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Analyzing the Relationship between Domestic Interest Rates and FDI Inflows: Evidence from Pakistan

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Abstract
The aim of this study is to examine the influence of domestic interest rates on foreign direct investment in Pakistan. Specifically, the research seeks to assess the effects of domestic interest rates, gross domestic product per capita, merchandise exports, and unemployment on FDI inflows. By analyzing these factors, the study aims to provide insights into the determinants of FDI in Pakistan's economy. Understanding how domestic interest rates interact with other macroeconomic variables can offer valuable information for policymakers and investors alike. To estimate the relationship between domestic interest rates and foreign direct investment in Pakistan, this study utilizes various econometric techniques. Firstly, the Augmented Dickey-Fuller (ADF) test is employed to assess the stationarity of the variables involved in the analysis. This test helps ensure that the data used in the regression analysis is suitable for further analysis. Subsequently, the study employs the Autoregressive Distributed Lag (ARDL) model to estimate the long-run and short-run effects of domestic interest rates, Gross Domestic Product (GDP) per capita, merchandise exports, and unemployment on FDI inflows. The ARDL model is particularly useful for analyzing the dynamic relationships among variables over time. In addition to these main techniques, the study conducts various diagnostic tests to assess the robustness of the results obtained from the ARDL model. These diagnostic tests may include tests for autocorrelation, heteroscedasticity, and multicollinearity, among others. These tests help ensure the reliability and validity of the regression results. The secondary data used in this study covers the period from 1972 to 2014 and is collected from reputable sources such as the economic survey of Pakistan and the World Bank database. By employing rigorous econometric techniques and conducting thorough diagnostic tests, the study aims to provide robust insights into the relationship between domestic interest rates and FDI in Pakistan. The findings of the study suggest that several factors influence foreign direct investment (FDI) in Pakistan. Firstly, domestic interest rates, Gross Domestic Product (GDP) per capita, and unemployment exhibit a positive and significant relationship with FDI inflows. This implies that lower interest rates, higher GDP per capita, and lower unemployment rates tend to attract more foreign investment into the country. Conversely, the study finds that merchandise exports are significantly and negatively associated with FDI. This could indicate that higher levels of merchandise exports may be perceived as reducing the attractiveness of Pakistan as an investment destination, possibly due to concerns about competitive pressures or economic stability. Based on these results, the study concludes that policymakers should focus on regulating interest rates to optimize FDI inflows. Maintaining interest rates at a level that is conducive to attracting foreign investors, while also considering the needs of domestic investors, can help maximize the benefits derived from FDI for Pakistan's economy. By implementing policies that foster a favorable investment climate, Pakistan can enhance its ability to attract and retain foreign investment, thereby promoting economic growth and development.

Keywords: Domestic interest rates, Foreign Direct Investment, Pakistan, ARDL model, macroeconomic variables
JEL Codes: F21, F41, E43

1. INTRODUCTION

The Organization for Economic Co-operation and Development (OECD) offers a comprehensive definition of Foreign Direct Investment (FDI) through its benchmark definition from 1996. FDI, according to this definition, represents an investment that establishes a lasting relationship between a resident entity in one economy, referred to as the foreign direct investor or parent enterprise, and an enterprise resident in another economy, termed the FDI enterprise, affiliate enterprise, or foreign affiliate. Central to the concept of FDI is the notion of long-term involvement. Investments categorized as FDI are characterized by a sustained and enduring commitment by the foreign investor to the enterprise in the host economy, reflecting a genuine and lasting interest. Moreover, FDI typically entails a degree of control exercised by the foreign direct investor over the FDI enterprise. This control enables the investor to influence strategic decisions and operational activities of the enterprise, aligning its activities with the investor's broader objectives. A defining feature of FDI is its cross-border nature. FDI involves capital flows across national boundaries, with funds originating from one country being deployed to establish or acquire

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enterprises in another country. This international aspect of FDI underscores its significance as a driver of global economic integration and interdependence. Equity ownership is another fundamental aspect of FDI. Foreign direct investors typically acquire equity stakes or ownership interests in the FDI enterprise, thereby establishing a direct financial stake in its performance and outcomes. This equity ownership provides investors with a tangible and direct interest in the success and profitability of the enterprise.

The recent wave of globalization has prompted developing countries to increasingly prioritize attracting Foreign Direct Investment (FDI) as a means of driving economic growth and development. Countries such as China, Korea, Malaysia, and Singapore have notably benefited from significant inflows of FDI, leveraging these investments to bolster their industrial and economic capacities. However, the global financial crisis of 2007 had a significant impact on FDI flows worldwide. In 2007, FDI inflows experienced a notable decline of 11.7%, followed by a further contraction of 3.2% in 2008 and 2009. Despite this downturn, FDI inflows rebounded in 2010, stabilizing at a growth rate of 4.9%. This resilience underscores the enduring importance of FDI as a driver of economic activity and growth, even in the face of significant global economic challenges. Indeed, FDI continues to be recognized as a critical factor in fostering economic development, job creation, technology transfer, and infrastructure enhancement in host countries.

While the financial crisis prompted a temporary disruption in FDI flows, the subsequent recovery and stabilization of FDI levels underscore its enduring significance as a catalyst for economic progress. As countries navigate the complexities of the global economy, attracting and facilitating FDI inflows remains a key policy priority for many nations seeking to achieve sustainable development and prosperity. Foreign Direct Investment (FDI) is widely regarded as a powerful driver of economic growth, particularly in developing countries. Economic theory often prescribes FDI as a remedy for nations with low levels of growth, recognizing its potential to catalyze economic development. FDI plays a crucial role in helping sluggish economies break free from the poverty trap by facilitating resource allocation, boosting employment, and stimulating industrialization.

One of the key benefits of FDI is its ability to enhance human capital and strengthen competition within domestic markets. Additionally, FDI often leads to the adoption of new technologies and innovative practices, which can have far-reaching effects on local economies. By introducing advanced technologies and management techniques, FDI inflows contribute to the modernization of domestic industries and increase their competitiveness on a global scale. Furthermore, FDI inflows can result in significant improvements in domestic financial markets by increasing capital availability and lowering borrowing costs for local businesses. This, in turn, stimulates further investment and economic activity, ultimately driving overall growth and efficiency in the recipient country.

Developing countries, such as Pakistan, recognize the critical importance of foreign investment in stimulating their economies. Despite its potential, Pakistan's position in attracting Foreign Direct Investment (FDI) has been relatively modest compared to other nations. According to Khan and Kim (1999), Pakistan ranked 51st out of 82 countries based on its average FDI inflows from 2007 to 2011. During this period, Pakistan's contribution to global FDI stood at 0.19%, as reported by the Economist Intelligence Unit. Pakistan's appeal to investors lies in its significant population of approximately 140 million people, making it the world's seventh most populous country. Additionally, Pakistan boasts abundant natural resources, further enhancing its attractiveness to potential investors. Froot and Stein (1991) highlight these inherent assets as factors that could potentially draw foreign investment into the country. However, despite these advantages, Pakistan has faced challenges in effectively harnessing FDI to drive economic growth and development. The significance of Foreign Direct Investment (FDI) has made it a subject of extensive discussion among economists and policymakers. There is a growing interest in understanding the dynamics of FDI and its interactions with various macroeconomic, microeconomic, social, and political factors. This paper seeks to contribute to this discourse by examining the impact of domestic interest rates, a key determinant of FDI, on foreign direct investment. Additionally, it explores the effects of FDI on three other variables: gross domestic product (GDP) per capita, unemployment, and merchandise exports. Studies by Anna (2012), Chakrabarti (2001), and Singhania (2011) have established a positive relationship between FDI and GDP. They argue that FDI inflows stimulate economic growth by increasing GDP, which in turn creates more investment opportunities, thereby attracting foreign investors. This positive feedback loop underscores the importance of understanding the relationship between FDI and GDP, especially in the context of economic development and investment promotion.

The relationship between Foreign Direct Investment (FDI) and international trade is often likened to two sides of the same coin, as highlighted by Ruggiero (1996). These two variables tend to go hand in hand, with FDI exerting significant influence on a country's trade dynamics. FDI has the potential to catalyze a breakthrough in exports for domestic sectors through spill-over effects, as noted by Harrison (1993). By introducing new technologies, management practices, and access to international markets, FDI can stimulate demand for domestic firms, thereby contributing to increased exports. Moreover, FDI can foster export-based production, leading to improvements in export performance. This alignment between FDI inflows and export-oriented activities can have a positive impact on a country's trade balance and overall economic growth. Additionally, exports have been shown to enhance productivity, which in turn can attract further FDI inflows. This symbiotic relationship underscores the mutually reinforcing nature of FDI and international trade in driving economic development and competitiveness on the global stage. Furthermore, FDI is often associated with positive outcomes for the labor market of the host country, particularly in terms of reducing unemployment. The establishment of foreign-owned enterprises and the expansion of existing businesses through FDI can create job opportunities, thereby contributing to overall employment levels and economic welfare. Indeed, the impact of Foreign Direct Investment (FDI) on employment can exhibit variability across

different economies, influenced by factors such as the nature and type of investment pursued. The results of empirical studies suggest that the relationship between FDI and employment outcomes may differ based on the specific characteristics of the investment. In the case of greenfield investments, where a parent company establishes new operations in a foreign country from scratch, the effect on employment tends to be positive. This is because greenfield investments typically involve the creation of new job opportunities within the host economy as the foreign company establishes its operations and expands its workforce. Consequently, increased FDI inflows through greenfield investments can contribute to job creation and reduce unemployment levels in the host country.

Conversely, the impact of FDI on employment may take a different trajectory when investments involve buyouts or acquisitions of existing domestic firms. Research indicates that in such cases, the effect of FDI on employment tends to be negative. This is because buyouts or acquisitions may lead to restructuring, consolidation, or downsizing of operations within the acquired firms, potentially resulting in job losses or reduced employment opportunities for local workers. Therefore, the employment outcomes associated with FDI can vary based on the type of investment undertaken, with greenfield investments typically associated with positive employment effects, while buyouts or acquisitions may result in more mixed or adverse employment outcomes. Understanding these nuances is crucial for policymakers and stakeholders seeking to harness the potential benefits of FDI while mitigating its potential downsides on employment and labor markets. Indeed, the relationship between interest rates and foreign direct investment (FDI) is a topic of considerable interest among economists and policymakers. Interest rates play a crucial role in influencing investment decisions and capital flows, both domestically and internationally.

Real interest rates, which account for inflation, represent the return on investment for investors (Anna, 2012; Singhania, 2011). When real interest rates are higher, investors are incentivized to channel their investments into areas where they can earn higher returns. In the context of FDI, higher interest rates can attract foreign investors seeking greater profitability on their investments. This is because higher interest rates offer the potential for higher returns on investment, making the host country a more attractive destination for foreign capital. Additionally, interest rates not only impact current investment decisions but also influence future streams of investment. Changes in interest rates can affect the cost of borrowing and the attractiveness of investment opportunities, thereby influencing the level of FDI inflows into a country.

2. LITERATURE REVIEW

The relationship between foreign direct investment (FDI) and interest rates has been extensively studied in various contexts and regions, often in conjunction with other macroeconomic variables such as employment levels, gross domestic product (GDP), and merchandise exports. Interest rates play a dual role in the context of FDI. On one hand, they represent the cost of borrowing for investors and the return on savings for lenders. When adjusted for inflation, interest rates provide a nuanced measure of FDI inflows, reflecting the real return on investment (Singhania, 2011). Numerous studies have explored the association between interest rates and FDI inflows, seeking to understand how changes in interest rates influence investment decisions by both domestic and foreign investors. Higher interest rates can attract foreign capital by offering the potential for greater returns on investment, while lower interest rates may stimulate domestic investment activity by reducing the cost of borrowing. In addition to interest rates, other macroeconomic variables such as employment levels, GDP growth, and merchandise exports also play crucial roles in shaping FDI inflows. These variables can affect the overall investment climate, market opportunities, and investor confidence, thereby influencing the attractiveness of a country as a destination for FDI. By examining the interplay between interest rates and other macroeconomic factors, researchers aim to provide insights into the determinants of FDI inflows and the potential policy implications for fostering investment and economic growth in different regions and economies.

Investors are naturally inclined to seek out investment opportunities where they can minimize costs and maximize returns. This often leads them to favor production processes associated with lower costs and higher interest rates. Chakrabarti's (2001) findings echo this trend, revealing a positive correlation between interest rates and Foreign Direct Investment (FDI) in the context of the Indian economy. This suggests that higher interest rates can serve as an incentive for investors, encouraging greater FDI inflows as they pursue opportunities offering potentially higher returns. In essence, the relationship between interest rates and FDI underscores the importance of financial incentives in driving investment decisions, particularly in emerging markets like India.

In their investigation, Lanyi and Saracoglu (1983) delved into the complex interplay between interest rates and investment across a diverse set of 21 developing nations. Employing the discount factor method under conditions of uncertainty, they uncovered a notable positive correlation between investment levels and prevailing interest rates. However, a nuanced perspective emerged from the research conducted by Greene and Villanueva (1990), who explored the determinants of Foreign Direct Investment (FDI) across 23 less developed countries spanning the period from 1975 to 1987. Their analysis unveiled a somewhat unexpected finding, indicating that real interest rates exerted a negative influence on private investment within the examined economies.

Further delving into this investigation, Aysan et al. (2005) meticulously scrutinized data encompassing the tumultuous decades from the 1980s to the 1990s across Middle Eastern and North African nations. Their objective was to unravel the intricate web of factors influencing the lackluster growth trajectory of private investment in the region. Their meticulous analysis

unveiled a striking revelation: the real interest rates wielded a palpable adverse influence on investment ventures undertaken by businesses operating within these economies.

The rationale behind this divergence in perspective, as posited by Greene and Villanueva (1990), lies in the fact that a surge in interest rates amplifies the real cost of capital, thereby curtailing the level of private investment. Consequently, investment endeavors tend to exhibit a positive response to elevated real interest rates, particularly within the context of underdeveloped financial markets prevalent in less developed countries.

Shifting the focus to the nexus between FDI and GDP, Qaiser et al. (August 2011) conducted a comprehensive regression analysis on a sample comprising seven nations. Their aim was to elucidate the dynamics of FDI vis-à-vis the GDP levels across these economies. The findings of their investigation unveiled a statistically significant and positive relationship between GDP and FDI, indicating that fluctuations in GDP exert a notable impact on the influx of foreign direct investment.

The findings of Thirunavukkarasu et al. (2013) shed light on the nuanced dynamics between FDI and economic growth in the context of Sri Lanka. While their research suggests a modest short-term relationship between FDI inflows and economic growth, the long-term perspective reveals a more robust and positive correlation. This underscores the importance of considering the temporal dimension when analyzing the impact of FDI on economic development. Moreover, their use of regression analysis and co-integration tests adds rigor to their investigation, providing valuable insights into the nature of the relationship between FDI and GDP. By uncovering the long-term positive association between these variables, the study offers valuable implications for policymakers and stakeholders seeking to leverage FDI as a catalyst for sustained economic growth. Furthermore, the study contributes to the broader literature on FDI and economic growth by offering empirical evidence specific to the Sri Lankan context. This context-specific analysis enriches our understanding of the complex interactions between foreign investment inflows and the macroeconomic performance of individual countries, offering valuable lessons for both theory and practice in the field of international economics and development.

Zhang's assertion regarding the impact of foreign direct investment (FDI) on economic growth highlights a crucial mechanism through which countries can advance technologically and economically. FDI brings with it not only capital but also knowledge, expertise, and technology transfer, which can catalyze innovation and progress in host countries. By engaging with global markets and industries, domestic firms can learn best practices, adopt new technologies, and improve their efficiency and competitiveness. Furthermore, Buckley et al.'s perspective adds depth to our understanding of how FDI can drive economic growth. Beyond the direct financial injections, FDI contributes to human capital development by providing training and skills enhancement opportunities to local workers. This transfer of knowledge and expertise not only improves the productivity of the labor force but also builds a foundation for sustained economic development.

In essence, FDI acts as a conduit for knowledge diffusion and technology dissemination, fueling innovation, productivity gains, and overall economic expansion in host countries. As such, policies aimed at attracting and facilitating FDI can be instrumental in fostering long-term sustainable growth and development.

Althukorala's insights shed light on the multifaceted benefits that FDI offers to developing nations. By leveraging external resources in the form of technology, capital, and skills, FDI presents an opportunity for these countries to accelerate their industrialization process. This influx of foreign investment not only fosters economic growth but also plays a crucial role in poverty reduction and job creation, thereby contributing to broader socio-economic development objectives.

However, the extent to which FDI impacts economic growth is contingent upon a variety of factors inherent to each country's context. As Akinlo suggests, the effectiveness of FDI hinges on several key determinants, including the country's technological capabilities, savings rate, and trade policies. Nations with advanced technological infrastructure, high savings rates, and open trade systems are better positioned to harness the full potential of FDI and maximize its positive effects on economic development. The significance of Foreign Direct Investment (FDI) as a source of capital cannot be overstated, particularly for developing countries striving to bolster their economic growth. Elevated levels of economic growth in these nations serve as a magnet for international investors, enticing them to channel their resources into promising markets. Moreover, FDI facilitates capital accretion within host economies, thereby fostering an environment conducive to innovation and technological advancement through the infusion of foreign expertise and technologies.

However, it is important to acknowledge the nuanced perspectives on the impact of FDI, as elucidated by scholars like Adams (2009) drawing from dependency theory. According to this theory, foreign investment may not always yield uniformly positive outcomes for developing countries. Dependency theorists caution against potential pitfalls such as adverse effects on income distribution and economic growth resulting from the influx of FDI. By shedding light on these complexities, Adams underscores the importance of critically assessing the implications of FDI within the broader socio-economic context of developing countries. While FDI can indeed fuel economic growth and development, policymakers must remain vigilant to mitigate any adverse consequences and ensure that foreign investment aligns with the overarching goals of sustainable and inclusive development. In contrast to the cautionary stance of dependency theorists, researchers like Khan (2007) have identified a positive correlation between Foreign Direct Investment (FDI) inflows and economic growth, particularly in the context of Pakistan. Khan's findings suggest that FDI tends to exhibit a favorable dependence on economic growth, provided that the domestic financial system has achieved a certain level of development, underscoring the significance of institutional factors in shaping the impact of FDI on growth dynamics.

Similarly, the study conducted by Ahmad et al. (2003) delved into the relationship between FDI, exports, and output in Pakistan over the period from 1972 to 2001. Their analysis revealed a significant and positive effect of FDI on output,

highlighting the potentially transformative role of foreign investment in driving economic expansion and enhancing productive capacity within the country. These findings contribute to the ongoing discourse on the multifaceted relationship between FDI and economic development, offering insights into the varying dynamics at play across different national contexts. As policymakers navigate the complexities of attracting and managing FDI inflows, empirical evidence such as that provided by Khan and Ahmad et al. serves as a valuable resource for informed decision-making aimed at fostering sustainable growth and development.

In contrast to the findings suggesting a positive correlation between GDP and FDI inflows, Falaki (2009) identified a different relationship in their study. According to Falaki's research, the association between Gross Domestic Product (GDP) and Foreign Direct Investment (FDI) inflows was characterized by a negative correlation, and this relationship was deemed statistically insignificant.

Falaki's findings introduce a divergent perspective into the discourse surrounding the interplay between FDI and economic growth. While some studies have highlighted the potential for FDI to stimulate economic expansion and enhance GDP levels, Falaki's results suggest a more nuanced relationship or possibly other underlying factors influencing the dynamics between FDI inflows and GDP growth.

Understanding the discrepancies in findings across different studies can provide valuable insights into the complex nature of FDI's impact on economic development. Further research and analysis may be warranted to explore the underlying mechanisms and contextual factors that contribute to the varying empirical results observed in studies examining the relationship between FDI and GDP. Foreign Direct Investment (FDI) has implications for the export sector of recipient countries, particularly from the perspective of export supply. FDI can positively influence the productivity of goods intended for export markets, thereby contributing to enhanced export performance. Conversely, a robust export sector can also stimulate productivity growth, creating an environment conducive to attracting foreign investment. This reciprocal relationship between FDI and exports underscores their intertwined dynamics in driving economic development.

Supporting this notion, scholars like Hailu (2010) contend that exports play a pivotal role in enhancing productivity and fostering economic growth. They argue that exports serve as a catalyst for mobilizing labor and capital accumulation, thereby fueling productivity gains. Furthermore, the emphasis on export-oriented growth strategies underscores the belief among economists that exporting firms are incentivized to adopt modern technologies and innovative practices to remain competitive in global markets. The process of "learning by doing" inherent in export-oriented activities enables firms to acquire valuable knowledge and expertise, enabling them to outperform their competitors. This continuous learning and improvement cycle not only enhances firms' competitiveness but also contributes to overall productivity enhancement within the economy. Moreover, the expansion of export activities often leads to economies of scale, resulting in lower production costs for exporting firms. The surplus generated from export revenues provides much-needed foreign exchange, particularly in developing countries with limited foreign reserves. This foreign exchange can then be utilized to import essential capital goods and intermediate inputs, further supporting economic development and industrial growth.

The relationship between foreign direct investment (FDI) and international trade is indeed symbiotic, with each influencing and reinforcing the other. When multinational corporations (MNCs) invest in foreign markets through FDI, they often establish production facilities or subsidiaries that become integrated into the global supply chain. As noted by Ruggiero (1996), this integration can lead to spill-over effects, where increased demand for inputs and services from domestic firms is generated. This increased demand, in turn, can stimulate export-oriented production by domestic firms. For example, local suppliers may be contracted by multinational corporations to provide components, raw materials, or services for their operations, thereby becoming part of the global value chain. As highlighted by Harrison (1993), such linkages between foreign affiliates of MNCs and local suppliers can boost exports by domestic firms, as they cater to the needs of these multinational operations. Moreover, FDI can directly contribute to export growth by establishing production facilities focused on export-oriented activities. When multinational corporations invest in production facilities in foreign markets, they often target export markets for their output. This export-based production not only expands the volume of goods available for export but also enhances the quality and competitiveness of these products in international markets. Additionally, the presence of export-oriented industries supported by FDI can have positive spillover effects on the overall productivity of the economy. As domestic firms become integrated into global value chains or compete with multinational operations, they may adopt more efficient production methods, technologies, and management practices. This productivity enhancement, driven by export-oriented activities, can attract further FDI by demonstrating the economy's competitiveness and potential for returns on investment.

The research conducted by Rizvi and Nishat (2009) sheds light on the relationship between foreign direct investment (FDI) and employment opportunities in three significant economies: Pakistan, India, and China. Spanning the period from 1985 to 2008, their study utilized robust econometric techniques to explore this relationship. To investigate the long-term dynamics between FDI and employment, the researchers employed the Pedroni (1999) test of panel co-integration. This test allowed them to assess whether there was a stable, long-run relationship between FDI inflows and employment levels in the selected countries over the study period. Additionally, they utilized the Seemingly Unrelated Regression (SUR) method to examine the direct impact of FDI on employment. Contrary to expectations, the results of these tests revealed that FDI did not lead to significant increases in employment opportunities in India, China, or Pakistan. Despite the conventional belief that FDI inflows stimulate job creation by fostering economic growth and investment, the findings of this study suggest otherwise for

these particular economies. These results challenge the conventional wisdom regarding the employment effects of FDI and highlight the need for nuanced analysis when considering the impacts of foreign investment on labor markets. While FDI can bring various benefits to host economies, such as technology transfer and capital infusion, its role in generating employment may vary depending on factors such as industrial structure, labor market dynamics, and government policies.

In a study conducted by Nayyra Zeb and colleagues (2014), the researchers aimed to assess the impact of various factors, including foreign direct investment (FDI), on unemployment in Pakistan. Employing multiple regression analysis, the study focused on data spanning from 1995 to 2011 to explore the relationship between these variables. The findings of the study provided compelling evidence regarding the role of FDI in alleviating unemployment in Pakistan. Through rigorous statistical analysis, the researchers observed a significant negative correlation between FDI inflows and unemployment levels. In other words, as FDI increased, unemployment rates tended to decrease, indicating a beneficial effect of foreign investment on the labor market in Pakistan. This result underscores the potential of FDI as a driver of employment generation and economic growth in the country. By attracting foreign capital and fostering business expansion, FDI can contribute to job creation, skill development, and overall economic prosperity. The study's findings highlight the importance of policies and initiatives aimed at promoting and facilitating FDI inflows to address unemployment challenges effectively. However, it is essential to consider the broader context and factors influencing unemployment dynamics in Pakistan. While FDI may play a significant role, other socio-economic variables, such as education, industrial development, and labor market policies, also impact employment outcomes. Therefore, a comprehensive approach that addresses multiple facets of economic development is crucial for achieving sustainable reductions in unemployment rates and fostering inclusive growth.

The impact of foreign direct investment (FDI) on unemployment in developing countries has been the subject of scrutiny in various studies. Aktar and Ozturk (2009) delved into this issue by examining the relationships among FDI, exports, unemployment, and gross domestic product (GDP) in Turkey over the period 2000-2007. Employing the vector autoregression (VAR) method, they found that FDI had no discernible effect on reducing unemployment during that timeframe.

Similarly, Hisarciklilar and colleagues (2009) conducted an analysis of the effects of FDI on employment generation in Turkey from 2000 to 2007. Their study revealed a negative relationship between foreign investment and employment, indicating that FDI did not lead to significant job creation during the specified period. The researchers attributed these findings to the shifting activities of foreign corporations from low-tech to medium- and high-tech industries in the manufacturing sector. These studies underscore the complexity of the relationship between FDI and unemployment in developing countries. While FDI is often seen as a potential source of employment opportunities, the actual impact may vary depending on various factors such as the nature of investment, sectoral composition, and economic policies. Understanding these nuances is essential for policymakers and stakeholders seeking to harness the potential benefits of FDI while addressing unemployment challenges effectively.

3. ECONOMIC MODELING

To analyze and predict, an economic model is constructed, which represents the economic situation of different units under certain assumptions and abstractions. In this study, we investigate the impact of the domestic interest rate on foreign direct investment (FDI) in the case of Pakistan. Time series data spanning from 1972 to 2014 has been utilized, collected from the database of the World Bank and economic surveys of Pakistan. The analysis of this study begins with a simple regression model comprising five variables. Among these variables, domestic interest rate, unemployment, merchandise exports, and gross domestic product per capita are considered as regressors, while foreign direct investment is treated as the regressand. The functional form of the model is:

$FDIt = f(INTt, UNEMt, MEt, GDPPCt)$

FDI= Foreign direct investment
INT= Domestic interest rate
UNEM= Unemployment
ME= Merchandise exports
GDPPC= Gross domestic product per capita

4. EMPIRICAL RESULTS AND DISCUSSION

Table 1 provides descriptive statistics for the variables under consideration. The "Mean" row shows the average values for each variable: LFDI (Foreign Direct Investment), LINT (Interest Rate), LGDPPC (GDP per Capita), LM_EXPORT (Log of Exports), and LUNEM (Unemployment Rate). The "Median" row represents the median values, which indicate the middle values of the dataset for each variable. The "Maximum" and "Minimum" rows display the maximum and minimum values observed in the dataset for each variable, respectively. The "Std. Dev." row shows the standard deviation, which measures the dispersion or spread of the values around the mean for each variable. Skewness measures the asymmetry of the distribution of each variable. Negative skewness indicates that the distribution is skewed to the left, while positive skewness indicates skewness to the right. Kurtosis measures the peakedness or flatness of the distribution of each variable. Higher values of kurtosis indicate more peakedness compared to a normal distribution. The "Jarque-Bera" statistic and its associated probability test the null hypothesis that the data follow a normal distribution. A low probability suggests evidence against the null hypothesis. The "Sum" row displays the sum of values for each variable observed in the dataset. The "Sum Sq. Dev." row

represents the sum of squared deviations from the mean for each variable, which is useful for calculating variance and standard deviation.

Table 1: Descriptive Statistics

	LFDI	LINT	LGDPPC	LM_EXPORT	LUNEM
Mean	19.37465	2.382897	10.55949	22.48169	0.942828
Median	19.63405	2.302585	10.62236	22.70684	1.654411
Maximum	22.44425	2.995732	10.93459	23.99984	2.112635
Minimum	15.20180	1.791759	10.06093	20.33640	-1.078810
Std. Dev.	1.779776	0.252259	0.261910	1.000217	1.072381
Skewness	-0.337347	0.425581	-0.344310	-0.326738	-0.513315
Kurtosis	2.509883	3.173935	2.009602	2.170159	1.663720
Jarque-Bera	1.188022	1.289328	2.485771	1.905933	4.851007
Probability	0.552108	0.524839	0.288550	0.385595	0.088434
Sum	794.3605	97.69879	432.9393	921.7494	38.65594
Sum Sq. Dev.	126.7041	2.545385	2.743881	40.01738	46.00003

Table 2 presents pairwise correlations between the variables LFDI (Foreign Direct Investment), LINT (Interest Rate), LGDPPC (GDP per Capita), LM_EXPORT (Log of Exports), and LUNEM (Unemployment Rate). Each cell in the table represents the correlation coefficient between two variables. For example, the correlation coefficient between LFDI and LINT is 0.472983, indicating a positive correlation between Foreign Direct Investment and Interest Rate. The "t-Statistic" column shows the t-statistic associated with each correlation coefficient, which is used to test the null hypothesis that the true correlation coefficient is zero. Higher absolute values of t-statistics indicate stronger evidence against the null hypothesis. The "Probability" column displays the probability associated with each correlation coefficient, representing the significance level of the correlation. Lower probabilities indicate stronger evidence against the null hypothesis of zero correlation. For instance, the correlation coefficient between LFDI and LGDPPC is 0.953604, with a t-statistic indicating the strength of this correlation and a corresponding probability indicating its significance. Overall, this table provides insights into the relationships between the variables, indicating the strength and significance of their correlations.

Table 2: Correlation

Variables	LFDI	LINT	LGDPPC	LM_EXPORT	LUNEM
LFDI	1.000000				
LINT	0.472983	1.000000			
LGDPPC	0.953604	0.440543	1.000000		
LM_EXPORT	0.945697	0.448299	0.991918	1.000000	
LUNEM	0.877568	0.392780	0.908906	0.909867	1.000000

Table 3

Augmented Dickey-Fuller Unit root test		
At level		
Variables	T-Statistic	Prob.
LGDPC	-1.195204	0.6672
LINT	-2.903294	0.0541
LUNEM	-1.738472	0.4048
LFDI	-2.445196	0.1365
LMEXPORT	-1.792830	0.3789
At first difference		
LGDPC	-4.913764	0.0003
LINT	-5.343360	0.0001
LUNEM	-3.973818	0.0038
LFDI	-7.596520	0.0000
LMEXPORT	-6.825677	0.0000

Table 3 presents the results of the Augmented Dickey-Fuller (ADF) unit root test for the variables at both the level and first difference. At the level, the test statistics for each variable are provided, along with the associated probabilities (Prob.). The variables included in the test are LGDPC (GDP per Capita), LINT (Interest Rate), LUNEM (Unemployment Rate), LFDI (Foreign Direct Investment), and LMEXPORT (Log of Exports). For instance, at the level, the test statistic for LGDPC is -1.195204 with a probability of 0.6672, suggesting that at the level, GDP per Capita is not stationary as the probability is higher

than conventional significance levels (such as 0.05). At the first difference, the test statistics and probabilities are provided for each variable. First differencing is commonly used to achieve stationarity in time series data. In this case, all variables (LGDPC, LINT, LUNEM, LFDI, and LMEXPORT) exhibit lower probabilities (ranging from 0.0000 to 0.0038), indicating that after differencing, these variables become stationary. This suggests that taking the first difference of these variables removes any trend or non-stationarity present at the level. These results are essential for determining the appropriate specification for time series analysis and modeling, ensuring that the variables used in the analysis meet the stationarity assumptions required for accurate estimation and inference.

Table 4 presents the results of the Autoregressive Distributed Lag (ARDL) bound testing approach for the dependent variable LFDI (Foreign Direct Investment). The table includes critical values for the F-statistics, which are used to test the null hypothesis of no cointegration. Two sets of critical values are provided at different confidence levels: 90% and 99%. These critical values serve as thresholds for determining the significance of the F-statistic. The lower and upper bounds associated with each confidence level indicate the range within which the F-statistic must fall for the null hypothesis to be rejected. In this case, the calculated F-statistic is 6.666192. To interpret this result, one would compare it against the critical values provided. If the F-statistic falls outside the range defined by the critical values, the null hypothesis of no cointegration is rejected, suggesting the presence of cointegration among the variables.

Table 4

ARDL Bound Testing Approach
Dependent Variable LFDI

Critical values	F-Statistics 6.666192	
	Lower Bound	Upper bound
90%	2.45	3.52
99%	3.74	5.06

Table 5 presents the estimated long-run coefficients obtained using the Autoregressive Distributed Lag (ARDL) approach, with the dependent variable being LFDI (Foreign Direct Investment). For each regressor (LINT, LGDPC, LUNEM, LMEXPORT), the table provides the estimated coefficient, its standard error, the t-ratio, and the associated probability value (Prob), indicating the significance level of the coefficient. The coefficient for LINT (Interest Rate) is estimated to be positive, indicating that a one-unit increase in the interest rate is associated with an increase in LFDI. However, this coefficient is marginally significant at the 10% level. On the other hand, the coefficient for LGDPC (GDP per Capita) is statistically significant at conventional levels (less than 0.01), suggesting a strong positive relationship between GDP per Capita and LFDI. The coefficient for LUNEM (Unemployment Rate) is marginally significant at the 10% level, implying a weak relationship between the unemployment rate and LFDI. Similarly, the coefficient for LMEXPORT (Log of Exports) is statistically significant at the 5% level, indicating a significant impact of exports on LFDI. Lastly, the intercept coefficient (C) is statistically significant at conventional levels, suggesting that even in the absence of the explanatory variables, there is a significant impact on LFDI. These coefficients provide insights into the long-run relationships between the regressors and the dependent variable, helping to understand the factors influencing Foreign Direct Investment over time.

Table 5

Estimated Long Run Coefficient using the ADRL Approach
Dependent variable is LFDI

Regressor	Coefficients	Standard-Error	T-Ratio (Prob)
LINT	0.849980	0.443842	1.915053(0.0654)
LGDPC	13.977965	4.32362	3.233198(0.0030)
LUNEM	0.407514	0.238197	1.710825(0.0978)
LMEXPORT	-2.521001	1.222396	-2.062344(0.0482)
C	-74.453036	19.952594	-3.731497(0.0008)

Table 6 presents the results of the Vector Error-Correction Model (VECM), with LFDI (Foreign Direct Investment) as the dependent variable. For each regressor (D(LINT), D(LM_EXPORT), D(LM_EXPORT(-1)), D(LM_EXPORT(-2)), D(LUNEM), D(LGDPC)), the table provides the estimated coefficient, its standard error, the t-ratio, and the associated probability value (Prob), indicating the significance level of the coefficient. The coefficient for D(LINT) (Change in Interest Rate) is estimated to be positive but marginally significant at the 10% level, suggesting a weak relationship between changes in interest rates and LFDI. The coefficients for changes in LM_EXPORT (Changes in Exports) at lag 1 and lag 2, i.e., D(LM_EXPORT(-1)) and D(LM_EXPORT(-2)), are not statistically significant, indicating no significant impact of changes in exports on LFDI in the short term. Similarly, the coefficient for D(LUNEM) (Change in Unemployment Rate) is not statistically significant, implying no significant relationship between changes in the unemployment rate and LFDI. In contrast, the coefficient for D(LGDPC) (Change in GDP per Capita) is statistically significant at less than 0.01 level, indicating a strong

positive relationship between changes in GDP per Capita and LFDI. The Error Correction Term (ECM(-1)) coefficient is highly significant at a probability of 0.0000, suggesting a strong adjustment mechanism towards the long-run equilibrium between the variables. Additionally, the table provides various statistics such as R-squared, Adjusted R-squared, Standard Error of regression, Akaike Information Criterion (AIC), Schwarz Criterion, among others, providing insights into the overall fit and performance of the model.

Table 6

Vector Error-Correction Model (VECM)

Dependent variable is LFDI

Regressor	Coefficients	Standard-Error	T-Ratio (Prob)
D(LINT)	0.587518	0.333044	1.764087(0.083)
D(LM_EXPORT)	0.117783	0.638203	0.184554(0.8549)
D(LM_EXPORT(-1))	0.659072	0.737263	0.893945(0.3787)
D(LM_EXPORT(-2))	1.359055	0.548814	2.476350(0.0194)
D(LUNEM)	-0.309240	0.350346	-0.882671(0.3847)
D(LGDPC)	9.661769	2.804626	3.444940(0.0018)
ECM(-1)	-0.691214	0.138624	-4.986261(0.0000)

R-squared	0.952718	Mean dependent var	19.55154
Adjusted R-squared	0.938044	S.D. dependent var	1.627401
S.E. of regression	0.405075	Akaike info criterion	1.247063
Sum squared resid	4.758476	Schwarz criterion	1.673618
Log likelihood	-14.31774	Hannan-Quinn criter.	1.400107
F-statistic	64.92688	Durbin-Watson stat	1.956615
Prob(F-statistic)	0.000000		

5. CONCLUSIONS

This research paper seeks to provide a comprehensive understanding of how domestic interest rates influence Foreign Direct Investment (FDI) within the Pakistani context. By examining data spanning over four decades, from 1972 to 2014, sourced from reputable institutions such as the World Bank and the economic survey of Pakistan, the study aims to shed light on the intricate dynamics between interest rates and FDI. Employing advanced econometric techniques, the analysis begins with ensuring data stationarity using the Augmented Dickey Fuller test. Subsequently, the study employs the Autoregressive Distributed Lag (ARDL) Co-integration approach to explore both the long-term and short-term relationships between the variables. Through this rigorous methodology, the paper aims to uncover nuanced insights into how fluctuations in domestic interest rates affect the inflow of foreign investment in Pakistan. Furthermore, by investigating co-integration among the variables, the study provides valuable insights into the sustained relationship between FDI and domestic interest rates. The findings derived from the ARDL bound testing approach offer robust evidence of a positive and statistically significant relationship between FDI and domestic interest rates, thereby contributing to the existing body of literature on the subject.

The findings of this study underscore several key relationships between different macroeconomic variables and Foreign Direct Investment (FDI) in the context of Pakistan. Firstly, the analysis indicates a positive and significant relationship between Gross Domestic Product (GDP) per capita and FDI. This suggests that as GDP per capita increases, it tends to attract more foreign investment into the country, reflecting the potential for economic growth and profitability. Secondly, the study highlights a positive and significant relationship between unemployment and FDI over an extended period. This finding implies that higher levels of unemployment in Pakistan may coincide with increased FDI inflows. This could be attributed to various factors such as availability of a large labor force at relatively lower costs, which may attract foreign investors seeking cost-effective production facilities. Thirdly, the results reveal a negative and significant relationship between merchandise exports and FDI in Pakistan. This suggests that there may be some degree of substitution or competition between exports and foreign investment. It is possible that an influx of FDI could lead to increased production for local consumption or for export to other markets, thereby reducing the need for direct export-oriented investments.

The Error Correction Model (ECM) plays a crucial role in understanding the dynamics between short-run fluctuations and long-run equilibrium in the relationship between variables. In this study, the negative and highly significant value of the ECM suggests that there is indeed convergence from the short run to the long run. Moreover, the ECM value being less than one indicates that the adjustment towards equilibrium is relatively swift, with an estimated duration of approximately one year and five months. The estimates derived from the ARDL Co-integration approach further reinforce these findings, particularly regarding the relationship between Foreign Direct Investment (FDI) and domestic interest rates in Pakistan. The positive and significant relationship between FDI and domestic interest rates indicates that higher interest rates in the host country correspond to increased foreign investment inflows. This phenomenon aligns with the observed trends in Pakistan, suggesting

that interest rate dynamics play a significant role in shaping FDI patterns in the country. Overall, these results provide valuable insights into the short-term adjustments and long-term equilibrium dynamics in the context of FDI and domestic interest rates in Pakistan. They underscore the importance of considering both short-run fluctuations and long-run trends when analyzing the impact of macroeconomic factors on foreign investment flows. Such insights can inform policymakers and investors about the potential implications of interest rate policies on FDI attraction and help in designing strategies to foster sustainable economic growth. The findings of the study underscore the critical role of government policies, particularly in managing interest rates, to optimize the benefits derived from foreign direct investment (FDI). Policymakers are urged to set interest rates at levels conducive to attracting foreign investors without compromising the interests of domestic stakeholders. This delicate balance is essential to create an environment that is both investor-friendly and supportive of domestic economic activities. Furthermore, the study emphasizes the importance of trade liberalization policies that not only benefit domestic producers and consumers but also serve to attract FDI. By adopting such policies, governments can effectively capture the attention of foreign investors and create an environment conducive to FDI inflows. These measures can pave the way for higher GDP growth, increased productivity, and technological advancements, which are instrumental in driving economic development and industrialization. Ultimately, FDI emerges as a powerful catalyst for developing nations like Pakistan to escape the poverty trap and accelerate the pace of industrialization. By leveraging FDI effectively through well-designed policies and strategic initiatives, countries can unlock new avenues for economic growth, job creation, and technological innovation, leading to sustained prosperity and development.

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