection criteria lie at lag length of 4. Therefore, we will use the optimal lag length 4 for further estimations for this study.

Table .1.3

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-155.089				8536.53	17.5654	17.5859	17.7138
1	-98.3375	113.5	9	0.000	43.3243	12.2597	12.3416	12.8533
2	-75.1588	46.358	9	0.000	9.97701	10.6843	10.8275	11.7231
3	-50.7877	48.742	9	0.000	2.42963	8.97641	9.18103	10.4604

4	34.5926	32.39*	9	0.000	2.23366*	8.17696*	8.44296*	10.1061*

LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQIC: Hannan-Quinn information criterion

ARDL Bound Test:

Bound test is applied to check the cointegration, this will help us to know whether there exists long-run relationship between variable's or not. Hence, F-statistics will be used to compare with upper bounds and lower bounds at different significant level. Table 1.4. shows that F-statistics value is 15.8 and which is greater than the upper and lower bounds at significant level 1%, 5%, 10%, showing that there is long run cointegration between variables. Thus we can use Vector Error Correction Model for this study.

Table. 1.4.

Test statistics	Value	
F-statistics	15.81	
	Critical Value Bounds	
Significance	Lower bounds	Upper bounds
10 %	5.15	6.36
5%	4.85	3.79
1%	3.17	4.14

Long-Run Coefficient:

Bound test has shown that there is long run relationship between variables, therefore, we will use vector error correction model to explain the long-run relationship between dependent variables and independent variables. The long-run estimated result shows that there is negative relationship between inflation rate and Foreign direct investment, and it is statistically and strongly significant. In order word, a 1% increase in inflation rate reduces the foreign direct investment by 0.0914571 % in Pakistan. Our estimated result is in line with (Agudze & Ibhagui, 2021), (COBAN & YUSSIF , 2019) and (Anon., 2019).

However, the result shows a positive and strong significant relationship between economic growth and FDI. In other word, a 1% increase in economic growth enhances foreign direct investment by 2.251832% in Pakistan. This estimated association supports with previous following research studies, (Türkcan, et al., 2008), (Tiwari & Mutascu, 2011) and (Iamsiraroj & Doucouliagos, 2015).

Time trend has coefficient value of -.1484765 and the negative coefficient suggests that, on average, there is a slight downward trend in the FDI over time. However, it's important to note that the p-value of 0.664 indicates that the coefficient is not statistically significant at the conventional significance level of 0.05. This implies that we do not have strong evidence to conclude that the observed trend is different from zero, so we cannot reject the null hypothesis that the coefficient of the trend value is zero.

Furthermore, the F-statistics i.e., 38.56 and probability value i.e.,0.0004 shows that the model as a whole is statistically significant. The R-square shows that a better goodness of fit of the model to the data.

Table. 1.5.

Variables	Dependent variable Ln FDI			
	Coefficient	St. Error	t- statistics	Prob
Ln CPI	-0.0194571	.0019319	-10.07	0.000 ***
Ln GDP	2.251832	.4969663	4.53	0.006***
Constant	-.9153983	.6851503	-1.34	0.239
@Trend	-.1484765	.3413643	-0.43	0.664
F-Statistics	38.56	R-Square	0.9883	
Prob	0.0004	Adj R-squared	0.9627	

Short-Run Coefficient:

The short-run coefficient shown in the table 1.6, explain that GDP growth rate has positive and significant relationship with Foreign direct investment, meaning that a 1% increase in GDP growth rate will increase the FDI by 0.1826363% in the short-run in Pakistan and the relationship is strongly significant. This indicates that in the short run increase in GDP growth is mandatory for Pakistan for attracting FDI in the short-run. However, the estimated result also shows the negative relationship between inflation rate and FDI. The increase in 1% inflation reduces the FDI by 0.0895457% in the short run and it is again statistically significant.

Table 1.6

Variables	Dependent variables			
	Coefficient	St. Error	t- statistics	Prob
Ln GDP	.1826363	.0471103	3.88	0.008**
Ln CPI	-.0895457	.0247165	-3.62	0.011**
Constant	-1.14453	.6632041	-1.73	0.135

Diagnostic Test:

Different type of diagnostics tests has been tested i.e., Breusch-Pagan test for Heteroskedasticity, Breusch Pagan LM test for autocorrelation, Jargue-Bera test for normal distribution, and Ramsey RESET test. In the table it gives that Breusch -Pagan test for heteroskedasticity to investigate whether the variance of errors in regression model in our study is persistence over the level of explanatory variables. The p-value is 0.1568, which is insignificant, therefore, we did not sufficient evidence of heteroskedasticity in our model.

Furthermore, Breusch Godfrey LM test is used to check the presence of autocorrelation or serial correlation. The null hypothesis says that “there is no serial correlation” at 0.05 significance level. The p-value i.e., 0.4391, which is greater than 0.05 and we cannot reject the null hypothesis of no serial correlation.

To check the normality, we applied Jarque-Bera test. The null hypothesis says “there is normality” at significant level 5%. The p-value 0.28728, which is again greater than 0.05 and so we cannot reject the null hypothesis of normality. Lastly, Ramsey RESET test tell us that whether our model need to add some non-linear variables to make the model fit or our model do not need any inclusion of new variables as it is already fit. The null hypothesis says” no

omitted variables or misspecification", the p-value is 0.7957, which is again greater than 0.05, so we accept null hypothesis of no misspecification or omitted variables.

Table: 1.7

Breusch-Pagan test for Heteroskedasticity
Chi2(1)
2.00
Prob > chi2
0.1568
Breusch-Godfrey LM test for autocorrelation
Chi 2
0.5991
Prob > chi2
0.4391
Jarque-Bera test
Chi 2
7.378
Prob > chi2
0.28728
Ramsey RESET test
F(3, 13) 0.34
Prob > F
0.7957

Granger Causality test:

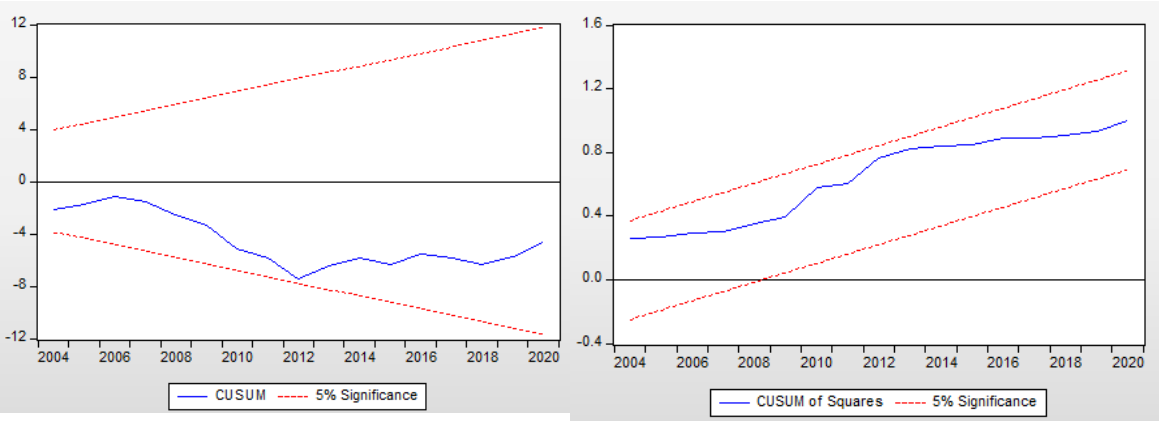
Granger causality test is used to check whether the previous value of one variable helps to predict the future value of other variables. The null hypothesis tells that the previous value of one variable does not cause the future variables of other value. If the p-value is less than 0.05 then we don't have enough evidence to reject the null hypothesis and if the p-value is greater than 0.05 than we reject the null hypothesis because now we will have sufficient information to reject the null hypothesis. Table 1.8 gives a snap shot of Granger causality test, in the first cause the null-hypothesis says that " CPI does not Granger Cause FDI", THE p-value is 0.0065 which is significant ,therefore, we reject the null hypothesis of not Granger cause ,and say that the previous value of CPI can provide predicting information about FDI but we cannot say that for other null hypothesis i.e. "FDI does not Granger Cause CPI" because p-value is greater than 0.05 and we don't have sufficient evidence to reject the null hypothesis. Moreover, for the null hypothesis i.e.,"GDP does not Granger Cause FDI", we again reject the null hypothesis and conclude that the past value of GDP can be used for providing forecasting information about FDI.

Table.1.8

Null Hypothesis:	Obs	F-Statistic	Prob.
CPI does not Granger Cause FDI	20	10.3512	0.0065 ***
FDI does not Granger Cause CPI		2.22269	0.1795
GDP1 does not Granger Cause FDI	20	59.8431	0.0033 ***
FDI does not Granger Cause GDP1		0.86804	0.5861
GDP1 does not Granger Cause CPI	20	0.92108	0.5648
CPI does not Granger Cause GDP1		2.15186	0.2806

CUSUM and CUSUMSQ:

CUSUM and CUSUM-SQ tests help us to check the stability of coefficient in our model over the time period. The CUSUM and CUSUM-SQ has been plotted between critical boundaries at a significant level 5%. If the CUSUM and CUSUM-SQ plots remain inside the critical boundaries, it concludes that the coefficient is stable over time. However, if the plots cross the critical boundaries, it suggests that the coefficients have changed at some point. In our case, the plots did not cross the critical boundaries at significant level 5%, hence concludes that our model is stable.



Recommendations &Conclusion:

This study aims to investigate the impact of economic growth and inflation on Foreign Direct Investment (FDI) the context of Pakistan over the period of 2001 to 2022. Firstly, it is important to check the unit root test, therefore, this study used ADF and PP unit-root test to check the stationarity of data. The result of unit-root test showed mix order of integration, hence this study applied ARDL model to check the cointegration among variables. The result of the Bound test confirms that the existence of long-run relationship between variables.

The estimated Long-run and Short-Run results show that there is positive relationship between economic growth and FDI in Pakistan and this relationship is statistically significant. This confirms that increase in economic growth attracts foreign investors to invest in Pakistan and vice-versa. Besides, a 1% increase in economic growth in the long-run enhances foreign direct investment by 2.251832% in Pakistan and a 1% increase in GDP growth rate will increase the FDI by 0.1826363% in the short-run. Furthermore, our result also points out the negative and significant association between inflation rate and Foreign Direct Investment.

This means in the long-run and short-run, increase in inflation discourage foreign investors to invest in Pakistan or a 1% increase in inflation rate reduces the foreign direct investment by 0.0914571 % in Pakistan in the long-run and the increase in 1% inflation reduces the FDI by 0.0895457% in the short run. The Granger Causality test suggests uni-directional association between variables.

Pakistan is currently facing hyper-inflation i.e., inflation rate at 29.4% as per reports by World Bank in 2023 and the growth rate is 0.29% as per reported by Reuters. Moreover, the world Bank has already projected Pakistan economic growth at 2 % for the fiscal year 2023-2024. This means under low economic growth and high inflation; the foreign investors would be discouraged and they will leave the country shifts their investment to other macroeconomic stable country. Under high inflation and low economic growth, the costs of raw materials go upward and the overall costs for the foreign investors will be cost-inefficient. Moreover, under the scenario of high inflation rate and low economic growth, the government will not be able to provide incentives to foreign investors such as tax holidays, which discourage FDI. Furthermore, low economic growth and high inflation causes uncertain changes in exchange rate i.e., unstable exchange rate, which also seems risky in the view of foreign investors so they hesitate to invest in Pakistan. Therefore, policy makers must contrive policies for the macroeconomic stability, which in turns will provide sufficient resources to government for giving incentives to encourage foreign investors to invest in Pakistan. Government should enhance sectorial growth by spending in advance research and technology in manufacture, services and agricultural sector. Moreover, human capital plays an important factor in both innovation and economic growth, hence government should introduce skilled learning programs in higher education as compulsory at both college and university level to equip skilled human capital in the future rather than producing graduates fully equipped with useless theories without practical implications. Besides, policy makers should devise an effective policy to boost agricultural outputs to control demand-pull inflation in the short-run and long-run.

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