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Effect of Financial Development on Poverty: An Empirical Case Study of Pakistan

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Abstract: This research emphases on the effect of Financial Development (FII) on poverty of Pakistan. Time series data from 1980 to 2024 is used in this study and Auto Regressive Distribution Lag (ARDL) technique is incorporated to estimate the regression result. Foreign Direct Investment (FDI), inflation, domestic credit to private sector by bank, poverty headcount ratio at national poverty lines are the variables used in this study. Long run relationship is found between FII and poverty. Regression results have ascertained that a joint effect of FII and FDI significantly reduces poverty. For the policy recommendation this study process to create concentrated policies for attracting FDI and using it with FII for lowering down the poverty pressures.

Key Words: Financial Development, Poverty, ARDL

Introduction

Background of the Study

FII is essentially a way to secure a proper financial system. The system is entailed to make the financial services available to the government and stake holders to encourage the need of funds for the variety of macroeconomic goals for the better economy and to regulate and supervise the financial organizations operation in the specific country (The World Bank, 2023). The alleviation of poverty and to encourage economic growth depend upon FII. According to the International Monetary Fund (IMF) FII is essential to tackle the issue of ever rising poverty therefore, FII is stood to compensate the destitute at large. FII is useful for resolving the issues of unrest in macroeconomic stature. The financial sector emerges as a result of the formation of companies and institutions which facilitate economic growth and the mitigation of poverty (Guru & Yadav, 2019).

FII raises growth in the economy, lowers poverty, and raises human standards of living. Advancements in finance have been essential to the nation's economic growth. To evaluate the state of financial services and comprehend how FII affects both the growth of the economy and the decrease of poverty, it is imperative to have an accurate indicator of FII.

Growth of financial institutions and liquidity enhancement in a country might have radically different influence on poverty. Reducing poverty sometimes means allowing the underprivileged to take part in growth and benefit from it. So, in order to ease poverty, economic growth and pattern are important factors. And for instance, growth can result in beneficial phases of opportunities and wealth. Parents tend to be more encouraged for making investments in their children's education by sending them to school when there is strong growth and employment possibilities because both cause reduction in the future poverty statistics of family. It is clear that poverty reduction and growth go in tandem. together. It is less clear how income distribution affects this relationship, and in especially, whether higher levels of

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inequality minimize the growth-induced reduction in poverty. Pakistan's poverty head count rate was 89.10%, a 1.3% decline from 2010-11, 86.50%, a 2.6% decline from 2011-13, 84.50%, a 0.7% increase in 2015-2018 and 83.80%, a 2.7% decline from 2013-15. Poverty, according to the American definition, which is measured in relation to the common conditions of our time frame that people are homeless, underweight, or without recourse to pure freshwater are clear signs of poverty. Poverty effects the living standard. In general, higher degrees of poverty result in lower levels of human capital accumulation, including lower levels of schooling. Every year, Pakistan's government spends million on a social safety initiatives program like; household credits for the poor families, household aid, and food stamps protect millions of Pakistanis out of poverty and lessen suffering for millions additional. Economic expansion can encourage employment and business ownership, which can subsequently lessen poverty by giving people more options to earn a living.

According to World Bank, In the government's Ministry of Economics and Development's report, which was submitted to the National Assembly of Pakistan, about 55 million people, or 24.3% of the country's population, were living in poverty. As of 2022, Pakistan has a Human Development Index (HDI) of 0.544, ranking it 161 out of 192 nations in the world. Poverty rate in Pakistan leads the list of nations with the lowest rates of poverty with a 4.9%. The World Bank claims that in 2017, Pakistan poverty rate even reached zero percent 2021. While economic expansion may reduce poverty, it also has the potential to widen the income gap. Meanwhile, FII is essential to trigger the disbursement of funds for variety of investment projects which can enable to create economic activities that lower the poverty rate by initiating the employment opportunities. Policymakers must take measures into consideration to ensure an equal distribution of the benefits of economic growth (American Philosopher Association Thomas Piketty).

Living standards are decreasing due to a weakening labour market and inflation in food prices, especially for lower-income families. Although reversing the cycle of poverty requires human capital, educating the destitute must be a top focused on both public and private sectors. "Agenda 21" highlights that as poverty is a complex, multidimensional problem, solutions have to be customized to meet the requirements of each unique country. However, the International Monetary Fund (IMF) predicts that the Covid-19 outbreak will cause the poverty level in Pakistan to increase to 40%.

IMF claims that Pakistan has not been able to sustain a decline in poverty as the consequence of ineffective policy implementation and gaps in policy. A concrete example of this is provided by each of the three land reform initiatives, following these changes, farming families that were without land or in poverty were excluded from the list of receivers of land. The sustainable development growth (SDGs) is audacious commitment to finish the job at hand and end poverty in all of its forms by 2030. This means focusing on the most vulnerable, increasing access to necessary services and resources, and providing assistance to people affected by fighting and catastrophic events.

Conceptualizing FII

FII in collaboration with FDI is crucial because the model result based on the outcome of these interaction term. FII enables companies to grow outdoors by raising the utilization of both labor and capital, as opposed to shifting the more expensive technologies beyond by projecting a boost in worker efficiency and cost.

Table 1

FII Percentage and Poverty in Pakistan (Financial Institution Index)

Year	Financial institution index %(FII)	Poverty ($1 Per Day)
2010	0.25	36.8
2011	0.25	36.3
2012	0.26	35.2
2013	0.26	29.5
2014	0.26	28.4
2015	0.26	24.3

Year	Financial institution index %(FII)	Poverty ($1 Per Day)
2016	0.26	23.2
2017	0.26	22.9
2018	0.26	21.9
2019	0.27	20.8
2020	0.27	20.7
2021	0.27	20.6
2022	0.27	20.5

In 2010 financial institution index is collected from IMF in which development was 0.25 with the passage of time FII increasing year by year financial institution index 2014 that was 0.26, and in 2017 financial institution index was 0.26, in 2019 that financial institution index was 0.27 improve, in 2021, financial institution index 0.27 in 2022. The figures of poverty show falling trend since 2010 to 2022. The range is recorded from 36.8 to 20.5, respectively.

Problem Statement

Poverty is the major issue in the society, and it is solved by FII together. In lieu of promoting economic growth which raises salary and extends possibilities for employment for the poor, structural and financial changes can be conducted to improve efficiency and use of assets together with decreasing poverty. Emphasizing the fundamental wants of the poor in national development activities is a need of time. Economic growth raises demand for employment which enhances the resource accessibility to the poor as well as chances for employment. The over expanding employment opportunities and low poverty rate have been essential for achieving higher growth. The advantages of FII by raising the level of savings, attracting and combining resources, generating knowledge about investments, encouraging and promoting the inflows of foreign capital, and refining the allocation of capital, boost economic growth with capital accumulation and technological improvement and address the issue of poverty. After periods of continuous global poverty reduction, three years of lost productivity happened around 2020 and 2022 due to major rebounds and disasters. Countries with low incomes face an increase in poverty during this time; these countries are still struggling to recover for stable economic condition. This is the reason that this study is important because FII solves these macroeconomic problems together with foreign investment.

Main focus of this study is to explore whether FII in complement with FDI is helpful to solve the poverty related problem faced by society which is a burning issue of the current nations who have FII and FDI with pertained poverty pressures. Whereas FII can benefit economic growth, it is essential to understand that there are numerous variables in this link and the effects may differ based on the particulars of each country. Poverty is also a major issue in which society is affected if the unemployment rate rises then a direct relationship to the rate of poverty. Poverty in Pakistan is mostly caused by economic problems. A significant number of the population in the whole country suffer to get reliable employment. A number of factors, include an absence of infrastructure, knowledge, and training, can be responsible for the high level of unemployment that is the main cause of poverty in Pakistan While social powerlessness, political disenfranchisement, are major contributors to the perseverance of difficulty among the poor, financial instability is an important variable in the rise of poverty in Pakistan. Around 95 million Pakistanis are now poor, representing a figure of 34.2% to 39.4% of the nation's total population.

Research Objectives

The issues are poverty, the creation of employment, and economic growth. which are needed to be addressed contemporary of Pakistan by FII. This study is carried out to explore the impact of FII on the poverty in Pakistan. Scope of this study is to analyze if poverty reduction is fetched by with the help of FII and the collaboration of FDI. Poverty is non less than an economic unrest which leads towards higher crime rates and a drop in average economic growth. Stronger financial institutions are positively correlated with poverty address-ups.

Research Questions

- Can unemployment and poverty be reduced at the back of FII?
- Is there a cointegration between FII and Poverty?
- Whether the interaction term of FII and FDI hold dissimilar results?

Significance of Study

It is essential to investigate how FII &FDI effect on poverty. This study highlights how enhanced financial services, such as credit and banking, contribute to addressing poverty. This information helps policymakers create policies which are successful to eliminate poverty. It shows how families with limited resources may overcome poverty with the use of financial services. World priorities like combating poverty and developing decent work with economic growth are supported by this research.

Better financial systems encourage growth, which in turn propels the expansion of the financial sector, creating a cycle of positive reinforcement. If those with low incomes have less access to financial services, save less money, and invest less, poverty slows down the development of the financial system. A high proportion of the population living in poverty reduces the demand for financial services, which limits the expansion of financial institutions and the advancement of financial systems.

Literature Review

Literature is reviewed to establish a justification to initiate regression analyses on the prescribed model. Also, this section aspires to cross-examine the undone work in the specific area of study which this study is initialized at.

Jeanneney and Kpodar (2011) investigated whether poverty might be alleviated both directly and indirectly via dispersion effects brought about by economic growth. Based on data collected from the McKinnon "conduit effect," institutions would offer them greater assets for operations and savings after economic downturn followed financial progress. which is especially damaging to the poor, but the potential advantages much exceed the risks.

Javid et al. (2012) collected a study that focused on eliminating poverty in Pakistan and studied migration and economic growth. Both at the macro and micro levels that addressed the impact of remittances on development and growth in either a direct or indirect manner (Arif, 1999; Burney, 1987; Adams, 1998; Malik & Sarwar, 1993; Burki, 1991; Amjad,1986; Kozel & Alderman,1990; Nishat & Bilgrami, 1991). Utilizing the ARDL Model, the results suggested that remittances have an important effect on reducing poverty and have a beneficial effect on economic growth. The statistical influence of remittances on decreasing poverty is especially large. The inflow of remittances cannot, in the long run, be an obstacle to growth because the economic and social circumstances in nations that receive them are steadily increasing. The impact of worker remittances on poverty and advancement in developing Asia-Pacific states is also examined by Jongwanich (2007). Remittances, based on data, validated a significant impact on ending poverty but little effect on economic growth.

Javid et al. (2012) examined that there is a positive correlation among economic growth and the decline of poverty (Imran & Khalil, 2012). The connection between Industrial development and FII in 1971 to 2010 Pakistan was investigated through Johnson's co-integration test and ARDL technique. The results indicated that reduction of poverty ultimately improves the beneficiary nation's economic and social standing without a wholesome manufacturing industry, there could be no manufacturing growth; therefore, the financial industry, which actively produces opportunities for employment, contributes to the decreasing poverty.

Study by Khan et al. (2012) focused on how FII supports Pakistan's efforts to decrease poverty. In their literature, time series data was examined using Wald testing and Johansen cointegration employed Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The connection among poverty and FII is never bi-directional nor unidirectional, and there is an unequal connection between market imperfections and the availability of credit in the economy. When some people stopped contributing to national investments, the development rate increased, and the productive capacity of large cities had a negative impact on rural areas' ability to operate. Cities are known for their poverty, and private

banking institutions steer clear of funding small-scale and Agri-based businesses due to their expensive nature, which directly fosters poverty. The findings show that, in both unit root statistics, poverty and FII remain stagnant at their first variance rather than at their initial level.

Alkire and Santos (2014) relied upon the data from household surveys in a panel of 100 developing nations where it was found that poverty had gradually improved. Decisions about the weights, deprivation cutoffs, poverty cutoff, and Human Development Index (HDI) for the MPI parameters were made within these limitations. Results of the MPI estimation that constituent components, A (intensity) and H (headcount ratio). The Online Supplementary data contain the results, including the suppressed headcount ratios for the indicators. MPI estimation outcomes estimations of global poverty, Global poverty distribution, the degree of poverty, those living in poverty, and the deprived non-poor. The proportion of resilient comparisons across different MPI specifications and significant pairwise comparisons in the beginning MPI in the developing word used in this study. The MPI results are resilient to shifts in the deprivation thresholds of the indicators (and even in some indicators such as child nutrition).

Shamim et al. (2014) focused upon poverty through time series data for the period of 1973-2011. The regression estimates were collected by using the ARDL technique and the results showed that there was positive relationship among Investment to GDP Ratio, Trade Openness, Exchange Rate, Political Stability, FII and FDI. Results showed that FDI had a negative impact on poverty other factors that also lessen poverty in the nation include public investment, gross domestic product, and FII.

Dauda et al. (2014) initiated poverty related investigation using the Vector autoregressive (VAR) model along with the impulse reaction to explore the financial sector's influence on poverty alleviation and development indicates that, while inequality in income has long-term adverse effects on poverty reduction, it has a short-term, large indirect effect on economic growth. The research concluded that credit to the business community have not, in actuality, resulted in a decrease in the level of poverty in Nigeria. The long-term consequences of financial sector development offer satisfaction to those in poverty.

According to Dhrifi (2015), financial breakthroughs have no positive impact on the economies with low incomes, but help to get rid of poverty, reducing inequality, and encourage economic growth in significant and middle-income countries. The research additionally discovered that while innovations in the banking sector increased the distribution of income disparities in low- and middle-income countries, they decreased disparity in high-income ones (Shamim et al., 2014).

Boukhatem (2015) instigated study demonstrating that FII immediately reduces poverty and improves the impoverished by expanding their possible sources of income and enhancing their standard of living. Creating an economic setting and accumulating assets to mitigate Mckinnon's "conduit effect". Beck et al. (2007) made the same conclusions. Econometric techniques of GMM were applied. The findings showed that there is no profusion of instrumentation and that the restrictions on inclusion are applicable. Moreover, they might throw light over pro-poor public investment techniques in low and middle-income countries. People in need population experiences financial volatility, which also partly minimizes the positive effects of financial advancements (Jeanneney & Kpodar, 2011).

Desbordesa and Wei et al. (2017) examined the empirical method to secondary effects of FII (DFD and SFD, in particular) on FDI resulting from the influence of FII on net output, as well as the different immediate effects of FII on FDI. DFD and SFD have significant favorable effects on FDI in nations that are developing, development, and acquisitions and mergers due to their directly increased outside monetary available and indirect promotion of manufacturing activities. Their total economic implications can be frequently comparable since DFD and SFD have varied both direct and indirect implications on many different FDI sectors and categories.

Adamkovic and Martoncik (2017) found that poverty is a major, persistent problem that affects entire communities. This Study influenced on the information that supported the requirements for developing a framework which explains the cognitive process through which poverty is reduced. It also addressed the issue of how financial decision-making is

impacted by poverty. Research on poverty have shown the connection between adverse reactions brought on by poverty and an increase in cognitive load that leads to persistent poverty.

Kaidi et al. (2019) studied the applicable research and a few indicators related to FII, institutional quality, and poverty. They investigated a sample directly using the three-stage least squares technique. Kaidi et al. (2019) confirmed that while FII does not directly improve the daily lives of the poor, the result of institutional quality on both FII and poverty relies on the measures of quality utilized. Numerous researchers conducted the relation between FII and poverty like Jeanneney and Kpodar (2008), Sehrawat and Giri (2015), Abdin (2016), Abosedra et al. (2016), Ho and Iyke (2017).

Aguilar and Sumner (2020) showed the differences between the original Alkire-Foster measurement of multiple dimensions of poverty and other multidimensional indicators, and they also discussed its significance for calculations of the poverty population. They got to the judgment that young individuals who live in countryside areas might not be employed in agriculture thus represent the majority of the world's multiple dimensions poor. The overall contribution is to give a discussion of variance across multidimensional poverty indices and to provide an updated set of estimates for the across-the-global multidimensional poverty picture.

Azam et al. (2020) and Tariq et al. (2020) found the cause related to poverty in Pakistan. The secondary information collected for this study covered time from 1975-2016. The analysis of Principal Components Analysis (PCA) is a method employed for producing a FII index that utilizes a number of financial statistics ARDL technique is utilized. Research revealed that trade openness and the expanding of financial services have an enormous effect on eliminating inequality in Pakistan. The study highlighted the demand for liberalization of trade even further with the goal to decrease the overall level of poverty, liberalization of trade, and growth of the financial sector are essential.

Le and Leshan (2020) eco-compensation in China which is referred to as payment for ecological services (PES) in other situations has become an essential instrument to handle the natural world as well as decreasing poverty. Eco-compensation has been identified by the Chinese government in general as one of the five primary methods to decrease poverty. Utilizing survey responses of rural families in three Guizhou Province, China, poverty counties to evaluate the impact on different eco-compensation plans on lowering the level of poverty for different income categories of rural families. Low-income of people' income is significantly benefited by the Environmental Employment Project. Although the eco-compensation method has been specifically designed for it, eco-compensation can sometimes fail to decrease poverty. The direct effect of eco-compensation on the earnings of farmers is dependent upon the nature and quantity of the eco-compensation.

Wang & Hu (2023) exclaimed that disability-related poverty has consistently been a major concern and barrier for global poverty management. China is implementing a number of employment programs and changes to substitute welfare with problems of society such as poverty. Multidimensional Poverty Index (MPI), The Alkire-Foster (AF) technique was implemented on OLS model. The findings reflected that poverty contributes significantly to the areas of education and community engagement than it does to the areas of the economy like, welfare and security. A lot of disabled people suffer from complex poverty. The multiple forms of poverty suffered by people who have disabilities and the impact of employment resources on decreasing poverty can be used to establish better government programs that focus on solving poverty.

Shair et al. (2024) examined that how Pakistan's poverty and income inequality levels are affected by institutional and financial growth. For empirical study, time series data spanning 1984 to 2019 was used. The ARDL was employed in their empirical predictions to examine the immediate results. According to Shair et al. (2024) positive short-term correlation between intuitional quality and poverty is evident with a statistically negligible long-term impact on poverty levels. According to their research, the short- and long-term effects of institutional growth on income disparity in Pakistan seem to be statistically negligible.

Kanat et al. (2023) used the Bayer and Hanck cointegration approach and the ARDL bound test on the data from 1985 to 2022 and explored that FII affects gender inequality and poverty in Pakistan while adjusting for a number of other variables in their research. Reducing gender disparity can also help to lower poverty levels in Pakistan. Kanat et

al. (2023) affirmed that economic growth is a dependable strategy to do so. Unexpectedly, poverty has grown because of lack of education. Better education and skill development was suggested for downing poverty.

Methodology

Data Collection

The present study aims at the notion that FII and FDI are essential to curtail poverty in Pakistan. Therefore, for the purpose of analyses, secondary data is used from 1980 to 2024. The sources of data and the description of the variables are given in Table 2.

Table 2

Measurement of Variable Description

Variable	Short form of variable	Operational Definition Measurement	Source
Poverty headcount ratio at national poverty line (% of Population)	PHR	The percentage of the population living below the national poverty line is known as the national poverty headcount ratio (s). Population-weighted subgroup estimates from home surveys serve as the foundation for national estimates. The reporting year is the income comparison year, or the year prior to the survey year, for economies from which the statistics come from EU-SILC.	World Bank Development Indicators (WDI)
Unemployment total (% of total labor force) (National estimate)	UNEMP	The percentage of people in the workforce that is jobless yet looking for work is referred to as unemployment. Each country has its own criteria for the labor force and unemployment.	WDI
Foreign direct investment, net inflows (% of GDP)	FDI	FDI measures the net investment flow into a foreign economy, representing ownership stakes of 10% or more. It includes equity, reinvested earnings, and other capital, divided by GDP.	WDI
Financial Institutions Depth Index	FII	IMF's Financial Institutions Depth Index is like a map, showing how good a country's financial system is. It helps countries make their financial systems better, so everyone can have more opportunities for banking and investing, leading to prosperity.	WDI
Inflation, consumer prices (annual %)	INFL	Consumer price index (CPI) inflation tracks the yearly change in the cost of a standard basket of goods and services for the average consumer.	WDI
Domestic credit to private sector (% of GDP)	DGS	Finances provided to companies by financial institutions constitute domestic credit to the private sector. and individuals, including loans and securities purchases. It involves banks, monetary authorities, and other financial entities, offering services like lending and insurance.	WDI
Domestic credit to private sector by banks (% 0f GDP)	DCPSB	Banks' domestic lending to the private sector represents the funds lent to businesses and individuals by banks, including loans, securities purchases, and trade credits. It establishes a repayment obligation and excludes central banks.	WDI

Specified Model

The Multiple form of general regression model

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\ldots + \beta\eta X\eta + \mu \quad (1)$$

$\alpha = intercept$

$\beta = coefficient$

$\mu = error\ term$

Unrestricted ARDL Model

ARDL Model

The goal of this study is to measure the stable nature of the variables using the unit root test in order to determine the long-term relationship between them. When a variable exhibits stationary patterns at many integral levels, such as I (0) or I (1), integration can be demonstrated to exist using the ARDL model. When contrast with conventional techniques used to investigate the strength of the connection between the various components, this type of technique has been deemed effective. The variable lasting associations with their functional forms (1, 2, 3, and 4) are created through an Error Correction Term (ECT).

$$PHR_t = \alpha + \beta_1\, UNEMP + \beta_2 FDI \times FII + \beta_3 INFL + \beta_4 DGS + \beta_5 DCPSB + \mu_t \quad (2)$$

3.3.2 Long Run Unrestricted ARDL Model 3

$$PHR = \alpha + \beta_1 PHR_{t-1} + \beta_2 UNEMP_{t-1} + \beta_3 FDI \times FII_{t-1} + \beta_4 INFL_{t-1} + \beta_5 DGS_{t-1} + \beta_6 DCPSB_{t-1} \quad (3)$$

$$\sum_{i=0}^{\rho 1} \delta 1\, \Delta PHR_{t-i} + \sum_{i=0}^{\rho 2} \delta 2\, \Delta UNEMP_{t-i} + \sum_{i=0}^{\rho 3} \delta 3 \Delta FDI \times FII_{t-i} + \sum_{i=0}^{\rho 4} \delta 4 \Delta INFL_{t-i} + \sum_{i=0}^{\rho 5} \delta 5 \Delta DGS_{t-i} + \sum_{i=0}^{\rho 6} \delta 6\ \Delta DCPSB_{t-1} + \mu_t \quad (4)$$

$\beta_1 = \text{long run multipliers}$

$\delta = \text{short run dynamics parameters}$

$\Delta = \text{first diffrence}$

$\mu_t =$ error term

Long run coefficient found by following equation

$$PHR = \alpha + \sum_{i=0}^{\rho 1} \eta 1\ PHR_{t-i} + \sum_{i=0}^{\rho 2} \eta 2\ UNEMP_{t-i} + \sum_{i=0}^{\rho 3} \eta 3 FDI \times FII_{t-i} + \sum_{i=0}^{\rho 4} \eta 4 INFL_{t-i} + \sum_{i=0}^{\rho 5} \eta 5 DGS_{t-i} + \sum_{i=0}^{\rho 6} \eta 6\ DCPSB_{t-i} + \mu_t \quad (5)$$

Equation (4)

$\alpha = \text{coefficient}$

$\eta = \text{lonf run parameter}$

$\mu = \text{error term}$

An extended connection is illogical if the lower bonding quantity exceeds the F-statistics value. Building the short-term relationship with ECT happens next after building the long-term relationship. The following equation (5) represents the short-term relationship by ECT in its functional form Model 3.

Short Run Coefficient Estimation Model 3

This can be accomplished with the use of the Error Correlation Technique (ECT). The following equation reflects the given form of the ECT.

$$\Delta PHR = \alpha + \sum_{i=0}^{\rho 1} \lambda 1 PHR_{t-i} + \sum_{i=0}^{\rho 2} \lambda 2\, \Delta UNEMP_{t-i} + \sum_{i=0}^{\rho 3} \lambda 3 \Delta FDI \times FII_{t-i} + \sum_{i=0}^{\rho 4} \lambda 4 \Delta INFL_{t-i} + \sum_{i=0}^{\rho 5} \lambda 5 \Delta DGS_{t-i} + \sum_{i=0}^{\rho 6} \lambda 6 \Delta DCPSB_{t-i} + \omega ECT + \mu_t \quad (6)$$

ω is the coefficient of ECT.

$\beta_1, \beta_2, \beta_3, \ldots\ldots\ldots \beta_n$ are the coefficient, α is an intercept, and μ_t is the error term of a model .in equation (2) PHR is dependent variable and UNEMP, FII, FDI, DGS, DCPSB, INFL FDI×FII are the control and main independent variable.

Diagnostics

The regression estimation is tested for the validity. In this regard, the serial correlation is checked via Breush-Godfrey LM Test. the Heteroscedasticity is analyzed by Breusch-Pagan-Godfrey Test. The model specification is authenticated

by Ramsey RESET test. And the Normality is checked with the help of Jarque-Bera along with the CUSUM and CUSUM squared are exercised for the validation of structural stability of the model.

Results and Discussion

An empirical evaluation of the effects of FII, employment, poverty, and economic growth is offered in Section 4.3. The findings of the research are presented, and the consequences are examined in light of current thinking and other research in this region.

Descriptive Statistic

Descriptive statistics, an instance of statistical model, describe and explain the key features of a sample or dataset. In alongside measurements of central tendencies such as mean, median, and mode, it indicates the computation of measurement of variation such as range, variance, and standard deviation. This allows for an improved understanding of the data. Table 4.1 offers an extensive and comprehensive study of the major Pakistan variable discussed above. The descriptive study includes a graphical depiction of the data, such as histograms, scatter plots, or box plots, in order to better comprehend the distribution and trends of the information being examined.

Table 3

Descriptive Statistic

	DCPSB	DGS	FDI	FDI×FII	FII	INFL	PHR	UNEMP
Mean	21.12	21.38	0.80	0.08	0.09	8.47	52.68	4.11
Maximum	29.79	29.79	3.04	0.38	0.12	20.29	74.60	7.83
Minimum	13.80	13.88	0.10	0.01	0.07	2.53	20.50	0.40
Std. Dev.	4.43	4.52	0.64	0.07	0.01	4.09	19.94	2.15
Skewness	-0.21	-0.28	2.15	2.59	0.82	0.84	-0.51	-0.11
Kurtosis	1.87	1.78	7.42	9.60	3.97	3.94	1.60	2.16
JB	2.61	3.23	68.14	126.26	6.49	6.67	5.34	1.37
Prob	0.27	0.20	0.00	0.00	0.04	0.04	0.07	0.50

Table 3 represent the descriptive analyses of several variable in Pakistan. Wider dispersion is evident in DCPSB and DGS. The skewness makes it clear that FDI, FDI× FII, and INF is positively skewed. DCPSB, DGS, PHR, and UMEMP are platykurtic unlike the rest of variables which are leptokurtic in nature. Moreover, UNEMP, DGS, and DCPSB are recorded for normal distribution.

Correlation

Table 4

Correlation Result

	DCPSB	DGS	FDI	FDI×FII	FII	INFL	PHR	UNEMP
DCPSB	1.00							
DGS	0.99	1.00						
FDI	0.02	-0.03	1.00					
FDI×FII	0.01	-0.03	0.99	1.00				
FII	-0.10	-0.12	0.71	0.76	1.00			
INFL	0.11	0.09	0.31	0.26	0.01	1.00		
PHR	0.79	0.81	-0.17	-0.16	-0.16	-0.15	1.00	
UNEMP	-0.19	-0.19	-0.39	-0.38	-0.09	-0.21	0.17	1.00

Correlation results are given in Table 4. DGS and DCPSB are recorded for higher correlation. PHR is also traced for more than moderate correlation with DCPSB and DGS. Rest of the variables are found to be least correlated.

Empirical Analysis

The only method that is frequently used to stratify data on the risk factor under study is empirical analysis. In order to do this, the data must be divided into groups or strata according to particular traits or variables. For each stratum, the estimated risk of an event of interest is used to test the hypothesis on its association. Three particular tests are addressed in the framework of the study: unit root test, an autoregressive distributed lag (ARDL) test, and bond test of cointegration.

Unit Root Test

A statistical method used to determine if a time series passes the unit root test. A unit root test reveals a series is non-stationary, indicating it does not display long-term trends before converging to a stable mean.

In Table 5, Augmented Dickey-Fuller stationarity test results are given. To determine if the time series data is stationary or not, the Augmented Dickey-Fuller test is utilized. Some variables are stationary at level such as while other variables like; are stationary at 1st difference.

Table 5

Results of Unit Root

Variable	Computed Statistic	t-Statistic	Conclusion
PHR	-3.60	-5.62	I (1)
UNEMP	-3.60	-6.47	I (1)
INF	-3.60	-5.62	I (1)
FDI	-3.60	-4.36	I (0)
FII	3.60	-5.22	I (0)
DGS	-3.60	-6.89	I (1)
DCPSB	-3.60	-6.25	I (1)

Bound Test of Cointegration

The Bound test of cointegration is a statistical model used to assess if a long-term link exists between variables of concern. To accomplish this, it is necessary to estimate an ECT that includes relevant variables and the initial difference. The H_0, or the coefficient on the first differenced variable, assumes that there is no long-term connection in the bound test. Cointegration occurs, if establishes that cointegration exists between the variables of the specified model, if the hypothesis H_0 is rejected.

To classify the long-term relationship, the linear models is developed below

Model: $PHR = f(UNEMP, FDI \times FII, INFL, DGS, DCPSB)$

ARDL Bound Test

Sample: 1980 to 2024

H_0: No long-run Relationship

Table 6

Test Result Bound ARDL

Test Statistic	Value	K
F-statistic	4.49	5
Critical value		
Significance	I (0)	I (1) Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

An ARDL bound test on sample data indicates a long-run relationship between Cointeq and the independent variables. Therefore, the H_0 is held rejected by proving that the F-statistic value of 4.49 is more than the table value at 3.79 the 5% significance level.

Autoregressive Distribution Lag

The ARDL technique of coefficient estimation is superior when the order of integration is mixed i.e. I (0) and I (0). The ARDL surpasses rest of the analytical techniques in estimating the independent variable's short- and long-term effects. This study constructed an additional linear model to test if both the cointegration and log-run form occur.

Table 7

Model Long-Run Coefficient

Dependent Variable (PHR)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UNEMP	2.31	1.10	2.12	0.08
FII×FDI	-236.24	78.10	-3.02	0.01
INFL	-1.03	0.90	-1.15	0.26
DGS	10.07	4.05	2.49	0.02
DCPSB	-7.12	4.04	-1.76	0.09
C	-21.65	14.55	-1.49	0.15

UMEMP is the independent variable and PHR is the dependent variable in the prescribed regression model. The results, given in Table 7, show that ENEMP is a significant predictor of PHR. The long run coefficient of UNEMP is 2.31 which shows that one unit rise in UNEMP is to cause poverty to increase by 2.31 units. Furthermore, the finding on FII×FDI is depicting a significant fall in poverty by 236.24 units at the back of either of one unit fall in the same. The result supports the study of Uddin et al. (2012).

FDI and FII are the core variables. The control variables are mostly found for the significant impact on the PHR. INF and constant of the model are held insignificant. DGS is positive in relation with PHR. Meanwhile, DCPSB is posting significant negative effect on PHR. Among the two financial sources. Both being a source of financial availability, the effects on poverty are surprisingly mixed. DCPSB which is domestic credit to private sector is more vibrant in transpiring the effects on poverty. Moving onto the domestic credit as a percentage of GDP, the poverty is seen increasing. The possible reason may be that such credit disbursements motivate the firms to use mechanized way of production therefore, any of the attempt to lay off the workers cause them unemployment which later take boost the poverty figures.

Table 8

Short-run Coefficient Model

Dependent Variable (PHR)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UNEMP)	-0.32	0.91	-0.35	0.73
D (UNEMP (-1))	-1.61	1.03	-1.56	0.13
D (UNEMP (-2))	-0.95	1.15	-0.83	0.42
D (UNEMP (-3))	2.13	0.97	-2.20	0.04
D (FDI×FII)	-55.85	33.12	-1.69	0.09
D (INFL)	0.14	0.32	0.44	0.67
D (DGS)	0.40	2.91	0.14	0.89
D (DCPSB)	0.52	2.98	0.17	0.86
CointEq (-1)	-0.46	0.10	-4.72	0.00

The Table 8 concludes the short run results. Of the series of variables, the UNEMP and FII×FDI are accounted for the significant impact on PHR. Fall in poverty is evident at the back of UNEMP and combined effect of FII and FDI. The positive spell outs of FDI in context of poverty reduction are not foreign (Shamim et al., 2014; Vandenberg, 2006). The coefficient of error term is also correctly specified, significant, and within range.

Sensitivity Analysis

The sensitivity analysis is done to validate the regression estimates and the outcomes are given in Table 9. The analyses are done of serial correlation by LM Test suggested by Breusch-Godfrey where no signs of serial correlation are traced. Whereas the heteroskedasticity is found to be present. The diagnostic for the correct specification of the model is not rejected. Finally, the Jarque-Bera statistics also affirm that the sample distribution is not irregularly distributed for the estimated residuals.

Table 9

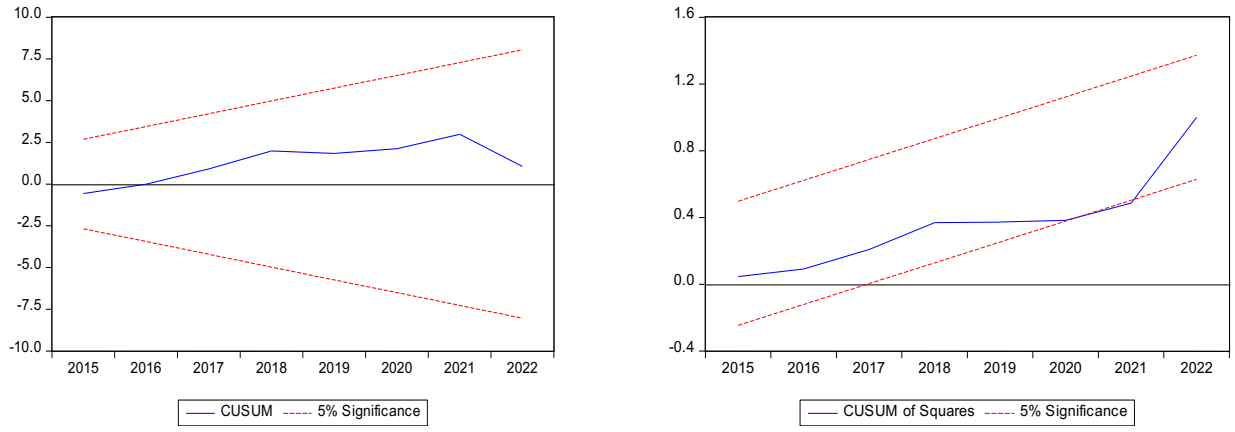
Sensitivity Analyses

Test	F-statistic	Conclusion
Breusch-Godfrey LM Test	0.39	No Serial Correction
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.00	No Homoscedastic
Ramsey RESET Test	0.23	Model is Correctly Specified
Jarque-Bera Normality Test	0.12	Residuals are Normally Distributed

CUSUM and CUSUM Squared Test

Figure 1

CUSUM and CUSUM Squared Test



In order to determine whether a structural split exists, the CUSUM and CUSUM squared test is run. In addition, the H_0 shows the structural stability of the coefficients. Thus, no proof of structural instability at the model is evident. The H_0 is rejected because the CUSUM and CUSUM squared sequence lie inside the critical zone which confirm that the coefficient of the model is reliable.

Conclusion & Policy Recommendation

Conclusion

The present research focuses on how FII and FDI combinedly affect poverty in the context of Pakistan. Time series data from 1980 to 2024 were used in this investigation. The ARDL approach is employed for data estimation. The long-run and short-run coefficient results are significant in case of UNEMP and FII×FDI apart from DGS and DCPSB where the coefficients are significant in long run alone. It is vital to note that the joint effect of FII×FDI is significant and according to the hypothesis of the study.

Policy Recommendation

Based on the empirical results which indicate that FII and FDI have reduced poverty, the policy makers can consider the following policy recommendations:

1. Implement the policies to surge access to banking services for the underserved populations - Promote the plate form of mobile banking and digital financial services - Reassure microfinance institutions to expand their reach to dampen poverty at large.
2. Develop robust regulations in the financial services to ensure stability and protect consumers - Implement measures to prevent predatory lending practices and to enhance the transparency in financial institutions for addressing poverty.
3. Offer targeted incentives for FDI in sectors which generate employment for low-income groups. There is an utmost need to develop policies for encouraging technology transfer and skill development through FDI so that the linkages between foreign investors and local small and medium enterprises is promoted to lower poverty pressures.
4. It is essential to invest in physical and digital infrastructure for supporting financial services and FDI towards poverty reduction.
5. To invest in education and vocational training to improve employability, promote financial literacy programs to help individual be employment and less victims of poverty.

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