

IMPACT OF FOREIGN DIRECT INVESTMENT AND ITS DETERMINANTS ON PAKISTAN'S ECONOMIC GROWTH

Aliza Khan* Saghir Pervaiz Ghauri**

Abstract

This research discovers the FDI impact on Pakistan's economic growth, focusing on a set of macroeconomic indicators: Gross Domestic Product Growth Rate (GDPGR), Inflation (INF), Trade Openness (TDO), External Debt (EXD), Human Development Index (HDI), and Exchange Rate (EXH). Utilizing annual figures from 1990 to 2024, the research applies the Auto Regressive Distributed Lag (ARDL) model to inspect both short-run and long-run relationships among variables. As per findings there is a stable long-run significant positive effects of HDI, inflation, and external debt on economic growth, whereas trade openness has a significant negative impact. In comparison, FDI and exchange rate have statistically insignificant long-run effects on economic growth. As per the result of short-run analysis inflation, external debt, trade openness, and exchange rate display significant delayed effects on economic growth. Furthermore, the ECT confirms convergence with long-run stability and short-run instability. Results shows the significance of maintaining a positive investment situation and executing strategies that can enhance the economy's absorptive capacity to capitalize on the benefits of FDI. This study provides valuable insights for policymakers seeking to utilize FDI as a facilitator for sustainable economic growth in Pakistan.

Keywords: Auto Regressive Distributed Lag (ARDL), Exchange Rate (EXH), External Debt, Foreign Direct Investment (FDI), Human Development Index (HDI), Inflation, Log of growth domestic product (economic growth), Openness to Trade.

1. INTRODUCTION

As an growing economy, Pakistan has actively pursued Foreign Direct Investment (FDI) to strengthen trade, industrial development, and infrastructure expansion. Over the years, FDI has contributed significantly to various sectors of the economy. Despite its prospective profits, the extent to which FDI aids to sustainable economic growth in Pakistan is still uncertain. As a result, the role of FDI in economic development has become an important area of research and policy discussion across the world results rests unsatisfying due to unpredictable economic conditions and methodological approaches across countries, As per Dinh et al., (2019) FDI facilitates advanced technologies and managerial, organizational, and marketing networks that help the economy improve its standard of living and infrastructure. FDI has always been a important element to bring external assets in developing countries that can support economic expansion through different source like transfer of technology, executive proficiency, and production skills, FDI also aids to industrial growth, infrastructure improvement, and overall economic transformation. However it depends largely on countries economic and political situation if there are macroeconomic's instability, high inflation, political uncertainty, weak authority control and poor governing structures foreign investment might reduce as poor economic and political situation might shake investor confidence. A stable political and economic environment remains essential for attracting foreign investors and improve foreign investment inflows. Numerous practical studies have emphasized the importance of FDI as a main aspect of monetary development, however, its impact differs thru countries depending on their development conditions. Noori (2019) also observed that FDI positively impacts GDP. The research focuses on Jordan's economy from 2000 to 2017 and concludes that the Jordanian government should make efforts to enhance the economic growth rate by attracting Foreign Direct Investments. According to Moazzam et al., (2018), in the case of Pakistan, many Foreign investors were more attracted to its economy before 9/11 because of its stability, but the increased rate of terrorism in Pakistan made the investors leave the country. Analysts regarded FDI as an essential contrivance for tracking a nation's domestic and international investment activities. (Ahmad et al., 2024) recommend expanding exports, Foreign Direct Investment inflows, and renewable energy to enhance Singapore's domestic production and economic development. This study offer a fresh perspective on how various dimensions

*Corresponding Author, Research Fellow, Jinnah University for Women. Email: alizazubairzafar@gmail.com.

**Professor, Economics Department, Jinnah University for Women.



License Type: CC-BY

This article is open access and licensed under a Creative Commons Attribution 4.0 International License.
Published bi-annually by © Sindh Madressatul Islam University (SMIU) Karachi.

of FDI impact the country's financial performance. Results will be helpful for legislators to foster sustainable economic development. Pakistan's economy has faced numerous challenges over the years, including low growth rates, high inflation, and significant trade deficits. In response, successive governments have sought to attract FDI as a strategy to stimulate economic expansion. Developed and underdeveloped countries, including Pakistan, actively pursue foreign investment by offering tax incentives and easing regulatory barriers, recognizing the positive role FDI plays in promoting economic development. Foreign Direct Investment contributes to increased savings and investment, enhanced production capacity, and the transfer of technology and expertise from developed nations, ultimately supporting skill development and capacity building for Pakistan.

Sustained foreign investment has consistently influenced Pakistan's economic growth trajectory. For many emerging economies, Foreign Direct Investment is a crucial factor for financial cycle, and Pakistan is no exception. As a major source of capital inflow, Foreign Direct Investment is a key element for investment needs. In Pakistan's case, FDI has the potential to spur economic activity, create employment opportunities, reduce inflationary pressures, and address structural issues such as poverty and underdevelopment. Economies with a steady growth rate of around 5% are rarely seen without a consistent inflow of FDI, underlining its importance as a long-term growth enabler.

1.1 Objective of the study

Foreign Direct Investment is the main aspect that contributes to the economic growth of Pakistan, even though over the years, Foreign Direct Investment is not been constant to Pakistan's economy due to various reasons. It is necessary during this period to analyze several effects of the FDI on the Economic Development of Pakistan. This paper analyzes the possible effects of FDI on the economic growth of Pakistan from 1990-2024 with some determinants such as External Debt, Exchange Rate, Gross Domestic Product, Human Development Index, Inflation, and Openness to trade.

1.2 Significance of the study

The significance of this paper is to have some affirmative processes used to help policymakers regarding the recent international trends and market behavior, so that they can address future policies for FDI. This research will also be beneficial for foreign investors' opportunities. The conclusion of this paper's recommendations will be helpful not only for native countries but also for foreigners to pay attention to our economy to participate in international markets.

1.2.1 Research Problem

Regardless of the possible profits of FDI, its consequence on Pakistan's economic progress remains indistinct. Former research has yielded mixed results around finding an optimistic association between Foreign Direct Investment and economic growth.

1.2.2 Research Questions:

- i. What influence does FDI have on Pakistan's economic growth?
- ii. How do various factors, such as Inflation, Openness to Trade, External Debt, Human Development Index (HDI), and Exchange Rate, influence the relationship between FDI and economic growth in Pakistan?

1.2.3 Gap Identification

Pakistan, same as many evolving states face difficulties due to insufficient FDI. Although there are many papers that work on exploration between FDI and economic development, observed evidence for Pakistan remains inconsistent. previous papers have examined a limited number of macroeconomic variables separately, such as (Shafiq et al., 2021; Sadiq et al., 2021) have studied FDI impact on inflation, trade openness, taxation, and exchange. While some studies have an conflicting results such as (Ndlovu & Haabazoka, 2024), Also, some of the previous studies conducting on Pakistan have not widely analyzed the combined impact of external debt, Human Development Index, inflation, trade openness, and exchange rates on economic growth within a single analytical framework also many previous paper have taken a short sample periods, or sector-specific data, which may not effectively seizure Pakistan's long-term economic conditions (Ciobanu, 2021; Farid et al., 2023). Similarly, previous findings regarding the effects of trade openness, inflation, and exchange rates on economic growth and FDI remain mixed. Some studies report positive relationships, whereas others find negative or statistically insignificant effects depending on the economic context and methodological approach employed (Dagume et al., 2024; Dahal et al., 2024).

Recent challenges such as rising inflation, increasing external debt, exchange rate volatility, and political instability may have considerably affected Pakistan's ability to attract sustainable foreign investment. To overcome these research limitations the ARDL approach examine short-term and long-term relationships between FDI and key macroeconomic indicators, and economic growth in Pakistan based on annual data from 1990–2024.. The

findings are expected to provide updated empirical evidence and valuable policy insights for promoting sustainable economic growth and enhancing foreign investment inflows in Pakistan.

2. LITERATURE REVIEW

Foreign Direct Investment is an important element it supports economic development by increasing capital formation, facilitating technology transfer, creating employment opportunities, improving managerial expertise, and enhancing productivity. Due to these potential benefits, many developing countries, including Pakistan have introduced various investment-friendly policies to attract foreign capital and accelerate economic growth while maintaining macroeconomic stability. There are many projects that explain the association between FDI and economic growth using different econometric technique Studies indicate that FDI contributes positively to economic performance in both the short and long term by improving technological progress and increasing productive efficiency.

In another study Ahmad et al., (2024) Analyze the influence of exports, Foreign Direct Investment inflows, and renewable energy on Singapore's economic growth from 1989 to 2022 from the perspective of the Cobb-Douglas production function. The study relates the ARDL approach to finding empirical results. The results reveal that exports, renewable energy, and Foreign Direct Investment inflows contribute positively and significantly to boosting economic growth; however, the short-run impact of renewable energy is observed as irrelevant. As per the above results, the study suggests that exports, Foreign Direct Investment inflows, and renewable energy can expand the size of local production in Singapore.

Ndlovu & Haabazoka (2024) evaluated the impact of FDI on economic growth in Zambia between 1996 and 2020. Foreign Direct Investment is measured as helpful as it generates employment provides access to advanced technology and brings on capital the motivation to conduct this study is to find the relationship between FDI and a country's economic growth as per previous studies it is said by reducing inflation, unemployment, interest, and the national saving rate. It had a positive impact on the economic growth of Zambia from 1996 to 2020. Their findings suggested that FDI positively influences economic growth through employment generation, technological advancement, and increased savings, although the statistical significance of the relationship remained relatively weak

Likewise Dagume et al., (2024) explored the impact of FDI on economic growth in South Africa using the ARDL model by using series data from 1985 to 2019. The results revealed a positive long-run relationship between FDI and economic growth, while inflation and real interest rates negatively affected economic performance. GDP is used as a dependent variable, while real interest rate, FDI, inflation, and saving rate are declared as independent variables. The results show a positive relation with growth, while inflation and real interest rates had negative long-run relationships.

In the context of African economies, Touray (2024) examined the relationship between FDI inflows and per capita income growth in Gambia, Ghana, and Senegal using wavelet coherence analysis. The experiential outcomes of the research presented that the impact of FDI inflows is influenced by the degree to which the FDI is a supplement for local investment.

Furthermore, Farid et al., (2023) This paper analyses the impact of Foreign Direct Investment influxes on the trades for a series of 5 large-scale industries of Pakistan from the period 2000- 2020. The Padroni residual-based co-integration test and error correction model (ECM) are used for the long and short-run associations. Padroni's residual-based approach indicates that human assets, domestic assets, Foreign Direct Investments, trades, and local sales are co-interrelated in the long run. As per the results of ECM, the coefficient of Foreign Direct Investment seems to have a positive, statistically significant impact on exports in the long run. Whereas not in the short run.

Dahal et al., (2024) investigated the impact of foreign trade and FDI on Nepal's economic growth using co-integration techniques. Secondary data was used from 1990 to 2022 for the tests, to search for the long-run impact of response and variables. Trace and max-eigen tests dependably point toward the long-run co-integration between dependent (gross domestic product) and independent (import, export, total trade, and Foreign Direct Investment) variables. Exports and imports are found to be negative and statistically significant for Nepal's economic growth.

Research conducted by Noori (2019) analyzed the relationship between FDI and economic growth in Jordan from 2000 to 2017. The study concluded that FDI positively affects GDP growth and recommended that the Jordanian government strengthen investment policies to attract additional foreign investment and stimulate economic development.

Ahmad et al., (2022) the impact of Chinese Foreign Direct Investment on economic growth in Pakistan. The research explores the determinants of economic growth in Pakistan from 1990 to 2019. The research analyzes the relationship between gross domestic product and Chinese Foreign Direct Investment, inflation, trade openness, exchange rates, interest rates, remittances, and renewable energy consumption by using the ARDL bounds test, and it was concluded that the dependent and independent variables are associated in the long term. While the error correction model is negative and significant, it determines the long-run relationship between variables. As per the

conclusions of the autoregressive distributed lag (ARDL) model, Chinese Foreign Direct Investment in renewable energy usage has a long-term considerable impact.

Ciobanu (2021) analyses have shown that Foreign Direct Investment flows have improved worldwide over the preceding periods and have a strong connection between trade, Foreign Direct Investment, labor force, and economic growth in the recipient countries. The ARDL bound approach is used to analyze the presence of a long-run relationship between Foreign Direct Investment, trade, labor, and economic growth. The Granger causality test is used to test the direction of causality between the variables. The outcomes discovered that there is a combination of determinants. That is, the increase of gross domestic product, exports, imports, and labor force encourages Foreign Direct Investment in the long run.

Sadiq et al., (2021) analyzed the influence of economic development, along with duties, expertise, trade openness, and exchange rate, on sustainable foreign private investment (FPI) in Pakistan. This research uses random impact and generalized least squares estimators using data sets from 1996 to 2017. The outcomes specify that Pakistan has been massively positively swayed by the location and choice of developing and developed countries' investment in the domestic market. Furthermore, emerging and developed economies' investment surges influence the domestic firms of the national economy. The effects resulted in steady models, indicating that Pakistan's economy can receive foreign private investment from developing and developed countries.

Similarly, Shafiq et al., (2021) find out the implications of taxation on the verdict of Foreign Direct Investment inflows in Pakistan. The data was gathered from the World Development Indicator (WDI) and the economic survey of Pakistan from 1985 to 2020. The auto-regressive distributed lag (ARDL) and error correction model (ECM) methods are used for empirical analysis. The research concludes that low taxes provoke a long-run relationship between taxes and Foreign Direct Investment in Pakistan, as it attracts foreign investors. Other variables such as GDP growth, trade openness, and exchange rate have a positive impact on Foreign Direct Investment. However, other important factors attract Foreign Direct Investment, such as the country's political environment, infrastructure, labor market conditions, availability of resources, financial factors, and government and legal factors. Although prior revisions have revived the relationship between Foreign Direct Investment and economic growth, empirical reports remains inconclusive, particularly for developing economies such as Pakistan. Recent studies have reported mixed findings regarding the growth-enhancing effects of FDI.

3. RESEARCH METHODOLOGY

3.1 Research design

This study adopts a quantitative research approach to analyze the impact of Foreign Direct Investment (FDI) and its determinants on Pakistan's economic growth. The study aims to investigate both the short-run and long-run relationships between economic growth and selected macroeconomic variables through empirical analysis. A quantitative approach is considered appropriate because it enables to analyze relationships among variables using statistical and econometric techniques, thereby producing objective and evidence-based findings. The analysis is based on annual time-series data covering the period from 1990 to 2024. In this study, the Log of Gross Domestic Product (LGDP) is used as the dependent variable representing economic growth, while the independent variables include Foreign Direct Investment (LFDI), Human Development Index (HDI), Trade Openness (LTDO), External Debt (LEXD), Exchange Rate (LEXH), and Inflation (LINF). The study is designed to evaluate both the direct and indirect effects of these macroeconomic determinants on Pakistan's economic performance. The findings of this research are expected to provide valuable insights for policymakers, investors, and economic planners regarding the role of Foreign Direct Investment in promoting sustainable economic growth in Pakistan.

3.2 Data Sources and Data Types

3.2.1 Data Sample

The study utilizes secondary data collected from reliable national and international sources, including:

- State Bank of Pakistan (SBP)
- World Bank (WB)
- Economic Survey of Pakistan
- United Nations Development Programme (UNDP)

Annual observations for a period of 34 years (1990–2024) are used for the empirical analysis

4. INSTRUMENTS AND MEASURES

To analyze the relationship among the variables, several econometric techniques are applied. Initially, descriptive and statistical analyses are conducted to understand the nature of the data. The Augmented Dickey-Fuller (ADF) unit root test is applied to determine the stationarity of the variables and identify their order of integration. Following the stationarity analysis, the Auto Regressive Distributed Lag (ARDL) model is applied to estimate both long-run and short-run relationships among the variables. The ARDL approach is preferred because

it is suitable for small sample sizes and can accommodate variables integrated at different levels, specifically I(0) and I(1).

4.1. Procedure

Firstly, the Augmented Dickey-Fuller Test (ADF) is applied to check the stationarity of the data. After the outcome of the Augmented Dickey-Fuller Test, we estimate its result; all of the variables are stationary at first-level difference. After that, the Autoregressive Distributed Lag (ARDL) model test is engaged to select the primary lag by the F-bound test, which illustrates the long-run and short-run co-integration between variables.

4.2. Identification of Variables

This study consists of the following variables.

Dependent Variable

LGDP = Log of Gross Domestic Product

Independent Variables

The following variables have been taken as dependent variables.

- i. Foreign Direct Investment (FDI)
- ii. Human Development Index (HDI)
- iii. Openness to Trade (TDO)
- iv. External Debt (EXD)
- v. Exchange Rate (EXH)
- vi. Inflation (INF)

4.3. EMPIRICAL MODEL

The Model could be specified as

$$LGDP = f(LFDI, LTDO, LINF, HDI, LEXD, LEXH) \dots\dots\dots (1)$$

The empirical model could be specified as

$$LGDP_t = \beta_0 + \beta_1 LFDI_t + \beta_2 LTDO_t + \beta_3 LINF_t + \beta_4 HDI_t + \beta_5 LEXD_t + \beta_6 LEXH_t + \varepsilon_t \dots\dots\dots (2)$$

Where

LGDP = Log of growth domestic product (economic growth) in the period

LFDI = Log of Foreign Direct Investment in period

LTDO = Log of Openness to Trade in period

LINF = Log of Inflation rate in period

LEXD = Log of External Debt in period

HDI = Human Development Index in period

LEXH = Log of Exchange Rate in period

$\beta_0 - \beta_4$ = coefficient parameters

ε_t = error term.

4.4. Measurement of variables

Gross Domestic Product (LGDP): Measured as the logarithm of Gross Domestic Product at constant prices and used as a proxy for economic growth.

Foreign Direct Investment (LFDI): Measured as the logarithm of net FDI inflows.

Inflation (LINF): Measured using the Consumer Price Index (CPI) annual inflation rate.

Trade Openness (LTDO): Measured as the ratio of total trade (exports + imports) to GDP.

External Debt (LEXD): Measured using the external debt-to-GDP ratio.

Exchange Rate (LEXH): Measured as the logarithm of the official exchange rate.

Human Development Index (HDI): Measured using annual HDI values published by international development agencies.

4.5 Justification for Using the ARDL Model

The ARDL model is considered appropriate for this study because it allows the estimation of both short-run and long-run relationships within a unified framework. Additionally, the model performs effectively with small sample sizes and accommodates variables integrated at different orders, provided none are integrated at the second difference I(2). The ARDL approach also helps avoid spurious regression results by ensuring the existence of co-integration among variables before long-run estimation.

5. RESULTS

5.1 Descriptive Statistics

As mention below Table 5.1 depicts the descriptive statistics of the variables over the observed period (1990-2024). The mean value for the GDP is 13.26, which indicates the average log of GDP. This value signifies the average rate over 34 observations.

Table 5.1: Descriptive statistics

Descriptive Statistics	LGDP	HDI	LEXD	LEXH	LFDI	LINF	LTDO
Mean	13.262	0.475	10.698	4.183	11.525	8.953	14.702
Median	12.331	0.487	10.476	4.111	12.244	8.749	14.840
Maximum	27.069	0.544	11.535	5.507	13.224	28.957	16.839
Minimum	6.618	0.394	10.172	3.066	8.615	2.857	12.451
Std. Dev.	4.517	0.051	0.440	0.624	1.506	4.980	1.283
Skewness	0.867	-0.153	0.631	-0.011	-0.483	1.878	-0.087
Kurtosis	3.731	1.549	2.057	2.340	1.710	8.761	1.756
Jarque-Bera	5.012	3.113	3.518	0.617	3.678	67.000	2.234
Probability	0.082	0.211	0.172	0.734	0.159	0.000	0.327

A standard deviation of 4.51 shows mild shift in GDP over time. Skewness indicates the irregularity of the distribution. A skewness value of 0.87 indicates that the data are moderately tilted to the right, due to higher values. The kurtosis value of 3.73 indicates slightly more peaked than a normal distribution. The mean value for the HDI is 0.474, indicating a low average HDI. The standard deviation of 0.05 shows low variation, reflecting steady improvement over time. A skewness of -0.15 shows a slightly negatively skewed distribution (longer left tail). A kurtosis of 0.55 suggests a flat distribution. The mean value for the External Debt is 10.69, indicating the average external debt. The value 0.44 shows low variation in Stanadrd deviation. A skewness of 0.63 indicates moderate positive skewness while kurtosis of 2.05 suggests the data is close to a normal distribution. The mean value for the exchange rate is 4.18, representing the average log-transformed The value 0.62 shows low variation in Exchange rate with almost no skewness (-0.01). A Kurtosis of 2.34 is close to a normal distribution. The mean value for the FDI is 11.52, indicating an average FDI. The value 1.05 shows moderate variation. The Skewness of -0.48 indicates slight negative skewness. A Kurtosis: 1.71 indicates a flat distribution. The mean value for Inflation is 8.95, indicating average inflation. The standard deviation of 4.98 shows high variability. A Skewness of 1.88 indicates significant positive skewness (higher frequency of lower values). A Kurtosis of 8.76 shows a highly peaked distribution, indicating extreme values. The mean value for the Total Debt Outstanding is 14.70, which represents the average debt outstanding. The value 1.28 shows low variation. Skewness 0.06 indicates almost no skewness (symmetry). A Kurtosis of 1.75 suggests a flat, spread-out distribution.

5.2 Jarque-Bera

Tests for normality of the data. The result of Jarque-Bera indicates Probabilities > 0.05, suggesting normal distribution for variables LGDP, HDI, LEXH, and LTDO. Probabilities < 0.05 indicate non-normal distribution for variables LINF and LFDI. Overall, this table provides an inclusive statistical overview of Pakistan's key economic and development indicators, showing variability, skewness, and distribution characteristics over the analyzed period.

5.3 Unit Roor Test

In Table 5.2 as per Augmented Dickey-Fuller test concludes that LGDP, HDI, LFDI, LEXH, LEXD, LINF become stationary after first differencing; however, LTDO concludes non-stationary even after first differencing under the PP test and may require further changes. Overall, it concludes that all variables are non-stationary at their levels except LTDO, which, under the PP test, becomes stationary after first differencing. For LTDO, further analysis may be needed second differencing or alternative transformations). These results are critical for ensuring valid econometric modeling, as non-stationary data can lead to forged regression results.

Table 5.2: UNIT ROOT TEST

Variable	Augmented Dickey-Fuller Test Statistic				Phillips-Perron Test Statistic			
	At Level		At First Difference		At Level		At First Difference	
	t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
LGDP	-2.280	0.184	-7.527	0.000	-2.345	0.165	-7.525	0.000
HDI	-0.856	0.789	-2.983	0.047	-0.941	0.762	-3.107	0.036
LFDI	-1.408	0.566	-4.788	0.001	-1.695	0.424	-4.813	0.001
LEXH	0.622	0.988	-3.311	0.023	0.509	0.985	-3.408	0.018
LEXD	0.164	0.966	-3.468	0.016	0.837	0.993	-3.504	0.014
LINF	-0.789	0.809	-3.834	0.006	-1.229	0.650	-4.011	0.004
LTO	-0.574	0.863	-5.383	0.000	-0.581	0.862	-5.379	0.000

5.4 ARDL Bounds Testing Approach

Numerous previously used cointegrating tests are applied to analyze the correlation between the evaluated series. In ARDL Bounds test as shown in Table 5.3 the value of F- statistic exceeds the benchmark values hence indicating null hypothesis of no long-run relationship being rejected and confirming the presence of a long-run relationship This analysis suggests that model effectively captures the dynamics of the dependent variable growth rate in both long run and shot run.

Table 5.3: F- Statistic

F-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	20.81	10%	1.99	2.94
K	6	5%	2.27	3.28
		2.50%	2.55	3.61
		1%	2.88	3.99

Table 5.4 concludes ARDL result where R-square represent explanatory power of the model that is 95.88%, but the adjusted R-square shows the explanatory power is 94.2%, which indicates that the number of predictors is still very high. Also P-value of the F-statistic is less than 0.05. while, Durbin-Watson Statistic is 2.790592, which is Close to 2, suggesting no significant auto-correlation in residuals. Value of co-efficient Growth Rate (-1) is 0.8455 which Recommends a positive short-run effect of first lag of Growth Rate on its current value, while the Value of the Co-efficient of inflation is 1.10775 highly significant, and the value of Co-efficient of inflation (-1) -0.639, indicating a mixed lagged effect of inflation on GDP growth, with inflation negatively affecting growth. LEXD and its lags have mostly negative coefficients (e.g., -4.231, 24.27595), with some significant t-statistics, indicating that there is s significant negative impact pf external debt on Growth Rate. Both coefficients of LTDO are positive (e.g., 9.709), and the t-statistic for LTDO (-1) is showing a significant positive impact with Growth Rate. This concludes that Inflation and external debt significantly influence growth in the short run, with mixed effects. LEXH and LTDO also exhibit lagged effects on growth. overall model exhibits a substantial proportion of the variation in economic growth. However, some variables, such as inflation, exhibit lagged effects that require careful interpretation when assessing their influence on GDP growth.

Table 5.4: Short Run Model

Description	Detail			
Dependent Variable	D(GR)			
Selected Model	ARDL(2, 0, 2, 2, 2, 0, 2)			
Case	Case 2: Restricted Constant and No Trend			
Date	02/04/2025			
Time	12:53			
Sample	1990 2023			
Included Observations	32			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GR(-1))	0.846	0.108	7.814	0.000
D(INF)	1.108	0.065	16.928	0.000
D(INF(-1))	-0.640	0.091	-7.007	0.000
D(LEXD)	-4.232	3.852	-1.099	0.289
D(LEXD(-1))	-24.275	4.612	-5.263	0.000
D(LEXH)	-11.397	3.398	-3.355	0.004
D(LEXH(-1))	-24.322	3.423	-7.105	0.000
D(LTDO)	-1.882	1.541	-1.221	0.241
D(LTDO(-1))	9.709	1.905	5.096	0.000
CointEq(-1)*	-2.752	0.176	-15.626	0.000
Statistic	Value	Statistic	Value	
R-squared	0.9588	Mean dependent var	0.259	
Adjusted R-squared	0.942	S.D. dependent var	4.1889	
S.E. of regression	1.0086	Akaike info criterion	3.1054	
Sum squared resid	22.383	Schwarz criterion	3.5634	
Log likelihood	-39.687	Hannan-Quinn criter.	3.2572	
Durbin-Watson stat	2.7905			

Table 5.5 providing insights into the associations between dependent variable (GR) and independent variables in the long term. HDI, INF, and LEXD Coefficient and t-Statistic values shows a significant and strong positive impact while LEXH and LFDI does not have a statistically significant impact on long-term growth, where as LTDO has a significant but negative impact on Growth Rate.

Table 5.5: Long-Run Model

Levels Equaltion				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
HDI	67.026	26.502	2.5294	0.0231
INF	0.9529	0.0616	15.449	0.0000
LEXD	5.0015	0.9825	5.0907	0.0001
LEXH	-0.8398	1.294	-0.6493	0.5261
LFDI	0.2625	0.3297	0.7969	0.4384
LTDO	-4.4387	1.4684	-3.0221	0.0086
C	-14.239	6.8705	-2.0725	0.0559
$EC = GR - (67.0262 \times HDI + 0.9529 \times INF + 5.0015 \times LEXD - 0.8399 \times LEXH + 0.2625 \times LFDI - 4.4388 \times LTDO - 14.2390)$				

5.5 Long-Run Results and Discussion

As ARDL long-run reveal that the HDI has a statistically positive significant effect on economic growth in Pakistan. As per Ndlovu and Haabazoka (2024) improvements in education, healthcare, living standards assist substantially to economic performance through increased productivity and innovation and will be vital for achieving viable economic growth of Pakistan.

The impact of LINF is positively significant in the long run indicating that inflation during the study period reflected expanding in economic activities rather than macroeconomic instability, the result differs from several previous studies that shows a negative relationship between inflation and growth, suggesting that the impact of inflation may depend on its scale and the fundamental economic environment.

The estimated impact of External Debt (LEXD) is positively significant indicating external borrowing has supported to Pakistan's economic growth with in the certain period. The outcome supports the arguments of many previous studies that indicate that external borrowing can encourage economic development when debt assets are efficiently allocated. However, the excess of external borrowing should be interpreted carefully, as it may increase future debt-servicing obligations and create long-term financial liabilities.

Although the estimated coefficient of LFDI is positive, it does not show statistical significance., indicating that foreign investment do not influence on Pakistan's economic growth in the long run. The insignificant impact shows systemic barriers and incompetence that edge the productive utilization of foreign investment in Pakistan.

On contrary, coefficient of Trade Openness (LTDO) indicates negative but statistically significant relationship with economic growth. The result recommends that trade openness alone has not been enough to enhance Pakistan's economic performance. One possible explanation is that country's trade shortage and heavy dependence on imports have balance out the potential benefits of international trade. This finding is consistent with Dahal et al., (2024), who reported that excessive import dependence can adversely impact on monetary development for developing countries. The outcome highlights their should be policies that may strengthen export competitiveness and improve the trade balance.

Similarly, the Exchange Rate (LEXH) is statistically insignificant in the long run indicating that there is no direct influence of rate on economic development. This may be cause of currency depreciation on exports and imports that results in a limited net impact on economic performance

5.6 Error Correction term (EC):

The error correction equation is given as:

$$EC = GR - (67.0262 * HDI + 0.9529 * INF + 5.0015 * LEXD - 0.8399 * LEXH + 0.2625 * LFDI - 4.4388 * LTDO - 14.2390)$$

This term represents the short-term deviations from the long-run equilibrium. HDI, INF, LEXD, and LTDO significantly impact Growth Rate in the long term. HDI, INF, and LEXD positively influence growth, while LTDO negatively affects growth, and do not have statistically significant long-run effects on GR. The presence of a significant error correction term validates the stability of this long-run relationship.

5.7 Residual Diagnostic Analysis

Figure 5.1 presents a residual diagnostic analysis, specifically the histogram and descriptive statistics of the residuals from a regression model. The mean value is 7.99×10^{-14} , which is equal to zero, which is desirable for residuals. Median: 0.0177870 (close to zero, further confirming symmetry). Maximum/Minimum: Indicate the range of residuals (1.6788841 –1.617617). The standard deviation of 0.8497300 reflects the dispersion of the residuals. A skewness of 0.0160850 is near to zero, indicating that the residuals are almost even. Kurtosis Value is 2.116000 that is close to 3, indicating that the distribution is normal, but also contain slightly extreme values than a normal distribution

The Jarque-Bera statistic is 1.043322, while the p-value is 0.593534, the p-value is greater than 0.05, indicating that result is not statistically significant.

This concludes that the residuals appear to be normally distributed, as suggested by the histogram, skewness, kurtosis, and Jarque-Bera test results. The mean and median being close to zero indicate that the residuals are centered, fulfilling a key assumption of regression analysis. These diagnostics confirm that the model likely satisfies the assumption of normality for residuals, enhancing the validity of hypothesis tests and confidence intervals. The regression model's residuals are well-behaved, and there is no evidence of significant departures from normality.

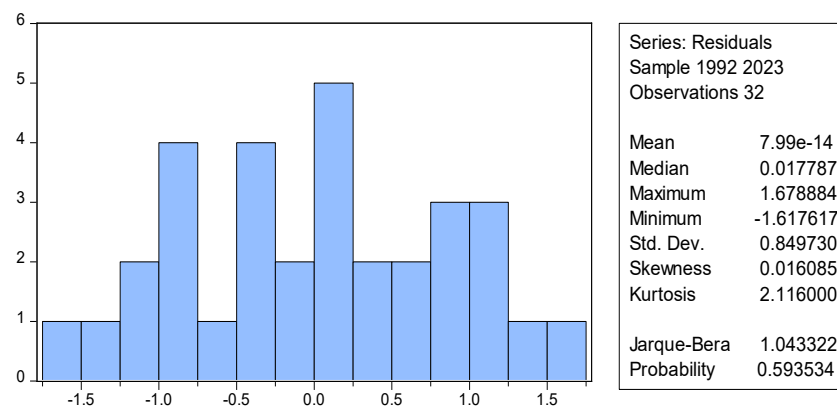


Figure 5.1: Residual Diagnostic Analysis

5.8 Serial Correlation LM test

The Breusch-Godfrey Serial Correlation LM Test as shown in Table 5.6 is used to detect the presence of serial correlation (autocorrelation) in the residuals of a regression model. The f-statistic is Value: 6.967359 while the p-value is 0.0194. The p-value is less than 0.05, suggesting that serial correlation may be present. The chi-square statistic is 10.63346 while the p-value is 0.0011. The p-value is highly significant (below 0.05), confirming the presence of serial correlation. The results indicate that serial correlation is present in the residuals of the model. Both the F-statistic and the R-squared test reject the null hypothesis of no serial correlation. Serial correlation violates a key assumption of regression models (especially ordinary least squares), potentially leading to biased estimates of standard errors and test statistics.

Table 5.6: Breusch-Godfrey Serial Correlation LM Test

Test Statistic	Value	Probability	Value
F-statistic	6.967359	Prob. F(1,14)	0.0194
Obs*R-squared	10.63346	Prob. Chi-Square(1)	0.0011

5.9 Heteroskedasticity Test

The Heteroscedasticity Test as shown in Table 5.6 ARCH checks whether the variance of the residuals (error terms) is constant (homoscedastic) or varies (heteroscedastic), particularly in an autoregressive conditional heteroscedasticity (ARCH) pattern. F-statistic Value: 1.097343 Probability (p-value): 0.3035 The p-value is greater than 0.05, so we fail to reject the null hypothesis of homoscedasticity. R-squared Value: 1.130254 Probability (p-value): 0.2877 The p-value is also greater than 0.05, reinforcing the conclusion that heteroscedasticity is not present. The test suggests that there is no evidence of heteroscedasticity in the residuals. The residuals exhibit constant variance over time. This result validates the assumption of homoscedasticity, ensuring the reliability of standard errors and test statistics in the model.

Table 5.6: Heteroscedasticity Test ARCH

Test Statistic	Value	Probability	Value
F-statistic	1.097343	Prob. F(1,29)	0.3035
Obs*R-squared	1.130254	Prob. Chi-Square(1)	0.2877

5.10 CUSUM stability test

The CUSUM and CUSUMSQ stability tests will be applied to the model. As per the result of the CUSUM and CUSUMSQ tests, the designated model is stable throughout the period. Figure 5.2 represents the CUSUM Test, which is used to evaluate the stability of a regression model over time by testing for structural changes in its parameters. The blue line remains within the red significance boundaries throughout the period. Although the blue line exhibits some fluctuations and a slight upward trend toward the later period, it does not cross the critical limits. While there is some inconsistency, it is not statistically significant, and the model does not show evidence of instability or structural change.

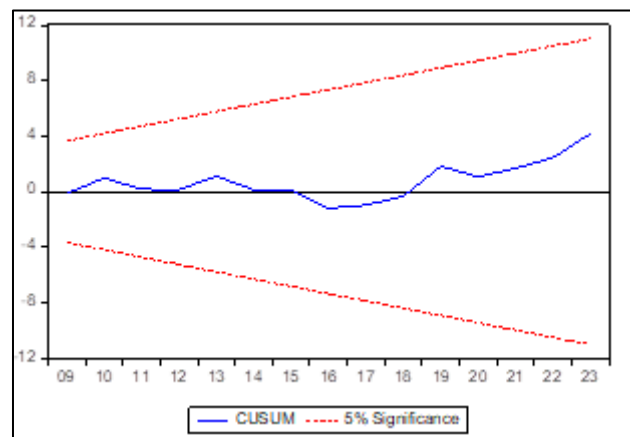


Figure 5.2: CUSUM stability test

5.11 CUSUM of Squares Test

Figure 5.3 represents the CUSUM of Squares Test that measures the stability of the model, Mainly to perceive structural disruptions in time-series data. As per the result the model appears stable over the period tested since the CUSUM of Squares does not cross the 5% significance level.

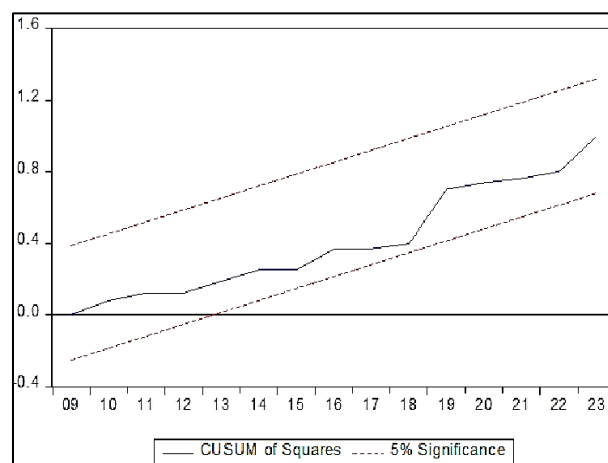


Figure 5.3: CUSUM of Squares Test

6. CONCLUSION

Foreign Direct Investment (FDI) has been long known as an important form of economic growth, specifically for countries like Pakistan. The paper focused on how FDI, composed with selected macroeconomic factors, influences economic growth in Pakistan within the time frame from 1990 to 2024. An Auto Regressive Distributed Lag (ARDL) approach was applied for short-term and long-term analysis. The research includes LGDP as the dependent variable while Foreign Direct Investment (FDI), Inflation (INF), Trade Openness (TDO), External Debt (EXD), Human Development Index (HDI), and Exchange Rate (EXH) are used as independent variables. The conclusion suggests the presence of a steady long-term affiliation among the variables.

As per results, HDI, inflation, and external debt show a significant positive impact on Pakistan's economy in the long term, similar to Ahmad et al., (2022) and Dagume et al., (2024). While, trade openness and exchange rate have a significant negative effect on the economy in the long term. These findings differ from those of previous studies, such as Noori (2019) and Farid et al., (2023), which reported, based on ARDL model results, that foreign direct investment (FDI) positively contributes to economic growth and exports. This discrepancy may be attributed to Pakistan's political instability, economic uncertainty, and inefficient utilization of foreign investment over time. In the short run, inflation and external debt have an influence on economic growth, while the effects of exchange rate and trade openness develop steadily over time. The significant error correction term confirmed the stability of the long-run equilibrium relationship among the variables.

Overall, the study concludes that while Foreign Direct Investment remains important for economic development, its effectiveness in Pakistan depends on stable macroeconomic conditions, institutional quality, human capital development, and effective policy implementation.

7. RECOMMENDATIONS

Following are the policy recommendations for improving Pakistan's investment climate and economic growth performance.

- Government of Pakistan should reinforce Governance capacity with balanced tax modifications, consistent regulatory policies, and transparency to enhance investor confidence so that we can make a satisfactory investment environment that may attract possible and feasible FDI inflows (Ahmad et al., 2024; Sadiq et al., 2021).
- The government should address some economic issues, including inflation, law and order issues, electricity shortages, and a lack of infrastructure development, in order to draw in international investment, particularly in sectors such as technology, renewable energy, manufacturing, and infrastructure, transportation, and digital connectivity, as it is essential to improve productivity and attract foreign investors (Dinh et al., 2019; Touray, 2024).
- Policymakers should carefully look through progress in the comprehensive trade-off situations so that government can get full benefit from increase in trade openness. Establishment of incorporation into international markets will permit Pakistan to benefit from global trade opportunities, while making sure that local firms are well-positioned to thrive in an increasingly open and unified economy (Dahal et al., 2024).
- Government should put plans in place to draw in foreign investment, in education, healthcare, and skills development departments, it is necessary to strengthen human capital, improve labor productivity, and enhance the economy's opportunities that could raise living standards, create jobs, and lower poverty.

Overall, the execution of these policy methods can help Pakistan create a more competitive, stable, and more friendly environment that will be capable of maximizing the benefits of foreign direct investment and promoting long-term economic growth and development.

References

- Ahmad, I., Saeed, A., Saeed, M. I., & Ajekwe, C. C. (2024). Exports, FDI inflows, renewable energy and economic growth: An empirical evidence from Singapore. *Bulletin of Business and Economics*, 13(1), 1–12.
- Ahmad, M. S., Szczepankiewicz, E. I., Yonghong, D., Ullah, F., Ullah, I., & Loopesco, W. E. (2022). Does Chinese foreign direct investment (FDI) stimulate economic growth in Pakistan? An application of the autoregressive distributed lag (ARDL bounds) testing approach. *Energies*, 15(6), Article 2050. <https://doi.org/10.3390/en15062050>
- Ciobanu, A. M. (2021). The impact of FDI on economic growth in the case of Romania. *International Journal of Economics and Finance*, 12(12), 1–81.
- Dagume, M. A., Mathebula, R. S., & Khangale, A. R. (2024). The impact of foreign direct investment on economic growth. *Journal of Smart Economic Growth*, 9(1), 117–148.

- Dahal, A. K., Bhattarai, G., & Budhathoki, P. B. (2024). Impact of foreign trade and foreign direct investment on economic growth: Empirical insights from Nepal. *Problems and Perspectives in Management*, 22(1), 390–401.
- Dinh, T. T.-H., Vo, D. H., Vo, A. T., & Nguyen, T. C. (2019). Foreign direct investment and economic growth in the short run and long run: Empirical evidence from developing countries. *Journal of Risk and Financial Management*, 12(4), Article 176. <https://doi.org/10.3390/jrfm12040176>
- Farid, K., Mahmood, T., Mumtaz, M., & Ansari, S. H. (2023). Impact of foreign direct investment on the exports of five major sectors of Pakistan's economy: A governance perspective. *Chinese Journal of Population, Resources and Environment*, 21(3), 181–188.
- Moazzam, A., Awais, M., Khan, A. A., Khan, O. A., & Hassan, W. (2018). Impact of organizational injustice and leader reward behavior on job satisfaction of employees. *Foundation University Journal of Business & Economics*, 3(1), 1–13.
- Ndlovu, D., & Haabazoka, L. (2024). Evaluating the impact of foreign direct investment on economic growth in Zambia: 1996–2020. *East African Finance Journal*, 3(1), 107–130.
- Noori, S. (2019). Impact of foreign direct investment on economic growth in Jordan. *Journal of Administration and Economics*, 119, 77–94.
- Sadiq, M., Usman, M., Zamir, A., Shabbir, M. S., & Arif, A. (2021). Nexus between economic growth and foreign private investment: Evidence from Pakistan's economy. *Cogent Economics & Finance*, 9(1), Article 1956067. <https://doi.org/10.1080/23322039.2021.1956067>
- Shafiq, M. N., Hua, L., Bhatti, M. A., & Gillani, S. (2021). Impact of taxation on foreign direct investment: Empirical evidence from Pakistan. *Pakistan Journal of Humanities and Social Sciences*, 9(1), 10–18.
- Touray, A. (2024). *The growth effect of foreign direct investment: Evidence from time-frequency analysis*. SSRN. <https://doi.org/10.2139/ssrn.5086687>