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Exchange Rate Volatility and Foreign Direct Investment under Democracy and Diplomatic Governance in Pakistan

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Abstract

This study examines the relationship between exchange rate volatility and foreign direct investment (FDI) in Pakistan, paying particular attention to how this relationship differs under democratic versus military governance. Using annual data spanning 1973–2020 (with regression estimation drawing on the 1990–2019 WDI sample), the study first generates a volatility series for the exchange rate using a GARCH(1,1) model, then applies the Autoregressive Distributed Lag (ARDL) approach to estimate both long-run and short-run effects on FDI, controlling for GDP, inflation, and trade openness. The GARCH results show that exchange rate volatility is highly persistent, with shocks decaying slowly over time. The ARDL bounds test confirms a long-run relationship among the variables in both models estimated. In the baseline model, exchange rate volatility is found to exert a significant negative effect on FDI, while currency depreciation and trade openness have significant positive effects; these relationships hold in the long run but disappear in the short run, where coefficients are statistically insignificant. When a political regime dummy is introduced to distinguish democratic from military rule, exchange rate volatility continues to depress FDI, but its coefficient becomes positive and loses statistical significance during democratic periods, suggesting that political regime moderates investor sensitivity to currency fluctuations. These findings indicate that exchange rate stability, rather than depreciation alone, is central to attracting foreign investment, and that the political environment shapes how investors respond to currency risk. The study recommends that Pakistani policymakers prioritize exchange rate stabilization and political continuity as complementary strategies for sustaining FDI inflows.

Keywords: Exchange rate volatility, foreign direct investment, Political regimes

Introduction

It is crystal clear from the history of Pakistan that the country is overburdened with political instabilities. Indeed, Pakistan is a democratic country by nature, but since 1947 the nation has gone through four military rules brought by three distinct military coups that lasted for around one decade each. However, democracy too has not proven to be a successful means of governance, as no prime minister to date has completed a full five-year constitutional tenure. These political instabilities have exerted downward pressure on several economic factors, including Gross Domestic Product (GDP), Foreign Direct Investment (FDI), exchange rates, and overall socioeconomic development.

This paper focuses on assessing the impact of exchange rate volatility on FDI within distinct political regimes. An upsurge of FDI was noticed internationally following the globalization of economies. FDI tends to flow primarily from developed countries toward developing countries due to the higher marginal productivity of capital in less developed nations, where investors benefit from higher returns on capital (Aqeel et al., 2004). FDI is considered a positive externality for host countries as it holds the potential to narrow the gap between rich and poor through technology transfer and growth spillovers (Kyereboah-Coleman & Agyire-Tettey, 2008). Many developing nations find themselves trapped in a vicious cycle of economic turmoil characterized by high inflation, unemployment, and continuous currency depreciation. This trap can be broken by attracting FDI and augmenting national capital formation (Yonghui et al., 2020).

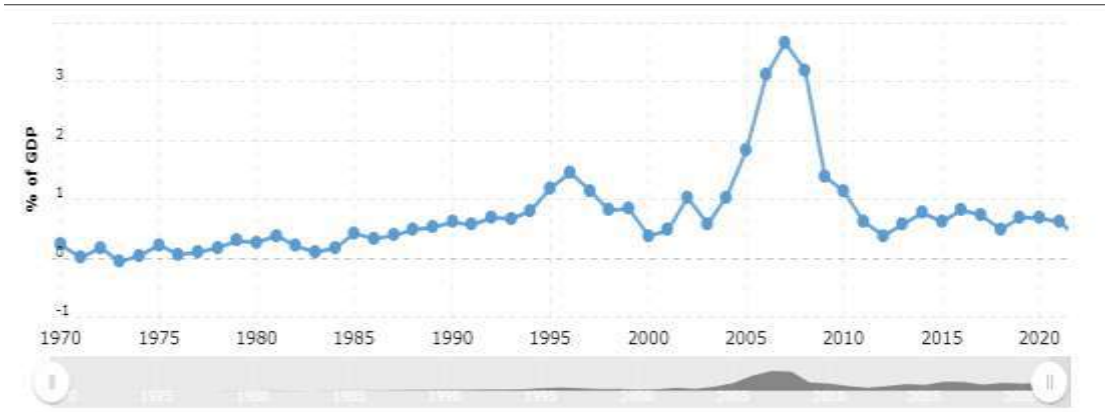
According to the United Nations Conference on Trade and Development (UNCTAD, 2022), FDI flows to developing economies grew more slowly compared to developed economies but still increased by 29.9% to US$837 billion. Notably, FDI inflows into developing Asia and Oceania rose for the third consecutive year, reaching US$619 billion (an increase of 19.3%). The highest inflow of FDI in Pakistan was received during 2005–2006, amounting to US$1,027 million. FDI serves as a vital catalyst for developing countries by uplifting the economy, creating employment opportunities, and lowering budget deficits (Azhar et al., 2015). It functions as a essential source of capital that fuels domestic private investment (Chowdhury & Mavrotas, 2006). However, among numerous determinants of FDI, political stability is widely recognized as paramount (Ali & Guo, 2005; Aqeel et al., 2004; Jadhav, 2012; Obwona, 2001). When examining Pakistan's economic history across distinct governance structures, FDI inflows were comparatively higher during military regimes relative to democratic eras.

FDI is highly sensitive to macroeconomic shocks, as illustrated by historical events such as the 1997 Asian Financial Crisis, during which FDI underwent a sharp downfall due to extreme currency depreciations. During these crises, the Pakistani Rupee experienced substantial volatility against the US Dollar. Exchange rate volatility (EXV) refers to frequent and unpredictable fluctuations in currency values. Following the collapse of the Bretton Woods

system in 1973, exchange rates became significantly volatile worldwide. EXV increases economic risk, thereby altering trade and investment decisions. For approximately 35 years, Pakistan maintained a fixed exchange rate system, initially pegged to the British Pound and later linked to the US Dollar as diplomatic relations with the United States strengthened. The Pakistani currency depreciated in June 1955 by 30% and remained fixed at 4.76 PKR/USD for seventeen years. Subsequent empirical literature examining currency movements indicates that exchange rate volatility generally exerts a negative influence on FDI inflows (Chowdhury & Wheeler, 2008).

Figure 1

Figure 1 presents historical trends in Pakistan's FDI inflows as a percentage of GDP from 1970 to 2020.



Foreign Direct Investment Inflows as a Percentage of GDP in Pakistan (1970–2020)

[Figure 1: Line graph displaying Pakistan FDI (% of GDP) peaking in 2005–2007 at over 3.5% and declining below 1% post-2010. Source: World Development Indicators (2022).]

Note. Data retrieved from World Bank World Development Indicators (2022).

This paper aims to analyze theoretically and empirically the impact of exchange rate volatility on FDI during distinct political systems (democracy versus military rule) in Pakistan from 1973 to 2020. Historical evidence indicates that military periods often coincided with relative macro-political stability and foreign aid inflows. Consequently, empirical estimates are expected to reflect distinct regime impacts. While exchange rate volatility and FDI inflows have been widely studied, few studies explicitly model the interactive effect of political regime transitions within a unified ARDL framework for Pakistan. Ramzan (2021) highlighted that foreign investors face heighted uncertainty during regime changes due to shifts in taxation and investment policies. Conversely, Muhammad et al. (2018) demonstrated that democratic institutions can help sustain investment attraction even amidst currency devaluation.

Literature Review

An extensive body of empirical literature examines the relationship between exchange rate volatility and FDI, though findings remain mixed. Aliber (1970) pioneered the theoretical link between currency strength and foreign investment, arguing that firms in stronger currency nations capitalize on foreign market opportunities. Froot and Stein (1991) further established that domestic currency depreciation lowers the relative cost of foreign capital acquisition, thereby attracting higher FDI inflows.

In an empirical study of SAARC nations, Azhar et al. (2015) identified a statistically significant negative effect of exchange rate volatility on FDI inflows. Brzozowski (2006) investigated exchange rate uncertainty in Central and Eastern European countries, confirming that currency risks depress cross-border capital flows. In contrast, Chowdhury and Wheeler (2008) examined four G7 countries using Vector Autoregression (VAR) models and found that exchange rate volatility shocks positively influenced FDI in specific high-liquidity settings. Dhakal et al. (2010) also observed a positive relationship in East Asian economies. Conversely, Sharifi-Renani and Mirfatah (2012) documented a negative impact in Iran.

For the case of Pakistan, Ramzan (2021) applied an ARDL framework and confirmed that exchange rate volatility exerts a strong negative effect on FDI inflows. Similarly, Ullah et al. (2012) employed Vector Error Correction Models (VECM) to demonstrate that exchange rate uncertainty dampens foreign investment in Pakistan. Furceri and Borelli (2008) highlighted that the direction of the relationship depends heavily on trade openness, where open economies exhibit higher vulnerability to external currency shocks. Qin (2000) demonstrated positive effects under two-way FDI models, while Zakari (2017) observed positive impacts in Nigeria during liberalized regime phases. Kiliçarslan (2018) found unidirectional causality running from FDI to volatility in Turkey, whereas Kiyota and Urata (2004) emphasized that currency overvaluation harms investment.

Görg and Wakelin (2002) confirmed that US dollar appreciation reduced inward FDI. Kyereboah-Coleman and Agyire-Tettey (2008) showed that interest rate instability indirectly destabilized FDI via exchange rate transmission in Ghana, whereas Havi (2021) found positive direct effects of real exchange rate volatility on Ghana's inward investment. Wang (2013) utilized ARDL and ECM techniques across BRICS economies, detecting long-run negative impacts in India and Russia. Udoh and Egwaikhide (2008) confirmed negative effects from both exchange rate and inflation uncertainties in Nigeria.

Table 1

Summary of Previous Empirical Studies on Exchange Rate Volatility and FDI

Author(s)	Country / Region	Time Period	Methodology	Effect
Kyereboah-Coleman & Agyire-Tettey (2008)	Sub-Saharan Africa	1970–2002	Cointegration & ECM	Negative
Azhar et al. (2015)	SAARC	1981–2013	GMM	Negative
Chowdhury & Wheeler (2008)	G7 Countries	1972–2005	VAR	Positive
Brzozowski (2006)	Central & Eastern Europe	1990s	GMM	Negative
Sharifi-Renani & Mirfatah (2012)	Iran	1980–2006	Johansen Test	Negative
Ullah et al. (2012)	Pakistan	1980–2010	VECM & Cointegration	Negative
Zakari (2017)	Nigeria	1990–2015	Multiple Regression Analysis	Positive
Kiyota & Urata (2004)	Japan	1990–2000	FGLS	Negative
Görg & Wakelin (2002)	US & 12 Countries	1983–1995	OLS / FE / RE	Negative
Boahen & Evans (2014)	Ghana	1984–2002	VAR	Negative
Havi (2021)	Ghana	1970–2018	DOLS	Positive
Moraghen et al. (2021)	Mauritius	1990–2015	ARDL Bounds Test	Positive
Udoh & Egwaikhide (2008)	Nigeria	1970–2005	Breusch-Godfrey LM	Positive
Dal Bianco & Loan (2017)	Latin America	1990–2012	Fixed Effects	Negative
Osinubi & Amaghionyeodiwe (2009)	Nigeria	1970–2004	ECM & OLS	Positive

Author(s)	Country / Region	Time Period	Methodology	Effect
Elly & Ojung'a (2015)	Kenya	1981–2010	Correlation Analysis	Positive
Muhammad et al. (2018)	Nigeria	1970–2014	VAR & Bounds Test	Negative
Asmae & Ahmed (2019)	Morocco & Turkey	1990–2017	Bounds Test	Negative
Ahmed (2018)	Nigeria	1990–2016	ARDL	Negative
Mahmood et al. (2011)	Pakistan	1975–2005	OLS	Negative
Arratibel et al. (2011)	CEE Countries	1995–2008	OLS & Fixed Effects	Negative
Hniya et al. (2021)	Tunisia	1980–2018	ARDL	Negative
Durairaj & Nirmala (2012)	India	1996–2010	Bounds Test	Negative
Mahjoub (2014)	Sudan	1979–2009	ECM	Negative
Martins (2015)	Brazil	1976–2013	ARDL	Negative
Ullah Khan et al. (2017)	Pakistan	1981–2015	ARDL Bounds Test	Negative
Ashraf & Nagia (2021)	Egypt	2015–2019	GMM	Negative

Note. Compiled by authors based on reviewed empirical literature.

Based on the conflicting evidence in literature, the following hypotheses are formulated:

H0: There is a negative relationship between exchange rate volatility and foreign direct investment in Pakistan.

H1: There is a positive relationship between exchange rate volatility and foreign direct investment in Pakistan.

Theoretical Framework

The theoretical channels linking exchange rate volatility, political governance, and FDI inflows operate through several distinct macroeconomic transmission mechanisms:

1. Volatility Channel: Exchange Rate Volatility ↑ → Economic Risk ↑ → Return on Investment ↓ → Host Country Confidence ↓ → FDI Inflows ↓ (Azhar et al., 2015).

2. Governance Channel: Political Instability ↑ → Market Imperfections ↑ → Exchange Uncertainty ↑ → Investor Confidence ↓ → FDI Inflows ↓ (Kyereboah-Coleman & Agyire-Tettey, 2008).

3. Demand Shock Channel: Real Demand Shocks ↑ → Exchange Rate Fluctuations ↑ → Risk Premium Adjustment → FDI Inflows ↑ (Goldberg & Kolstad, 1995).

4. Monetary Transmission Channel: Interest Rate Volatility ↑ → Currency Volatility ↑ → Capital Flight → FDI Inflows ↓ (Kyereboah-Coleman & Agyire-Tettey, 2008).

Data and Methodology

Model Specification

This study evaluates the impact of exchange rate volatility on net foreign direct investment inflows in Pakistan under two distinct political governance structures (democracy versus military rule). Controlled variables include trade openness (TOP), inflation (INF), and Gross Domestic Product (GDP). Political regime is introduced as a dummy variable taking the value of 1 for democratic periods and 0 for military rule. Data were obtained from the World Development Indicators (WDI) spanning 1990 to 2019.

Table 2

Description of Variables and Data Sources

Variable	Description	Source
FDI	Net foreign direct investment inflows (% of GDP)	WDI
REXR	Real Exchange Rate (Nominal Exchange Rate × CPI_PK / CPI_US)	WDI / Author Calc.
REXRVOL	Real Exchange Rate Volatility generated via GARCH(1,1)	Author Estimation
INF	Inflation rate measured by GDP deflator (annual %)	WDI
GDP	Annual GDP growth rate at constant 2015 US dollars (%)	WDI
TOP	Trade Openness measured as (Exports + Imports) / GDP	WDI
PR	Political Regime Dummy (1 = Democratic Governance, 0 = Military Rule)	Author Construction

Note. WDI = World Development Indicators (World Bank).

The empirical regression specifications are modeled as follows:

$$FDI_t = \alpha_0 + \beta_1 REXR_t + \beta_2 REXRVOL_t + \beta_3 GDP_t + \beta_4 INF_t + \beta_5 TOP_t + u_t \quad (1)$$

$$FDI_t = \alpha_0 + \beta_1 REXR_t + \beta_2 REXRVOL_t + \beta_3 GDP_t + \beta_4 INF_t + \beta_5 TOP_t + \beta_6 PR_t + u_t \quad (2)$$

Table 3

Descriptive Statistics of Macroeconomic Variables (1990–2019)

Statistic	FDI	REXCH	REXCHVOL	GDP	INF	TOP
Mean	0.792	73.680	31.294	4.713	9.991	0.373
Median	0.613	76.853	13.010	4.731	8.873	0.368
Maximum	3.668	112.301	313.797	10.216	38.512	0.542
Minimum	0.045	38.517	0.008	-1.274	3.259	0.277
Std. Dev.	0.773	20.330	52.269	2.152	6.457	0.056
Skewness	2.322	-0.331	3.895	-0.076	2.340	0.810
Kurtosis	8.349	2.183	20.279	3.436	9.959	3.908
Jarque-Bera	98.267	2.168	688.529	0.418	137.713	6.751
Probability	0.000	0.338	0.000	0.811	0.000	0.034

Note. Sample period covers 1990–2019 (N = 30 annual observations).

GARCH(1,1) Volatility Modeling

Following Engle (1982) and Engle and Granger (1987), conditional exchange rate volatility is modeled using a standard GARCH(1,1) process. The mean and variance equations are specified as follows:

$$REXR_t = \phi + \lambda REXR_{t-1} + e_t \quad (3)$$

$$\sigma^2_t = \omega + \alpha e^2_{t-1} + \beta \sigma^2_{t-1} + u_t \quad (4)$$

Where $\alpha + \beta$ reflects the degree of volatility persistence in the exchange rate series.

Results and Discussion

To test for stationarity across variables, the Augmented Dickey-Fuller (ADF) unit root test was conducted. The results presented in Table 4 indicate a mixed order of integration—I(0) and I(1)—justifying the use of the ARDL bounds testing approach.

Table 4

Augmented Dickey-Fuller (ADF) Unit Root Test Results

Variable	Level Stat.	Critical (5%)	1st Diff. Stat.	Critical (5%)	Order
EXR	-1.582	-2.928	-4.891	-2.928	I(1)
FDI	-2.998	-2.928	-4.564	-2.928	I(0)
GDP	-3.837	-2.927	-9.961	-2.928	I(0)
TOP	-2.422	-2.927	-6.607	-2.928	I(1)
INF	-6.539	-2.927	-7.979	-2.930	I(0)
EXRVOL	-4.740	-2.928	-9.856	-2.930	I(0)

Note. Critical values are at the 5% level of significance.

Table 5

GARCH(1,1) Model Estimation Results for Real Exchange Rate

Variable	Coefficient	Std. Error	z-Statistic	p-value
Mean Eq: Constant	11.687	3.069	3.809	< .001
Mean Eq: REXCH(-1)	0.852	0.041	20.728	< .001
Var Eq: Constant (ω)	5.241	2.511	2.087	.037
Var Eq: RESID(-1)^2 (α)	1.017	0.517	1.967	.049
Var Eq: GARCH(-1) (β)	-0.019	0.069	0.277	.782

Note. R-squared = 0.936, Adjusted R-squared = 0.935, Log Likelihood = -126.570. High volatility persistence is indicated by $\alpha + \beta \approx 0.998$.

Baseline Model (Model 1) Empirical Results

The ARDL bounds test for Model 1 yields an F-statistic of 8.169, which exceeds the upper bound I(1) critical value at the 1% significance level (4.68), confirming a robust long-run cointegrating relationship among the variables.

Table 6

Model 1 Long-Run ARDL Cointegration Coefficients

Variable	Coefficient	Std. Error	t-Statistic	p-value
REXCH	0.0507	0.0081	6.291	< .001
REXCHVOL	-0.0077	0.0030	2.577	.018
GDP	0.0349	0.0403	0.865	.397
INF	-0.0325	0.0138	2.344	.029
TOP	11.130	2.415	4.608	< .001
Constant	-6.682	1.453	4.600	< .001

Note. Dependent variable is FDI. ARDL Bounds test F-stat = 8.169 (higher than 1% I(1) bound = 4.68).

Political Regime Interactive Model (Model 2) Empirical Results

In Model 2, a political regime dummy (PR) is introduced (1 = Democracy, 0 = Military). The ARDL bounds test yields an F-statistic of 5.767, exceeding the 5% upper bound critical value (3.61) and confirming long-run cointegration.

Table 7

Model 2 Long-Run ARDL Coefficients with Political Regime Dummy

Variable	Coefficient	Std. Error	t-Statistic	p-value
REXCH	0.0568	0.0083	6.817	< .001
REXCHVOL	-0.0053	0.0030	1.784	.102
GDP	0.2122	0.0916	2.316	.041
INF	-0.0297	0.0239	-1.242	.240
TOP	11.391	2.859	3.985	.002
PRDUMM	0.1554	0.2193	0.708	.494
Constant	-8.202	1.780	4.607	< .001

Note. Dependent variable is FDI. ECT(-1) speed of adjustment coefficient = -0.380 (p < .001).

Conclusion and Policy Recommendations

This study empirical examines the dynamic impact of exchange rate volatility on foreign direct investment inflows in Pakistan across democratic and military political regimes from 1970 to 2020. The empirical results demonstrate that while real currency depreciation and trade openness significantly boost long-run FDI inflows, exchange rate volatility exerts a strong depressing effect on foreign investment. Uncertainty regarding future exchange rates raises risk premiums and discourages foreign investors from making long-term capital commitments.

When controlling for political governance, democratic regimes exhibit a complex interaction with currency volatility. While democratic periods show positive potential for market liberalization, political instability and frequent policy changes heighten investor sensitivity to currency risks. In contrast, periods of administrative continuity under military rule historically corresponded with higher capital inflows, primarily driven by international geopolitical alignment and short-term policy predictability.

Based on these findings, the study recommends that Pakistani economic policymakers prioritize exchange rate stabilization alongside structural political continuity. Key policy measures include maintaining adequate foreign exchange reserves, reducing inflation volatility, expanding trade openness, and fostering institutional transparency to buffer investors against political and monetary shocks.

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