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Economic Misery, Exchange Rate, Interest Rate, and Foreign Direct Investment: Empirical Evidence from Pakistan

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Abstract

This study examines the relationship between economic misery, exchange rate, interest rate, and foreign direct investment (FDI) in Pakistan from 1972 to 2013. Using time series data sourced from various editions of Pakistan's Economic Surveys, the State Bank of Pakistan, and the World Development Indicators, the study applies the Augmented Dickey-Fuller and Phillips-Perron unit root tests to assess variable stationarity. The Autoregressive Distributed Lag approach is employed to examine cointegration among the variables. The empirical findings reveal that economic misery and political instability have a negative but statistically insignificant impact on FDI in Pakistan. In contrast, the exchange rate exhibits a positive and significant relationship with FDI over the analyzed period. Despite the vital role of exports in the economy, the study identifies a negative and insignificant impact of exports on FDI. Interest rate and GDP emerge as key determinants, both demonstrating a positive and significant relationship with FDI, suggesting that lower interest rates and higher GDP levels contribute to increased foreign investment inflows. These findings highlight the importance of macroeconomic stability and favorable investment conditions in attracting FDI. While exchange rate, interest rate, and GDP positively influence FDI, addressing economic challenges such as political instability and weak export performance remains crucial. The study provides valuable insights for policymakers, emphasizing the need to enhance economic stability, improve investment-friendly policies, and mitigate risks associated with instability to bolster Pakistan's attractiveness as a destination for foreign direct investment.

Keywords: economic misery, exchange rate, interest rate, foreign direct investment

1. INTRODUCTION

Foreign direct investment (FDI) represents a significant component of capital flows, driven by the actions of multinational corporations seeking investment opportunities in foreign markets (Agiomirgianakis, 2003). The underlying economic rationale behind international capital mobility suggests that FDI tends to flow towards countries offering higher rates of return on investment compared to others. Consequently, developing countries such as Pakistan endeavor to create an environment conducive to attracting foreign direct investment by providing security and favorable conditions for investors. The allure of high returns prompts multinational corporations to explore investment prospects in countries like Pakistan, where the potential for profitability exists. In response, policymakers in these nations enact measures aimed at fostering an investor-friendly climate, characterized by regulatory stability, legal protection, and incentives to encourage foreign investment. By offering security and comfort to investors, Pakistan aims to position itself as an attractive destination for FDI, leveraging its strategic location, abundant resources, and growing consumer market. Initiatives such as liberalizing trade policies, streamlining bureaucratic processes, and enhancing infrastructure are designed to bolster the country's appeal to multinational corporations seeking to establish or expand their presence in emerging markets. Foreign direct investment plays a pivotal role in breaking the cycle of poverty in host countries by bringing about numerous advantages. One of the key benefits is the infusion of capital into the economy, which can be utilized for various development projects, infrastructure improvements, and job creation initiatives. Additionally, FDI often brings with it advanced technology and know-how, enhancing the technological capabilities of the host country and facilitating long-term economic growth. Host countries with open economies, skilled workforces, and promising growth prospects are particularly attractive to foreign investors seeking to maximize their returns. Such countries offer a conducive environment for

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investment, characterized by favorable regulatory frameworks, political stability, and ample opportunities for market expansion. The decision to invest in a foreign country is influenced by factors such as interest rates and exchange rates. Lower interest rates may encourage investment by reducing the cost of borrowing for foreign investors, while favorable exchange rates can enhance the profitability of investments by increasing returns when converted into the investor's home currency.

Interest rates indeed play a crucial role in attracting foreign direct investment to a country. These rates, representing the cost of borrowing or the return on investment, significantly influence investment decisions made by both domestic and foreign investors (Hussain, 2018; Asif & Simsek, 2018). When interest rates are relatively high in a country, it may deter domestic investors from borrowing and investing due to the increased cost of capital. However, for foreign investors, high interest rates may present an opportunity for attractive returns on their investments. Foreign investors often seek markets where they can earn competitive returns on their investment capital. In countries with high interest rates, foreign investors may find the prospect of earning substantial returns on their investments appealing, especially when compared to the lower returns available in countries with lower interest rates. High interest rates can also signal to foreign investors that the host country's economy is stable and offers favorable investment conditions. In such cases, foreign investors may perceive the higher returns as justifying the perceived risks associated with investing in a foreign market (Iqbal, 2018; Siddiqi, 2018). Furthermore, when foreign investors see that local businesses and individuals are not investing due to high interest rates, they may perceive an opportunity to fill the investment gap and capitalize on the potential returns available in the market (Maurya, 2018; Mahmood & Aslam, 2018). This can lead to increased inflows of FDI into the country, as foreign investors seek to take advantage of the investment opportunities presented by the high interest rate environment.

Indeed, exchange rates are a critical determinant of foreign direct investment (FDI) in a country. The exchange rate, which represents the value of one currency relative to another, directly influences the cost of doing business and the potential returns on investment for foreign investors. A depreciating exchange rate, where the domestic currency weakens relative to foreign currencies, can make investments in the host country more attractive for foreign investors (Bilawal et al., 2014; Shahid & Ali, 2015; Ali & Rehman, 2015; Ali, 2015; Khan & Ahmad, 2016). This is because foreign investors can acquire assets or invest in projects in the host country at a lower cost in terms of their own currency. As a result, a depreciating exchange rate often leads to an increase in FDI inflows, as foreign investors seek to take advantage of the favorable exchange rate environment. Conversely, an appreciating exchange rate, where the domestic currency strengthens relative to foreign currencies, may deter foreign investment (Ali & Ahmed, 2016; Arshad & Ali, 2016; Ali & Naeem, 2017; Ali & Zulfiqar, 2018). A stronger domestic currency increases the cost of investments for foreign investors, potentially reducing the attractiveness of investing in the host country. Additionally, an appreciating exchange rate can erode the competitiveness of the host country's exports, potentially impacting the profitability of foreign investments that rely on export-oriented industries. However, the relationship between exchange rates and FDI is not always straightforward and can vary depending on various factors, including the economic conditions of the host country and global market dynamics. Additionally, exchange rate volatility, characterized by frequent and unpredictable fluctuations in exchange rates, can introduce uncertainty for foreign investors and impact their investment decisions (Ahmad et al., 2018).

In the context of a developing country like Pakistan, attracting foreign direct investment (FDI) is crucial for fostering economic growth, stimulating job creation, and enhancing technological transfer and innovation. To achieve this, governments often implement various policy measures aimed at creating a conducive investment environment. Among these measures, reforms in interest rates and exchange rates play a significant role in influencing the decisions of foreign investors. Interest rates, controlled by central banks, determine the cost of borrowing and the returns on investments. By adjusting interest rates,

governments can influence the attractiveness of investing in the country. Lowering interest rates can encourage investment by reducing borrowing costs for businesses and individuals, while raising interest rates may attract foreign capital seeking higher returns on investment (Bilawal et al., 2014). Similarly, exchange rates, which reflect the value of the domestic currency relative to foreign currencies, have a profound impact on FDI inflows. A favorable exchange rate, such as a depreciated domestic currency, can make investments more attractive to foreign investors by lowering the cost of entry and potentially increasing returns on investment when repatriated back to their home countries. However, despite efforts to reform interest rates and exchange rates to attract FDI, developing countries like Pakistan face challenges such as political instability and economic uncertainty, which can deter foreign investors. Political instability creates an uncertain business environment and raises concerns about property rights protection and regulatory stability, thus discouraging long-term investments. Economic misery, characterized by high inflation, unemployment, and fiscal deficits, can further undermine investor confidence and deter foreign investment. Given the significance of FDI for economic development, understanding the relationship between interest rates, exchange rates, and FDI in the context of Pakistan is essential. This study aims to contribute to the existing literature by examining how changes in interest rates and exchange rates influence FDI inflows in Pakistan, taking into account the impact of political instability and economic misery. By shedding light on these dynamics, policymakers can formulate targeted strategies to attract and retain foreign investment, thereby fostering sustainable economic growth and development.

2. LITERATURE REVIEW

Urata and Kiyota's (2001) study provides valuable insights into the relationship between exchange rates, exchange rate volatility, and foreign direct investment (FDI). By analyzing monthly data on inward FDI and the RMB/USD exchange rate from July 2005 to December 2010, the study uncovers important dynamics in FDI flows. One key finding of the study is that FDI inflows tend to increase in response to the appreciation of the RMB exchange rate. This suggests that a stronger RMB, relative to the USD, makes investing in the country more attractive for foreign investors. This finding underscores the importance of exchange rate movements in influencing investment decisions and highlights the potential benefits of a favorable exchange rate regime for attracting FDI. Additionally, the study identifies a feedback loop between FDI inflows and exchange rate dynamics. Specifically, the substantial influx of FDI into the country exerts upward pressure on the exchange rate of the RMB. This highlights the interconnected nature of FDI and exchange rate movements, with each influencing and reinforcing the other in a dynamic manner. Overall, Urata and Kiyota's (2001) research contributes to the understanding of the determinants of FDI by shedding light on the role of exchange rates and exchange rate volatility. By uncovering the relationship between these factors and FDI inflows, the study provides valuable insights for policymakers and investors seeking to understand and leverage the dynamics of international capital flows.

Barrell et al.'s (2004) study delves into the intricate relationship between exchange rate uncertainty and the geographic location of US foreign direct investment (FDI) in Europe. By examining US foreign investment in both the UK and Continental Europe across seven manufacturing industries, the research sheds light on how exchange rate volatility influences investment decisions. One notable finding of the study is the significant impact of exchange rate uncertainty on US firms' investment behavior. Specifically, the results suggest that US firms exhibit a preference for environments characterized by lower exchange rate volatility. In response to increasing exchange rate volatility, these firms tend to decrease their investment levels. This underscores the importance of stable and predictable exchange rate conditions in attracting foreign investment, as firms are averse to the risks associated with currency fluctuations. Interestingly, Barrell et al. (2004) find that market power, often considered a significant

factor in investment decisions, does not appear to have a discernible effect on US FDI in Europe. This suggests that while competitive dynamics may influence investment strategies in other contexts, exchange rate uncertainty emerges as a more salient factor shaping US firms' investment behavior in the European market. Overall, the study contributes valuable insights into the determinants of US FDI in Europe, highlighting the role of exchange rate volatility as a key consideration for multinational firms. By elucidating how firms respond to currency risk, the research offers important implications for policymakers and investors seeking to foster an environment conducive to foreign investment.

Udomkerdmongkol et al. (2006) conducted a comprehensive analysis to investigate the influence of exchange rates on US foreign direct investment (FDI) inflows across 16 emerging market countries. Employing panel data spanning from 1990 to 2002, the study aimed to elucidate the nuanced relationship between exchange rate dynamics and FDI patterns. A key finding of the research is the identification of a negative relationship between expectations of local currency depreciation and FDI inflows. This implies that when investors anticipate a depreciation of the local currency, they may exhibit reluctance to commit FDI to the respective market. Such expectations of currency devaluation likely introduce uncertainty and risk for investors, prompting a cautious approach to investment decisions. Conversely, Udomkerdmongkol et al. (2006) observed that a scenario where the local currency becomes cheaper tends to attract FDI inflows into a country. This finding underscores the importance of relative currency valuations in influencing investment flows. A depreciated local currency can enhance the competitiveness of a country's assets and exports, making it an attractive destination for foreign investors seeking cost advantages and profit opportunities. Overall, the study sheds light on the intricate interplay between exchange rates and FDI dynamics in emerging markets. By identifying the impact of currency expectations and relative currency valuations on investment decisions, the research provides valuable insights for policymakers and investors navigating the complexities of global capital flows.

Osinubi and Amaghionyeodiwe (2009) conducted a detailed analysis to explore the impact of exchange rate volatility on foreign direct investment (FDI) in Nigeria. Utilizing an error correction model and employing the Ordinary Least Squares (OLS) method of estimation, the study aimed to uncover the relationship between FDI inflows and exchange rate fluctuations using secondary time series data spanning from 1970 to 2003. The findings of the research revealed a noteworthy positive relationship between real inward FDI and exchange rate, specifically highlighting the impact of Naira depreciation on FDI inflows. This suggests that a devaluation of the Nigerian currency tended to attract higher levels of foreign investment into the country. The observed positive correlation underscores the role of relative currency valuations in shaping investment decisions, with a depreciated Naira potentially enhancing the competitiveness of Nigeria's assets and economic prospects in the eyes of foreign investors. However, the study also noted a significant negative impact of exchange rate volatility on FDI inflows, particularly attributed to the structural adjustment program (SAP) implemented in Nigeria. The volatility induced by the SAP was found to deter foreign investors, highlighting the importance of stability and predictability in exchange rate policies for fostering a conducive investment climate. Overall, findings underscore the complex relationship between exchange rate dynamics and FDI inflows in Nigeria. While currency depreciation may serve to attract foreign investment, exchange rate volatility poses a significant deterrent to FDI, emphasizing the need for policymakers to pursue measures aimed at promoting stability and confidence in the currency market to sustain and enhance foreign investment inflows.

Hunjra et al. (2010) conducted a comprehensive study to assess the impact of various macroeconomic variables on foreign direct investment (FDI) inflows in Pakistan. Employing a range of statistical techniques including the Augmented Dickey-Fuller (ADF) test for data stationarity, co-integration analysis, descriptive statistics, and Granger Causality test, the study aimed to uncover the relationships between key economic indicators and FDI inflows over the period from 1992 to 2013. The results of the study revealed several significant findings regarding the determinants of FDI inflows in Pakistan. Among

the macroeconomic variables examined, the study identified GDP growth rate and interest rate as having a significant impact on FDI inflows. Specifically, higher GDP growth rates were found to attract greater levels of foreign investment into the country, reflecting the attractiveness of a growing and expanding economy for foreign investors. Similarly, interest rates were shown to exert a significant influence on FDI inflows, indicating that the cost of borrowing and lending in the country's financial markets played a crucial role in shaping investment decisions by foreign firms. In contrast, the study found that inflation and exchange rate variables were insignificant in determining FDI inflows in Pakistan. Despite their potential relevance in influencing investment decisions, particularly in terms of price stability and currency competitiveness, the study did not find a statistically significant relationship between these variables and FDI inflows during the examined period. Overall, Hunjra et al.'s (2010) findings provide valuable insights into the macroeconomic determinants of FDI inflows in Pakistan. By highlighting the significance of GDP growth rate and interest rate while also identifying the lack of significant impact from inflation and exchange rate variables, the study offers policymakers and stakeholders important considerations for enhancing the attractiveness of Pakistan as a destination for foreign investment. Efforts to sustain robust economic growth and maintain stable interest rate environments may be particularly instrumental in attracting and retaining foreign investment in the country.

Dhakal et al. (2010) conducted a study to investigate the impact of exchange rate volatility on foreign direct investment (FDI) in select East Asian countries that have historically attracted significant FDI inflows and experienced exchange rate volatility. The study utilized annual time series data from six countries, including China (1982-2005), Indonesia (1981-2005), Malaysia (1974-2005), the Philippines (1977-2005), South Korea (1976-2005), and Thailand (1975-2005). Employing the error correction model (ECM), the researchers aimed to uncover the relationship between exchange rate volatility and FDI inflows in these countries. The findings of the study yielded intriguing results regarding the impact of exchange rate volatility on FDI. Contrary to expectations, the results indicated that exchange rate volatility had a favorable effect on foreign direct investment in the case of Pakistan. This suggests that in the context of Pakistan, increased exchange rate volatility may not necessarily deter foreign investors but could instead be associated with higher levels of FDI inflows. The study's findings have important implications for policymakers and stakeholders involved in shaping investment-related policies in Pakistan. While exchange rate volatility is typically perceived as a risk factor that could deter foreign investment due to uncertainty and potential losses associated with currency fluctuations, the results of this study suggest that in certain contexts, such volatility may actually be perceived as an opportunity or may not significantly influence investment decisions. By shedding light on the nuanced relationship between exchange rate volatility and FDI inflows in Pakistan, Dhakal et al. (2010) provide valuable insights that can inform policymakers' decisions regarding exchange rate management and investment promotion strategies. Understanding the factors that influence foreign investment decisions, including the perception of exchange rate risk, is essential for creating an environment conducive to attracting and retaining foreign investment in the country.

Ellahi (2011) conducted a comprehensive analysis to examine the impact of exchange rate volatility on foreign direct investment (FDI) in the context of Pakistan's economy. The study utilized time series data spanning from 1980 to 2010 and employed advanced econometric techniques to investigate both short-run and long-run relationships between exchange rate volatility and FDI inflows. Using the auto-regressive distributed lag (ARDL) model, Ellahi explored the dynamic relationships between exchange rate volatility and FDI over different time horizons. Additionally, the study employed the multivariate vector error correction method (VECM) to examine causality in the long-run relationship between exchange rate volatility and FDI. The findings of Ellahi's study provided valuable insights into the relationship between exchange rate volatility and FDI in Pakistan. Contrary to expectations, the results indicated that exchange rate volatility had a negative effect on FDI inflows, and this negative relationship

persisted in the long run. This suggests that increased volatility in the exchange rate may act as a deterrent to foreign investors, potentially leading to reduced levels of FDI in Pakistan over time. The study's findings have significant implications for policymakers and stakeholders involved in shaping economic and investment-related policies in Pakistan. Addressing exchange rate volatility and implementing measures to stabilize the currency could be crucial for fostering a more favorable investment climate and attracting greater levels of FDI inflows. Additionally, efforts to enhance transparency, reduce uncertainty, and improve the overall business environment may also contribute to mitigating the negative impact of exchange rate volatility on FDI. Overall, Ellahi's study contributes to the existing body of literature by providing empirical evidence on the relationship between exchange rate volatility and FDI in Pakistan, thereby informing policymakers and stakeholders about the potential implications for investment promotion strategies and economic development initiatives.

In their study, Anna et al. (2012) investigated the influence of interest rates on foreign direct investment (FDI) within the Zimbabwean economy. Gathering data from a variety of sources including the Reserve Bank of Zimbabwe, International Monetary Fund reports, World Bank reports, Ministry of Finance, and Failed Nations, the researchers utilized the classical linear regression model and ordinary least squares approach to analyze the data. The findings of Anna et al.'s study revealed that interest rates did not exert a significant impact on FDI inflows in the Zimbabwean economy. Despite the conventional expectation that interest rates might play a crucial role in shaping investment decisions, particularly for foreign investors, the empirical results suggested otherwise in the context of Zimbabwe. These findings carry important implications for policymakers and stakeholders involved in economic policymaking and investment promotion efforts in Zimbabwe. While interest rates are often considered a key determinant of investment behavior, the study's results imply that other factors may be more influential in driving FDI inflows within the Zimbabwean economy. By highlighting the limited impact of interest rates on FDI inflows, Anna et al.'s study underscores the need for a more comprehensive understanding of the factors that drive foreign investment decisions in Zimbabwe. Policymakers may need to explore alternative strategies and policies aimed at improving the overall investment climate, enhancing regulatory frameworks, reducing political risks, and addressing structural challenges to attract greater levels of FDI.

Ullah et al. (2012) conducted a study to analyze the impact of exchange rate volatility on foreign direct investment (FDI) in Pakistan. Using time series data spanning from 1980 to 2010, the researchers examined variables such as FDI, exchange rate, exchange rate volatility, trade openness, and inflation. Employing various econometric techniques including unit root tests, volatility analysis, co-integration techniques, and causality analysis, the study found that FDI was positively affected by rupee depreciation, while exchange rate volatility acted as a deterrent to FDI. Additionally, trade openness was found to increase FDI. The Granger causality test indicated that exchange rate volatility granger caused FDI, but not vice versa.

Jin and Zang (2013) investigated the impact of changes in the exchange rate on FDI, drawing on both international and domestic research. Using monthly data on FDI in China and the index of real effective exchange rate (REER) of RMB from January 1997 to September 2012, the study initially employed ordinary least squares (OLS) and Augmented Dickey-Fuller (ADF) tests to assess the statistical model. Subsequently, they examined cointegration using the Engle-Granger causality test. The results indicated that the appreciation of RMB promoted FDI in China.

Saymeh and Orabi (2013) explored the effect of interest rate, inflation rate, and GDP on real economic growth in Jordan over the period 2000-2010. Employing unit root tests (specifically the Augmented Dickey-Fuller test) and the Johansen test, the study focused on four variables and investigated their Granger causality relationships. The findings suggested that inflation caused changes in the interest rate. Regression analysis was also conducted to examine the combined influence of GDP, interest rate, and

inflation rate on economic growth, revealing that both current GDP and lagged GDP had a significant impact on the growth rate.

Siddiqui and Aumeboonsuke (2014) conducted an analysis on the relationship between foreign direct investment (FDI) inflow and interest rates (IR) using Vector Auto Regression (VAR) technique. They utilized data spanning from 1986 to 2012 for their study. The findings revealed interesting insights regarding the impact of interest rates on FDI inflows across different countries in Southeast Asia. The study observed that low interest rates in Singapore and Malaysia did not necessarily attract FDI inflows. Additionally, a one-directional relationship was identified between FDI inflow and inflation (INF) in Thailand, Singapore, and Indonesia. Specifically, the interest rates of Thailand, Indonesia, and Malaysia were found to have a negative relationship with FDI. These results shed light on the nuanced dynamics between interest rates and FDI inflows in the region, suggesting that the relationship may vary depending on the specific economic context of each country.

3. METHODOLOGY

Interest rates and exchange rates play pivotal roles in attracting foreign direct investments (FDI) into an economy, as highlighted by various studies such as Urata and Kiyota (2001), Osinubi and Amaghionyeodiwe (2009), Ellahi (2011), Jin and Zang (2013), Anna et al. (2012), Saymeh and Orabi (2013), and Siddiqui and Aumeboonsuke (2014). FDI serves as a crucial catalyst for the rapid development of a country, offering numerous benefits that contribute to economic growth and prosperity. One of the primary advantages of FDI is its potential to lift a country out of the poverty trap. By injecting foreign capital, technology, and expertise into the local economy, FDI can spur job creation, enhance productivity, and stimulate overall economic activity. Moreover, FDI often leads to the transfer of advanced technologies and management practices, which can further boost efficiency and innovation within domestic industries. In addition to alleviating poverty, FDI brings about other positive impacts on the economy. For instance, it helps reduce unemployment by creating new job opportunities and providing training for local workers. Furthermore, FDI contributes to the expansion of exports by facilitating access to international markets and promoting the development of competitive industries. As a result, FDI can play a significant role in improving a country's balance of trade and enhancing its overall economic performance. Given the importance of FDI for economic development, understanding the factors that influence FDI inflows is essential. In the model of this study, FDI is examined as the dependent variable, while independent variables such as exchange rate, interest rate, economic misery, political instability, exports, and GDP are considered. By analyzing the relationships between these variables, policymakers and stakeholders can devise effective strategies to attract and sustain FDI inflows, thereby fostering economic growth and prosperity in Pakistan. Thus, the model of the study become as:

$$FDI = f(INTR_t, OER_t, EI_t, PI_t, MERE_t, GDPG_t)$$

Where,

FDI=foreign direct investment
INTR= Interest Rate
OER=Exchange Rate
EI=Economic Misery
PI= Political Instability
MERE= Exports
GDPG= Gross Domestic Product
t=Time Period

In this study, we aim to investigate the influence of exchange rate and interest rate on foreign direct investment (FDI) in Pakistan. To achieve this objective, we have collected data on the selected variables

from various sources, including the World Development Indicators (WDI), different editions of the Pakistan Economic Survey, and the online databases of the State Bank of Pakistan. The dataset spans the period from 1972 to 2013, allowing for a comprehensive analysis of the relationship between these variables over time. In our analysis, we employ a dummy variable to capture the effect of political instability on FDI inflows. This dummy variable takes the value of 1 for periods characterized by autocratic or military regimes and 0 for periods characterized by democratic regimes. By incorporating this variable into our model, we can assess how changes in the political environment impact the flow of foreign investment into Pakistan. The primary focus of the study is to understand the role of exchange rate and interest rate in attracting or deterring FDI in Pakistan. Exchange rate volatility and fluctuations in interest rates can significantly influence investment decisions, as they affect the relative attractiveness of investing in Pakistan compared to other countries. By examining the relationship between these variables and FDI inflows, we aim to provide insights that can inform policy decisions and strategies aimed at promoting foreign investment and economic development in Pakistan. Through rigorous empirical analysis and econometric techniques, we seek to uncover the underlying dynamics driving FDI in Pakistan and identify potential areas for policy intervention. By shedding light on the factors that influence FDI inflows, our study contributes to the existing literature on foreign investment and provides valuable insights for policymakers, investors, and other stakeholders interested in Pakistan's economic development.

4. EMPIRICAL RESULTS AND DISCUSSIONS

In this study, we aim to examine the impact of economic misery, exchange rate, and interest rate on foreign direct investment (FDI) in Pakistan over the period from 1972 to 2013. To begin our analysis, we conducted descriptive statistics and pair-wise correlation tests among the variables included in our model, as presented in Table-1. The results from Table-1 indicate that the data for foreign direct investment, political instability, exchange rate, exports, economic misery, interest rate, and GDP exhibit normal distribution characteristics. Specifically, the Jarque-Bera statistic, which assesses the normality of the variables, yields insignificant values for all variables in the model. This implies that the data for each variable has finite covariance and a mean of zero, suggesting adherence to a normal distribution. However, it is important to note that the significance of the interest rate variable may be influenced by the presence of repeated values within the selected time period. Despite this, our analysis confirms that the selected variables demonstrate characteristics of normal distribution, providing a solid foundation for further investigation into their relationships with foreign direct investment in Pakistan. By establishing the normality of the data and conducting initial descriptive analysis, we have laid the groundwork for more comprehensive econometric modeling and hypothesis testing. Our subsequent analysis will delve deeper into understanding the relationships between economic misery, exchange rate, interest rate, and FDI inflows in Pakistan, thereby contributing valuable insights to the existing literature on foreign investment dynamics in the country.

The correlation matrix among the variables of the model provides insights into the relationships between foreign direct investment (FDI), exchange rate, exports, economic misery, political instability, interest rate, and GDP. FDI exhibits positive and significant correlations with exchange rate, exports, economic misery, and interest rate, indicating that as these variables increase, FDI inflows also tend to increase. However, FDI shows an insignificant relationship with political instability and a negative and insignificant correlation with GDP. Economic misery demonstrates positive and significant correlations with exchange rate, exports, and interest rate, suggesting that higher levels of economic misery are associated with increased exchange rates, exports, and interest rates. Conversely, economic misery exhibits negative and significant correlations with political instability and GDP, implying that higher levels of economic misery correspond to lower political stability and GDP. Political instability displays

negative and insignificant correlations with exchange rate and exports, indicating that political instability does not significantly impact these variables. However, it shows a negative and significant correlation with interest rate, suggesting that higher levels of political instability are associated with lower interest rates. Additionally, political instability exhibits a positive and significant relationship with GDP, implying that higher levels of political instability coincide with higher GDP. Exchange rate shows positive and significant correlations with exports, indicating that increases in the exchange rate are associated with higher levels of exports. However, it demonstrates positive but insignificant correlations with interest rate and GDP, suggesting that exchange rate fluctuations do not significantly impact interest rates or GDP. Overall, the correlation matrix highlights the complex interplay between these variables and provides valuable insights into their relationships, laying the foundation for further analysis and interpretation of the data.

Table 1: Descriptive Statistics

	LFDI	EI	PI	LOER	LMERE	LINTR	GDPG_
Mean	-0.660494	13.37607	0.476190	3.306263	22.52603	2.410585	4.806418
Median	-0.564676	12.82930	0.000000	3.279104	22.72142	2.302585	4.772638
Maximum	1.299735	27.02303	1.000000	4.621328	23.95733	4.356709	10.21570
Minimum	-3.087973	4.526414	0.000000	2.161181	20.77445	1.791759	0.813406
Std. Dev.	1.003818	5.434834	0.505487	0.809953	1.002894	0.390237	2.142846
Skewness	-0.276979	0.524761	0.095346	0.039070	-0.268294	3.024762	0.215617
Kurtosis	2.986059	2.873802	1.009091	1.535048	1.934333	15.93101	2.607804
Jarque-Bera	0.524568	1.955488	7.000145	3.766334	2.609886	356.6637	0.622931
Probability	0.769293	0.376159	0.130195	0.152108	0.271188	0.000000	0.732373
Sum	-27.08027	561.7947	20.00000	138.8631	991.1454	101.2446	211.4824
Sum Sq. Dev.	40.30602	1211.034	10.47619	26.89695	43.24923	6.243674	197.4469

The unit root tests, namely the Augmented Dickey-Fuller (ADF) and Philips Perron (PP) tests, are employed to address the issue of unit root in the time series data. Table-2 presents the results of these unit root tests. According to the results, economic misery, interest rate, and GDP exhibit stationarity at level, as indicated by both the ADF and PP tests. Conversely, foreign direct investment, political instability, exchange rate, and exports are found to be non-stationary at level, leading to the failure to reject the null hypothesis for these variables. However, upon taking the first difference, all variables become stationary, resulting in the rejection of the null hypothesis. Based on these findings, it can be concluded that the variables of foreign direct investment, political instability, exchange rate, export, economic misery, interest rate, and GDP possess a mixed order of integration. This mixed order of integration indicates the suitability of employing the Auto-Regressive Distributed Lag (ARDL) bound testing approach to analyze co-integration among these variables.

Table 2: Unit Root Tests

Augmented Dickey-Fuller Unit root test		
At level		
Variables	T-Statistic	Prob.
LFDI	-2.775594	0.0711
EI	-3.443635	0.0149
PI	-2.054020	0.2637
LOER	0.501385	0.9848
LMERE	-1.055619	0.7245
LINTR	-3.462693	0.0142
GDPG_	-4.971467	0.0002
At first difference		
LFDI	-7.768387	0.0000
EI	-7.730288	0.0000
PI	-6.164414	0.0000
LOER	-4.677630	0.0005
LMERE	-6.710193	0.0000
LINTR	-8.231064	0.0000
GDPG_	-11.62870	0.0000

Table 3: ARDL Bound Testing Approach

Dependent Variable: LFDI		
ARDL(1, 1, 0, 1, 0, 0, 1)		
Critical values	F-Statistics	3.383499
	Lower Bound	Upper bound
95%	2.45	3.61
90%	2.12	3.23

The Auto-Regressive Distributed Lag (ARDL) bound testing approach is employed to examine the co-integration among foreign direct investment, political instability, exchange rate, export, economic misery, interest rate, and GDP in the context of Pakistan spanning the period from 1972 to 2013. The F-statistic is utilized to test the null hypothesis of co-integration. The calculated F-statistic of 3.383499 exceeds the critical value of 3.23 at the 10 percent significance level. Therefore, the alternative hypothesis of co-integration is accepted, and the null hypothesis is rejected. This implies that there exists a co-integrational relationship among the variables of foreign direct investment, political instability, exchange rate, export, economic misery, interest rate, and GDP in the case of Pakistan.

Now we can examine the long run relationship among the variables, in this study foreign direct investment is the dependent variable whereas political instability, exchange rate, exports, economic misery, interest rate and GDP are selected independent variables. The estimated long run results of model are depicted in the table 4. The findings indicating a lack of statistically significant impact of economic misery and political instability on foreign direct investment (FDI) in Pakistan suggest several implications. Firstly, the insignificance of economic misery implies that variations in economic conditions, such as unemployment rates or inflation levels, do not significantly deter or attract foreign investors. This may indicate that foreign investors in Pakistan are less sensitive to short-term economic fluctuations and instead focus on other factors such as market size, infrastructure, or regulatory environment when making investment decisions. Similarly, the lack of significance of political instability suggests that despite potential concerns over political unrest or uncertainty, foreign investors do not

perceive it as a major deterrent to investing in Pakistan. This could be due to various reasons such as the perceived resilience of the Pakistani economy, the presence of stable institutions, or the attractiveness of investment incentives offered by the government. The positive coefficient for the exchange rate indicates that a depreciation of the local currency relative to foreign currencies leads to an increase in foreign direct investment (FDI) in Pakistan. This can be attributed to the fact that a weaker local currency makes investments in the country more attractive for foreign investors, as they can acquire assets or establish operations at a lower cost in terms of their own currency. Additionally, a depreciated currency can boost the competitiveness of Pakistani exports, further attracting foreign investment. On the other hand, the negative coefficient for exports suggests that higher levels of exports may lead to a reduction in FDI in Pakistan. One possible explanation for this inverse relationship is that increased export activity may divert resources and attention away from domestic investment opportunities. Additionally, a focus on exporting may signal to investors that the domestic market is not as attractive, potentially dampening their interest in investing within the country. The positive coefficient for the interest rate indicates that higher interest rates may attract more foreign investment into Pakistan. This can be attributed to the fact that higher interest rates offer better returns on investment for foreign investors, making the country more appealing for capital inflows. Moreover, higher interest rates may reflect tighter monetary policy, which could signal macroeconomic stability and confidence in the economy, further bolstering investor sentiment. Lastly, the positive coefficient for GDP suggests that higher levels of economic growth may lead to increased FDI in Pakistan. This is consistent with the notion that a growing economy presents more opportunities and potential returns for investors. As GDP expands, businesses may see greater demand for their products and services, leading to increased investment to capitalize on growth opportunities. Overall, these results underscore the importance of factors such as exchange rates, interest rates, exports, and GDP growth in shaping the investment environment and attracting foreign capital into Pakistan.

Table 4: Long Run Estimates

ARDL(1, 1, 0, 1, 0, 0, 1)
Dependent variable is LFDI: Time Period 1972-2013

Regressors	Co-efficient	Standard-Error	T-Ratio (Prob)
EI	-0.005626	0.040431	-0.139(0.890)
PI	-0.419446	0.417610	-1.004(0.324)
LOER	3.282456	1.317733	2.491(0.019)
LMERE	-1.908315	1.067463	-1.788(0.086)
LINTR	1.239564	0.411393	3.013(0.006)
GDPG_	0.452007	0.184696	2.447(0.022)
C	27.149622	18.861648	1.439(0.162)

The short-run dynamics analysis provides valuable insights into the immediate effects of various factors on foreign direct investment (FDI) in Pakistan: Firstly, economic misery exhibits a positive and significant relationship with FDI. A 1 percent increase in economic misery leads to a 0.071370 percent increase in FDI in Pakistan in the short run. This suggests that during periods of economic distress or uncertainty, foreign investors may perceive investment opportunities in Pakistan as more attractive, possibly due to lower asset prices or higher potential returns. Secondly, political instability does not show a significant relationship with FDI in the short run. This indicates that immediate fluctuations or disruptions in the political landscape may not significantly impact foreign investors' decisions to invest in Pakistan. However, it is essential to monitor political stability over longer periods, as prolonged instability could deter investment. Thirdly, the exchange rate demonstrates a negative and significant

relationship with FDI. A 1 percent increase in the exchange rate results in a 3.434937 percent decrease in FDI in Pakistan in the short run. This suggests that a depreciating local currency may deter foreign investment, possibly due to increased costs for foreign investors or concerns about currency volatility. Fourthly, exports exhibit a negative and significant relationship with FDI in the short run. A 1 percent increase in exports leads to a 1.039727 percent decrease in FDI in Pakistan. This suggests that higher export activity may divert resources away from domestic investment opportunities or signal weaker domestic demand, potentially reducing foreign investors' interest in the country. Fifthly, the prevailing interest rate shows a positive and significant relationship with FDI. A 1 percent increase in the interest rate brings a 0.675364 percent increase in FDI in Pakistan in the short run. This indicates that higher interest rates may attract foreign capital inflows, possibly due to improved returns on investment or perceptions of macroeconomic stability. Lastly, the short-run relationship between GDP and FDI is positive but insignificant. This suggests that immediate changes in GDP may not have a significant impact on foreign investment decisions in Pakistan. Additionally, the negative and significant coefficient of the error correction term (ECM) indicates that deviations from the long-run equilibrium are corrected in the short run. The speed of convergence suggests that more than 54 percent of the variation in FDI in the current period is corrected in the next period, indicating a relatively rapid adjustment process. However, the estimated time for full convergence to the long-run equilibrium exceeds 2 years, highlighting the persistence of short-run dynamics in the FDI-FDI relationship.

Table 5: Short Run Outcomes

ARDL(1, 1, 0, 1, 0, 0, 1): Dependent variable is LFDI: Time Period 1972-2013			
Regressor	Co-efficients	Standard-Error	T-Ratio (Prob)
D(EI)	0.071370	0.020278	3.520(0.002)
D(EI(-1))	0.060404	0.019361	3.120(0.004)
D(PI)	-0.228531	0.209721	-1.090(0.286)
D(LOER)	-3.434937	1.368205	-2.511(0.019)
D(LMERE)	-1.039727	0.436832	-2.380(0.025)
D(LINTR)	0.675364	0.203239	3.330(0.003)
D(GDPG_)	0.009828	0.046261	0.212(0.833)
D(GDPG_(-1))	-0.104334	0.037778	-2.762(0.010)
ECM	-0.544840	0.126172	-4.318(0.000)

The diagnostic tests conducted provide valuable insights into the robustness and reliability of the model: Firstly, the Breusch-Godfrey Serial Correlation LM test indicates that there is no serial correlation among the error terms of the selected variables. This suggests that the residuals do not exhibit any systematic pattern over time, supporting the assumption of independence and randomness in the model's errors. Secondly, the Heteroskedasticity test, conducted using the White test, indicates that there is no heteroscedasticity problem in the model. Heteroskedasticity refers to the situation where the variance of the error terms varies across observations. The absence of heteroskedasticity ensures that the model's standard errors are correctly estimated and that the coefficients remain unbiased. These results provide confidence in the reliability of the model's parameter estimates and the validity of the statistical inferences drawn from them. Moreover, they suggest that the selected variables have a correct functional form, indicating that the model adequately captures the underlying relationships among the variables. Furthermore, the confirmation of normal distribution of the time series data enhances the validity of the statistical tests conducted and the interpretation of the model's results. Normality of the data is crucial for making reliable statistical inferences and ensuring the accuracy of the estimated coefficients. Overall,

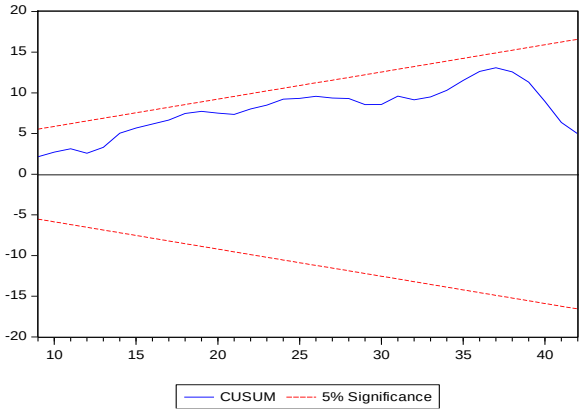
the diagnostic tests support the adequacy and reliability of the model, providing assurance that the estimated relationships among the variables are robust and statistically sound.

Table 7: Diagnostics Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	54.20011	Prob. F(1,24)	0.2828
Obs*R-squared	46.20125	Prob. Chi-Square(3)	0.5873
Heteroskedasticity Test: White			
F-statistic	0.80976	Prob. F(12,26)	0.6386
Obs*R-squared	10.6103	Prob. Chi Square(12)	0.5626
Scaled explained SS	4.68597	Prob. Chi-Square(12)	0.9677

The stability of the long and short-run parameters of the model is crucial for ensuring the reliability of the estimated relationships over time. To assess this stability, the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMsq) tests, proposed by Brown et al. (1975), are employed. The CUSUM plot, depicted in Figure 1, illustrates the cumulative sum of the parameter estimates over time. By analyzing the CUSUM plot, we can determine whether the estimated coefficients remain stable over the entire sample period. In this case, the CUSUM plot remains within the acceptable bounds, indicating that the estimated parameters do not exhibit significant fluctuations or structural breaks over time. Additionally, the CUSUM plot is significant at the 5 percent level, further reinforcing the stability of the model's parameters. Overall, the results from the CUSUM test provide evidence of the stability of both the long and short-run parameters of the model. This suggests that the estimated relationships among the variables remain consistent and reliable throughout the sample period, enhancing the credibility of the model's findings.

Figure-1



5. CONCLUSIONS

The main objective of this study is to examine the factors influencing foreign direct investment (FDI) in Pakistan over the period from 1972 to 2013. The study focuses on several key determinants, including political instability, exchange rate, exports, economic misery, interest rate, and GDP. To analyze these relationships, the study employs a rigorous methodology, beginning with the ADF unit root test to assess the stationarity of the variables. The results of the unit root test indicate a mixed order of integration among the variables, highlighting the necessity of employing advanced techniques such as the Auto-Regressive Distributed Lag (ARDL) model to investigate cointegration. The findings of the study reveal

that economic misery and political instability do not exert a significant impact on foreign direct investment in Pakistan. However, exchange rate emerges as a key determinant, exhibiting a positive and significant relationship with FDI over the selected time period. Conversely, exports are found to have a negative and insignificant impact on FDI. Furthermore, interest rate and GDP demonstrate a positive and significant relationship with FDI in Pakistan, indicating that favorable economic conditions and higher GDP growth rates attract greater levels of foreign investment. In the short run, economic misery is shown to have a positive and significant relationship with FDI, suggesting that periods of economic instability may spur foreign investment in Pakistan. However, the short-run relationship between political instability and FDI is found to be negative and insignificant, indicating that political unrest may not significantly deter foreign investors in the short term. Based on the empirical findings, several policy recommendations can be proposed to enhance foreign direct investment (FDI) in Pakistan. Firstly, ensuring stability in both interest rates and exchange rates is crucial. A stable economic environment reduces uncertainty for foreign investors, making Pakistan a more attractive destination for FDI. This can be achieved through effective monetary policy measures aimed at maintaining stability in interest rates and exchange rates. Secondly, fostering economic growth is essential for attracting foreign investment. The government should implement policies that promote economic development and create favorable conditions for businesses to thrive. This can include investing in infrastructure, improving regulatory frameworks, and facilitating trade and investment processes. Moreover, efforts should be made to improve the overall business climate in Pakistan. This involves reducing bureaucratic hurdles, streamlining administrative processes, and enhancing transparency and accountability in governance. A conducive business environment encourages investor confidence and promotes FDI inflows. Additionally, political stability plays a crucial role in attracting foreign investment. The government should work towards creating a stable and predictable political environment, free from unrest and uncertainty. This can be achieved through effective governance, inclusive policymaking, and efforts to address political challenges and conflicts. In short, a comprehensive approach is needed to increase FDI in Pakistan, encompassing measures to ensure stability in interest rates and exchange rates, foster economic growth, improve the business climate, and promote political stability. By implementing these policies, Pakistan can enhance its attractiveness as a destination for foreign investment and stimulate economic growth and development.

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