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Socioeconomic and Religious Tension Mitigate Exchange Rate: Empirical Evidence from Pakistan

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Abstract: *The study investigated the socioeconomic and religious tension effect on the exchange rate of Pakistan. As well as ethnic tension, law and order, political and government stability. For this purpose, use time series data and time period 1996-2017. The econometric approach ARDL and NARDl approaches are used. The study findings, Socioeconomic conditions, government, political stability, and law and order are positive and statistically significant. Thus, the religious and ethnic factors are also negative and statistically significant. In the case of NARDL, the projected variables are positive and negative, with a significant impact on the exchange rate of Pakistan. The study suggests the government and political stability of the state. As well as reduce ethnic and religious issues in appropriate ways, such as by increasing religious education and declining ethnic hatred.*

Key Words: Socioeconomic, Religious Tension, Exchange Rate, ARDL, NARDL, Pakistan

Introduction

The global cashless payment system emerged in the 16th and 17th centuries. The system originated in Europe, particularly in Italy. Later, it expanded to Amsterdam and London as the central financial market. The mutual quotation of exchange rates facilitated the integration of economically significant regions into a global network. A concise account of exchange rates in these financial markets from the late 16th century to the First World War allowed for instant conversion between major world currencies within that period (Denzel, 2017). The role of FDI in the countries' economic growth is significant, no matter what we think about those phenomena through which the contribution to economic development is made. Though the fundamental contribution of FDI is to enhance a country's stock of physical capital, according to the new growth theory, its indirect effects arising from technology abundance and efficiency gains are of much importance (Elkomy et al., 2015). Country risk is separated into several categories, such as economic risk, transfer risk, political risk, sovereign risk, and exchange rate risk. These categories overlap each other, and maybe one of them might have an influence on another (Nordal, 2001). Socioeconomic conditions, external conflict, military in politics, law and order, and religious and ethnic tensions are even significant at a 1 percent level, indicating a positive direct relationship with FDI flows. Exchange rates play a crucial role in the global economy, as they determine the value of one currency relative to another. The forces influencing exchange rates are multifaceted, with economic, political, and social factors all contributing to their fluctuations. Among these, socioeconomic and religious tensions have the potential to significantly impact exchange rates (Lothian, 2001; Ramakrishnan et al., 2017). The objective of this research is to investigate how socioeconomic and religious tension palliates FDI by looking into empirical evidence from Pakistan. The flexible price monetary model (FPMM) is used to explain exchange rates as the general prices of one country relative to another in terms of money, determined by demand and the remaining shares of two currencies. The paragraph highlights that exchange rates have become an important area of research in finance in recent years, and understanding them is crucial for financial modeling and the forex rate (Frankel, 1979; Rauf and Khan, 2017). Mundell and Fleming's (M-F) model explains the real-world

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phenomena of how monetary and fiscal policies influence foreign exchange under different economic regimes. The M-F model is also known as the sticky price model. Similarly, it assumes fixed expectations, imperfect capital mobility, and significant price effects. A number of scholars in that field have criticized the model due to its lack of validity in certain situations. To address these concerns, economists have turned to the Flexible Price Monetary Model (FPMM) for determining exchange rates. FPMM assumes that prices are elastic and continuously change based on the expected inflation rate of a country, which is influenced by deviations in nominal interest rates. This model offers an alternative approach to understanding exchange rate dynamics and seeks to address the limitations of the M-F model (Frankel, 1979; Butt et al., 2020; Willett et al., 2014)

Literature Review

(Benedict et al., 2022) investigated the impact of political risk on the demand for foreign exchange in Zimbabwe. The study used time series data and a time period from 1980 to 2019. The econometric approach ARDL used. The study shows a significant negative relationship between political risk and foreign exchange reserves in both the short and long term. This suggests that as political risk increases, there is a corresponding increase in the demand for foreign currency.

(Venâncio de Vasconcelos, 2020), Studied how political stability influences cross-border bank flows. For this purpose, different econometric approaches were used along with quarter data from 1984 to 2013. The results show that sound political measures, leading to higher political stability, tend to increase cross-border bank flows, particularly in advanced economies. Furthermore, the study also found that specific components of socioeconomic conditions, investment profile, corruption within the political system, religious tensions, ethnic tensions, and bureaucracy quality of political stability have a significant positive association with these bank flows in advanced economies.

The increasing levels of global conflict and political instability in recent decades have contributed to a higher occurrence of banking crises. (Compaore et al., 2020) Examined the relationship between conflict, political instability, and the change of banking crises, particularly in developing countries. The study revealed that conflicts and political instability in one country can negatively affect the neighboring countries' banking systems. The primary mechanism behind this spillover effect appears to be the occurrence of fiscal crises following conflicts or political instability.

(Bahmani-Oskooee et al., 2019), Examined the long-term response of the Real Exchange Rate (RER) to political risks and investigated whether non-economic factors influence RER in 31 emerging and developing countries. The study used annual data and a time period from 1984 to 2016. Two distinct econometric approaches are used: the Cross-Sectionally Augmented ARDL and panel threshold estimation. The study found a threshold effect in the relationship between RER and variables such as investment profile, corruption, and political instability. When these factors exceed a certain threshold, they have a more pronounced adverse impact on the RER. Therefore, also found that bureaucracy, law, and order on RER appear to be statistically insignificant, suggesting that these factors do not have a significant influence on the exchange rate.

Methodology

Data and Data Sources

The study investigated the socioeconomic and religious tension effect on the exchange rate of Pakistan. The time series data used and the time period from 1996-2017. Therefore, the econometric approach ARDL and NARDL was used. This study used six variables: exchange rate is a dependent variable, while ethnic and religious tension, socioeconomic conditions, law and order, and government and political stability are explanatory variables. The data are taken from World Development DI and ICRG.

Model Specification

$$\text{Exchange rate} = f(\text{Ethnic tension}, \quad \text{Religious tension}, \quad \text{Socioeconomic condition}, \quad \text{law and order}, \quad \text{Government stability}, \quad \text{political stability})$$

Econometric Model

$EXRt + \alpha - \beta_1 ET_t - \beta_2 RT_t - \beta_3 SECOND_t + \beta_4 LO_t + \beta_5 GS_t + \beta_6 PS_t^* + \varepsilon$ ... (1)

Description of the model

Table 1

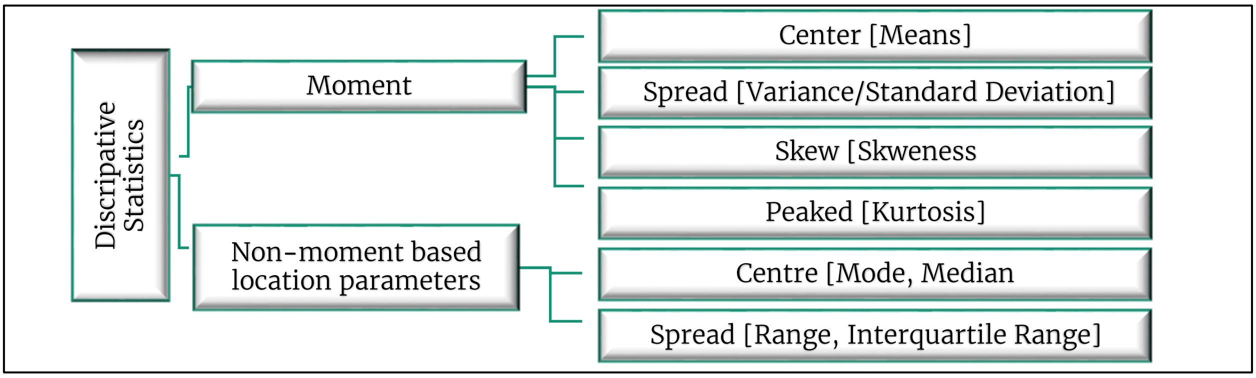
EXRt	α	$-\beta_1 ET_t$	$-\beta_2 RT_t$	$-\beta_3 SECOND_t$	$+\beta_4 LO_t$	$+\beta_5 GS_t$	$+\beta_6 PS_t^*$	ε
Dependent variable	Intercept	Independent variables						Error term
		$\beta_1 < 0$	$B_2 < 0$	$B_3 < 0$	$B_4 > 0$	$B_5 > 0$	$B_6 > 0$	-

**Indicates insignificant*

Descriptive Statistics

Descriptive statistics are a set of methods employed to describe and summarize the main structures of a dataset. They provide a brief overview of the data's characteristics and help to understand its distribution (Skewness and Kurtosis), central tendency, variability, and other important aspects, i.e., percentiles, quartiles, minimum and maximum, without the need for analysis (Fisher and Marshall, 2009; Kaur et al., 2018; Gul et al., 2023).

Image 1



Correlation

Correlation is a statistical measure that measures the direction and degree of a linear association between two variables. It supports us in recognizing how variations in one variable are correlated with variations in another variable.

Unit Root Test

Unit root tests play a critical role in time series analysis by determining whether a time series is stationary or non-stationary. It refers to the fact that a time series variable has a stochastic trend and is not stationary (Gul et al., 2023). In time series analysis and modeling, unit roots hold a significant importance. Most studies employed the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test analysis. The null hypothesis (H_0) of ADF and PP exists in the time series data. If H_0 is rejected, it means the series is stationary. Besides, If H_0 accepts, it means the series has a unit root. The equation of the ADF test is:

$$\Delta z_t = \rho z_{t-1} + \sum_{i=1}^{p-1} ai\, \Delta z_{t-i} + \varepsilon_t \text{ ...(2)}$$

Where, z_t and Δz_t Refer to the value and 1st difference of the time series at time (t), respectively. The ρ shows the coefficient associated with the lagged value. z_{t-1}, ai are the coefficients corresponding to the lagged differences of z_t *and* ε_t Stands for the term time at time (t). Therefore, the null hypothesis of the ADF ($\rho = 1$) and alternative hypothesis ($\rho < 1$) (Said and Dickey, 1984; Phillips and Perron, 1988; Gujarati, 2022; Rehman et al., 2023).

ARDL

Co-integration deals with the long-term relationship between or among variables. The cointegration is found through many tests in time series data, such as Johannsen Cointegration, VECM, and ARDL. The ARDL applies to the long-run relationship between variables, mainly in the context of cointegration. The preconditions before running ARDL. If the variables are stationary at I (0), or I (1), or I (0), and I(1).

$$\Delta Y_t = \beta_0 + \beta_1 \Delta Y_{t-1} + \cdots + \beta_k \Delta Y_{t-k} + \gamma_0 X_t + \gamma_1 X_{t-1} + \cdots + \gamma_m X_{t-m} + \varepsilon_t \quad (3)$$

Where, ΔY_t= represents the 1st difference of the explanatory variable at time t. $\Delta Y_{t-1}, \ldots \Delta Y_{t-k}$, are the lags of the dependent variable. $X_t, X_{t-1}, \ldots X_{t-m}$ Are the explanatory variables along with lags? $\beta_0, \beta_1 \ldots . \beta_k$ and $\gamma_0, \gamma_1, \ldots \gamma_m$ Are the coefficients of the lags of the dependent variable and independent variables? While ε_t Is error term. If the upper bound (I1) critical value is higher than the calculated F-statistic, it indicates the presence of cointegration. The lower bound (I0) critical value is lower than the calculated F-statistic, which means no cointegration. If the bound test value lies between I0 and I1, it refers to the inconclusive region (Gul et al., 2023; Sifat et al., 2023). Now:

$$\mathrm{EXRt}{+}\beta_0 + \sum_{i=1}^{n1} \beta_1 \Delta \mathrm{ETt} - \mathrm{i} + \sum_{i=0}^{n2} \beta_2 \Delta \mathrm{RTt} - \mathrm{i} + \sum_{i=0}^{n3} \beta_3 \Delta \mathrm{SECONDt} - \mathrm{i} + \sum_{i=0}^{n4} \beta_4 \Delta \mathrm{LOt} - \mathrm{i} + \sum_{i=0}^{n5} \beta_5 \mathrm{GSt} - \mathrm{i} + \sum_{i=0}^{n6} \beta_6 \mathrm{PSt} - \mathrm{i} + \eta_1 \mathrm{ETt} - \mathrm{i} + \eta_2 \mathrm{RTt} - \mathrm{i} + \eta_3 \mathrm{SECONDt} - \mathrm{i} + \eta_4 \mathrm{LOt} - \mathrm{i} + \eta_5 \mathrm{GSt} - \mathrm{i} + \eta_6 \mathrm{PSt} - \mathrm{i} + \varepsilon_t \ldots (4)$$

where ∆ indicates I(1) operator; β_0 refers intercept; while $\beta_1, \ldots, \beta_6$ shows coefficients of short-term; $\eta_1 \ldots . \eta_6$ is indicates coefficients of long-term; $n_1 \ldots, n_6$ are shows lag-length, and ε_{t-1} error term of the specific model. If the calculated value of F-statistics is compared with the I(1) and I(0) critical values described by Pesaran et al. (2001). If the calculated statistics of $F_{\text{statistics}}$ > I(1) & H_0 (No cointegration is rejected), nonetheless, the series is stationary I(0) or I(1). As Pesaran et al. (2001) stated, cointegration exists between the variables, so we keep to the estimate of ECM. ECM is a time series model that estimates the association between two or more two variables in the long term. It describes the dynamic of short and long-run equilibrium. The ECM indicates how much disequilibrium of a model effect when presenting points corrects the dis-equilibrium of the previous point (Gul & Khan, 2021). The ECM value should be negative and significant.

$$\mathrm{EXRt}{+}\beta_0 + \sum_{i=1}^{n1} \beta_1 \Delta \mathrm{ETt} - \mathrm{i} + \sum_{i=0}^{n2} \beta_2 \Delta \mathrm{RTt} - \mathrm{i} + \sum_{i=0}^{n3} \beta_3 \Delta \mathrm{SECONDt} - \mathrm{i} + \sum_{i=0}^{n4} \beta_4 \Delta \mathrm{LOt} - \mathrm{i} + \sum_{i=0}^{n5} \beta_5 \mathrm{GSt} - \mathrm{i} + \sum_{i=0}^{n6} \beta_6 \mathrm{PSt} - \mathrm{i} + aECT\mathrm{t} - 1 (5) ..$$

NARDL

The ARDL approach deficiencies reflect the opportunity for asymmetric association between variables. The impact of positive and negative differences in the decomposed variables on the dependent variable is preserved equally. This method is not appropriate for considering the degree of relationship between variables, as there could be Non-linear connections between them. Thus, the preference is for the asymmetric ARDL (NARDL) approach. Hence, the NARDL model, a nonlinear extension of the ARDL approach, is chosen to explore asymmetric relationships and is centered around the concept of long-run asymmetric associations.

$$EXRt_t + a_{it} + {\beta_1}^{+} ET_t + {\beta_1}^{-} ET_t + {\beta_2}^{+} RT_t + {\beta_2}^{-} RT_t + {\beta_3}^{+} SECOND_t + {\beta_3}^{-} SECOND_t + {\beta_4}^{+} LO_t + {\beta_4}^{-} LO_t + + {\beta_4}^{+} GS_t + {\beta_4}^{-} GS_t + {\beta_4}^{+} PS_t + {\beta_4}^{-} PS_t + \varepsilon_{it} \ldots (6)$$

The relationship between EXR and ET shows positive $({\beta_1}^{+} ET_t)$and negative $({\beta_1}^{-} ET_t)$ effects, demonstrating a distribution around equilibrium. The error term ε_t Represents potential deviations from this long-term equilibrium relationship. Therefore, an association between $GDPG_{it}$ And show both positive. $({\beta_1}^{+} ET_t)$, $({\beta_2}^{+} RT_t)$, $and\ ({\beta_3}^{+} SECOND_t)\ ({\beta_4}^{+} LO_t), ({\beta_4}^{+} GS_t), and\ ({\beta_4}^{+} PS_t)$ and negative $({\beta_1}^{-} GOVCONS_{it})$, $({\beta_1}^{-} IMPORT_{it})$, and $({\beta_1}^{-} INFL_{it})$, $({\beta_4}^{-} LO_t$, $({\beta_4}^{-} GS_t)$, $and\ ({\beta_4}^{-} PS_t)$effects, referring to a distribution of equilibrium.

In equation (6), the outcomes of EXR can be decomposed into two parts, +ve and -ve components:

$ET_t = ET_0 + ET_1^{+} + ET_1^{1} \ldots$ (7)

$RT_t = RT_0 + RT_1^{+} + RT_1^{1} \ldots$ (8)

$SECOND_t = SECOND_0 + SECOND_1^{+} + SECOND_1^{1} \ldots$ (9)

$LO_t = LO_0 + LO_1^+ + LO_1^1 \dots (10)$

$GS_t = GS_0 + GS_1^+ + GS_1^1 \dots (11)$

$PS_t = PS_0 + PS_1^+ + PS_1^1 \dots (12)$

Where ET, RT, SECOND, LO, GS, and PS indicate the random initial values and $ET_1^+ + ET_1^1, RT_1^+ + RT_1^1, SECOND_1^+ + SECOND_1^1, LO_1^+ + LO_1^1, GS_1^+ + GS_1^1,$ and $PS_1^+ + PS_1^1$, show the partial sum approach, which sums positive and negative deviations correspondingly, and are defined as:

$$ET_1^+ = \sum_{i=1} \Delta ET_i^+ = \sum_{i=1} \max(\Delta ET_i, 0) \dots (13)$$

$$ET_1^- = \sum_{i=1}^{t} \Delta ET_i^- = \sum_{i=1}^{t} \max(\Delta ET_i, 0) \dots (16)$$

$$RT_1^+ = \sum_{i=1} \Delta RT_i^+ = \sum_{i=1} \max(\Delta RT_i, 0) \dots (13)$$

$$RT_1^- = \sum_{i=1}^{t} \Delta RT_i^- = \sum_{i=1}^{t} \max(\Delta RT_i, 0) \dots (16)$$

$$SECOND_1^+ = \sum_{i=1} \Delta SECOND_i^+ = \sum_{i=1} \max(\Delta SECOND_i, 0) \dots (13)$$

$$SECOND_1^- = \sum_{i=1}^{t} \Delta SECOND_i^- = \sum_{i=1}^{t} \max(\Delta SECOND_i, 0) \dots (16)$$

$$LO_1^+ = \sum_{i=1} \Delta LO_i^+ = \sum_{i=1} \max(\Delta LO_i, 0) \dots (13)$$

$$LO_1^- = \sum_{i=1}^{t} \Delta LO_i^- = \sum_{i=1}^{t} \max(\Delta LO_i, 0) \dots (16)$$

$$GS_1^+ = \sum_{i=1} \Delta GS_i^+ = \sum_{i=1} \max(\Delta GS_i, 0) \dots (13)$$

$$PS_1^- = \sum_{i=1}^{t} \Delta PS_i^- = \sum_{i=1}^{t} \max(\Delta PS_i, 0) \dots (16)$$

The form of the estimated Panel NARDL model:

$$\begin{aligned} EXR_t &+ a_{it} + \beta_1{}^+ EXR_{it-1} + \varphi_1{}^+ ET_{it-1} + \varphi_1{}^- ET_{it-1} + \beta_1 ET_{it} + \vartheta_1{}^+ RT_{it} + \vartheta_1{}^- RT_{it} + \beta_2 RT_{it} + \kappa_1{}^+ SECOND_{it} \\ &+ \kappa_1{}^- SECOND_{it} + \beta_3 SECOND_{it} + \pi_1{}^+ LO_{it} + \pi_1{}^- LO_{it} + \beta_4{}^- LO_{it} + \Omega_1{}^+ GS_{it} + \Omega_1{}^- GS_{it} + \beta_5 GS_{it} + \Lambda_1{}^+ PS_{it} \\ &+ \Lambda_1{}^- PS_{it} + \beta_6{}^- PS_{it} + + \sum\nolimits_{i=0}^{n-1} (\varphi_1{}^+ ET_{it-1} + \varphi_1{}^- ET_{it-1}) + \sum\nolimits_{i=0}^{n-1} (\vartheta_1{}^+ RT_{it} + \vartheta_1{}^- RT_{it}) \\ &+ \sum\nolimits_{i=0}^{n-1} (\kappa_1{}^+ SECOND_{it} + \kappa_1{}^- SECOND_{it}) + \sum\nolimits_{i=0}^{n-1} (\pi_1{}^+ LO_{it} + \pi_1{}^- LO_{it}) + \sum\nolimits_{i=0}^{n-1} (\pi_1{}^+ GS_{it} + \pi_1{}^- GS_{it}) \\ &+ \sum\nolimits_{i=0}^{n-1} (\pi_1{}^+ PS_{it} + \pi_1{}^- PS_{it}) + + \vartheta ect'i + \varepsilon_{it} \dots (10) \end{aligned}$$

The asymmetric ECM is represented by ect'i_t and the rate at which the system returns to long-run equilibrium after a shock is represented by ϑi.

Results and Discussion

Table 2

Descriptive Statistics

Variable	ET_t	$GOVTS_t$	LO_t	EXR_t	RT_t	PS_t	SECOND
Mean	2.153509	6.919956	2.628289	64.11645	1.070175	-1.827049	5.632675
Std. Dev.	1.696858	2.116213	0.728572	4.147929	0.241621	0.588744	0.696601
Skewness	0.946210	-0.064346	-0.504460	0.798516	3.361465	-0.002483	0.124694
Kurtosis	2.018043	2.226858	2.395603	2.888357	12.74662	1.860257	1.888284
Probability	0.077364	0.614880	0.334525	0.131464	0.234533	0.357577	0.357841

Descriptive statistics are used to summarize and describe the main features of a dataset. It helps to understand the variability, central tendency, distribution, and other significant characteristics of the data. The mean of the ET_t, $GOVTS_t$, LO_t, and EXR_t are 2.153509, 6.919956, 2.628289, and 6.411645, respectively. Therefore, RT_t, PS_t, and $SECOND_t$ are 1.070175, -1.827049, and 5.632675 respectively. The standard deviation of ET_t, $GOVTS_t$, LO_t, and EXR_t are 1.696858, 2.116213, 0.728572, and 4.147929. similarly, the RT_t, PS_t, and $SECOND_t$ are 0.241621, 0.588744, and 0.696601 respectively. The ET_t, RT_t, PS_t, and $SECOND_t$ are positively skewed. The GOVTSt LOt is negatively skewed, and PSt is close to zero. Similarly, The ETt, GOVTSt, LOt, PSt, and SECONDt are leptokurtic, and EXRt are mesokurtic. The RTt are platykurtic. The probability of Jarque-Bera of all the variables is higher than 0.05, which means that accepting the null hypothesis and null hypothesis, the projected variables ET_t, $GOVTS_t$, LO_t, EXR_t, RT_t, PS_t, and $SECOND_t$ are normal distribution.

Table 3

Correlation

	LNEXR	*PS*	*GS*	*SECOND*	*RT*	*LO*	*ET*
LNEXR	1						
PS	0.18122	1					
GS	-0.2563	-0.2709	1				
SECOND	-0.2656	-0.0121	0.08883	1			
RT	-0.5529	-0.1437	0.29633	0.52713	1		
LO	0.02635	0.19265	-0.1954	0.68999	0.14695	1	
ET	0.17282	-0.1472	-0.1709	0.40857	-0.4147	0.55755	1

The correlation refers to the degree to which changes in one variable correspond with changes in another variable. The value range of the correlation coefficient is -1 to +1. Thus, -1 and +1 indicate perfect -ve and +1, while 0 shows no linear association. The correlation between a variable and itself is always 1 (diagonal values). The correlation between exchange rate and socioeconomic condition is approximately 0.181, suggesting a weak positive correlation. Therefore, the correlation between EXR and RT is approximately -0.256, indicating a weak negative correlation. The correlation between EXR and ET is approximately -0.266, indicating a weak negative correlation. The EXR and PS are also negatively correlated. The EXR and GS are very weak and positively correlated. The LOt and EXR are also weak positive correlated. To conclude, the EXR is weak, positive, and negatively correlated among other variables.

Table 4

Lag Length Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-361.5940	NA	3.311765	21.06251	21.37358	21.16989
1	-161.6518	308.4822*	0.000630	12.43725	14.92580*	13.29629
2	-113.1409	55.44107	0.000925	12.46519	17.13124	14.07591
3	-35.29538	57.82807	0.000552*	10.81688*	17.66041	13.17927*

** Refers to selected lag order criteria.*

Table 4 is the lag length criteria for a time series analysis. These criteria are used to determine the appropriate lag length when constructing autoregressive models, such as ARIMA models. The lag length indicates the number of past time periods that are considered when predicting the current value in the time series. The entries marked with asterisks (*) under the LR, FPE, AIC, and HQ columns indicate the selected lag order criteria. In this study, AIC selected which is selected three lags.

Table 5

ECM and Short Run Coefficients

	ARDL (3, 0, 1, 0, 3, 3, 3)		NARDL (3, 0, 1, 0, 3, 3, 3)	
Variable	Coeff (SD)	t-Statistic [prob]	Coeff (SD)	t-Statistic [prob]
D(EXR(-1))	-0.33 (0.22)	-1.51 [0.15]		
D(EXR(-2))	-1.05 (0.26	-3.93 [0.00*]		

	ARDL (3, 0, 1, 0, 3, 3, 3)		NARDL (3, 0, 1, 0, 3, 3, 3)	
Variable	Coeff (SD)	t-Statistic [prob]	Coeff (SD)	t-Statistic [prob]
D(SECON)	-8.97 (2.32	-3.85 [0.00*]		
D (SECON (-1))	5.12 (2.82	1.81 [0.09***]		
D (SECON (-2))	5.70 (2.42	2.35 [0.03**]		
D($SECON^{+ve}$)			-0.02 (0.01)	-2.03 [0.07] ***
D($SECON^{-ve}$)			-0.01 (0.00)	-1.79 [0.10]
D ($SECON^{-ve}$ (-1))			0.01 (0.00)	2.01 [0.07] ***
D ($SECON^{-ve}$ (-2))			-1.51 (0.62)	-2.40 [0.03] **
D(RT)	-1.24 (5.94	-2.09 [0.05***]		
D(RT^{+ve})			-0.07 (0.02	-2.56 [0.05] ***
D(RT^{-ve})			-1.08 (0.40	-2.66 [0.04] **
D(ET)	1.63 (1.23	1.32 [0.20]		
D(ET^{+ve})			-0.15 (0.31)	-0.49 [0.63]
D(ET^{-ve})			0.06 (0.02)	2.62 [0.03] **
D(PS)	-0.66 (3.54	-0.18 [0.85]		
D(PS(-1))	1.40 (4.68	2.22 [0.04**]		
D(PS(-2))	9.47 (4.89	1.93 [0.07***]		
D(PS^{+ve})			4.42 (0.76	5.81 [0.00] *
D(PS^{-ve})			1.03 (0.61	1.68 [0.15]
D (PS^{-ve} (-1))			-2.80 (0.87	-3.20 [0.0] *
D (PS^{-ve} (-2))			-0.37 (0.53	-0.69 [0.51]
D(GS)	2.73 (1.09	2.48 [0.02**]		
D(GS(-1))	-0.31 (1.01	-0.31 [0.76]		
D(GS(-2))	-2.87 (0.93	-3.06 [0.00*]		
D(GS^{+ve})			0.05 (0.02	2.25 [0.07] ***
D(GS^{-ve})			0.05 (0.02	2.47 [0.05] ***
D (GS^{-ve} (-1))			1.66 (0.41	4.00 [0.01] *
D (GS^{-ve} (-2))			0.91 (0.33	2.76 [0.03] **
D(LO)	-3.54 (3.52	-1.00 [0.33]		
D(LO(-1))	6.45 (3.78	1.70 [0.11]		
D(LO(-2))	13.6 (3.91	3.47 [0.00*]		
D(LO^{+ve})			0.31 (0.64)	0.48 [0.64]
D(LO^{-ve})			-1.07 (0.31)	-3.39 [0.0] *
D (LO^{-ve} (-1))			-1.18 (0.39)	-2.98 [0.02] **
D (LO^{-ve} (-2))			-0.09 (0.13)	-0.71 [0.50]
CointEq(-1)	-0.13 (0.05	2.31 [0.03**]		
CointEq(-1)			-0.87 (0.20)	-4.34 [0.00] *

, **, and * refers 1%, 5% and 10% significant level respectively.*

In the short run, the socioeconomic condition has a statistically negative significant impact on the exchange rate. Similarly, religious tension and political stability have a negative impact on the exchange rate. Government stability plays a significant role in the economic activities of a state. Thus, government stability is negative and statistically significant on the exchange rate. Law and order do not impact the exchange rate in the short run. The short-run results of NARDL. The NARDL studies the negative and positive shock and its impact on dependent variables. The socioeconomic conditions positive shock in the short run increase in 1 unit as a result, exchange rate decline of -0.02 percent. Besides, a negative shock of socioeconomic condition 1 unit increases the exchange rate decline by -0.01. The religious tension positive shock in the short run is significant at 10%, while ethnic tension is insignificant. Religious tension positively increased by 1 unit; thus, the exchange rate declined by -0.07 percent. Furthermore, religious and ethnic tension negative shock was statistically negative and positive significant. When religious tension and ethnic tension 1 unit increase as a result, the exchange rate declines (-1.06), and ethnic tension increases by 0.06 percent. In the same period, political stability positive shock increases by 1 unit due to a decline of -0.37 percent, while negative shock is insignificant. In the case of government stability, asymmetry does not exist in the short run. Thus, the variable responds equally to positive and negative shocks, showing no bias or preference for one direction of change over the other. Finally, law and order have an insignificant impact on the exchange rate. The ECM shows the relationship between variables over time and analyzes how variables respond to short-term equilibrium toward long-run equilibrium. In the above table, the ECM values ARDL and NARDL are -0.131390 and -0.87, respectively. It represents the coefficient associated with the ECM. It means that if the variables experience a temporary disturbance, causing them to move away from their balanced relationship, they will tend to correct themselves over time.

Table 6

Long Run Coefficients of ARDL and NARDL results

	ARDL		NARDL	
Series	Coefficient	t-Statistic [Prob]	Std. Error	Prob.
SECOND	-0.04 (0.02)	-1.82 [0.08] ***		
$SECOND^{+ve}$			-0.63 (0.23	-2.75 [0.04] **
$SECOND^{-ve}$			-0.05 (0.02	-2.25 [0.07] ***
RT	-0.20 (0.08)	-2.43 [0.02] **		
RT^{+ve}			0.07 (0.02	2.56 [0.05] ***
RT^{-ve}			-0.53 (0.21	-2.49 [0.02] **
ET	-0.06 (0.01)	-3.69 [0.00] *		
ET^{+ve}			-0.24 (0.19)	-1.23 [0.27]
ET^{-ve}			0.41 (0.25)	1.64 [01.6]
PS	-0.02 (0.05)	-0.39 [0.69]		
PS^{+ve}			0.86 (0.33)	2.61 [0.04] **
PS^{-ve}			-1.66 (0.41)	-4.00 [0.01] *
GS	0.04 (0.06)	-2.26 [0.03] **		
GS^{+ve}			-0.91 (0.33)	-2.76 [0.03] **
GS^{-ve}			-001 (0.15)	-0.07 [0.94] *
LAW	0.14 (0.00)	2.26 [0.03] **		
LAW^{+ve}			0.64 (0.14)	4.47 [0.00] *
LAW^{-ve}			-0.08 (0.02)	-4.01 [0.01] *
Constant (c)	2.27 (0.42)	5.33 [0.00] *		

Table 6 illustrates the outcomes of long-run efficiency. Socioeconomic conditions are positive and statistically significant at a 10% level. The coefficient value of this is -0.04, which indicates that when 1 unit increases socioeconomic conditions, there is a -0.04 percent decline in the exchange rate of Pakistan. However, given the p-value surpasses the conventional significance threshold of 0.05, the relationship might not be statistically significant at 5%. Therefore, the religious tension is also negative and statistically significant at a 5% level. When religious tension increases by 1 unit, the exchange rate declines -0.20 percent. Ethnic tension is also a crucial factor that significantly affects the exchange rate of developing countries, including Pakistan. When the ethnic tension increases by 1 unit, the exchange rate declines to -0.06 percent, in the case of Pakistan. Conversely, the political stability coefficient is -0.020. But does not seem to significantly influence the exchange rate, because as its high p-value of 0.69 indicates. The government stability coefficient is 0.04, which holds a positive and statistically significant relation to the exchange rate. Thus, the p-value of the same variable is 0.0334, which falls below the 0.05 level. Law and order are positively correlated with the exchange rate. When law and order are raised by 1 unit, the exchange rate is enhanced by 0.14%. It indicates the strong and suitable law and order of a state improve the economic activities of that state. In summary, the analysis highlights the explanatory variables of socioeconomic conditions, ethnic and religious tension, government stability, and law and order effect on the exchange rate. In the long run, when there is a positive socioeconomic shock, meaning increased economic stability, higher GDP growth, better employment rates, etc., it leads to a decline in the exchange rate of -0.63 percent. Conversely, when there is a negative socioeconomic shock, it leads to a decrease in the exchange rate of -0.5. Thus, religious tension positive shock raises 1 unit. As a result, the exchange rate declines -0.07. While in negative shock increase by 1 unit, the exchange rate declines -0.53. There are so many socioeconomic issues, and ethnic tension is one of them. Ethnic tension negative shock increases by 1 unit the -.24 decline in the exchange rate. Also, in negative shock of the ethnic tension increase by 1 unit, the exchange rate increases by 0.41 percent. Ethnic tension led to a rise in the exchange rate. Its significant relationship between socioeconomic and geopolitical factors and exchange rates can be complex and may vary depending on the specific circumstances and time period under consideration. Political stability is a significant element that can importantly impact the exchange rate. The stable environments tend to attract foreign investment, promote consistent economic policies, increase investor confidence, and contribute to a stronger local currency. When there is a positive political stability shock, it means an increased exchange rate increase of 0.86 percent. Conversely, when there is a negative political stability shock, it leads to a decrease in the exchange rate of -1.66. Government stability and law and order also have a significant impact on the exchange rate. The government stability negative increased by 1 unit as a result of a 0.91 percent increase in the exchange rate. Besides, the government stability negative is insignificant. The law and order also determine the economic activities. The law-and-order negative shock increases by 1 unit, the exchange rate increases by 0.64 percent, while negative shock increases by a unit as a result of a decline of -0.08 percent. Besides, merely political stability does not have a significant impact on the exchange rate in the case of Pakistan.

Table 7

ARDL & NARDL Bounds Tests

	ARDL BOUND VALUE		NARDL BOUND VALUE	
F-statistic	4.298546		7.999712	
Significance	Lower-Bound	Upper-Bound	Lower-Bound	Upper-Bound
10%	2.23	3.34	2.26	3.35
5%	2.57	3.51	2.62	3.79
2.5%	2.86	3.88	2.96	4.18
1%	3.24	4.23	3.41	4.68

A bound test is used in hypothesis testing to check whether the cointegration (long-run association) exists among the variables or not. If the calculated test value is exceeded than the upper bound, it means cointegration exists among the specific variables. In Table 7, the F-statistics value is 4.29, and it exceeds both the upper and lower bounds at a significance level of 5%. It is that there is evidence of cointegration.

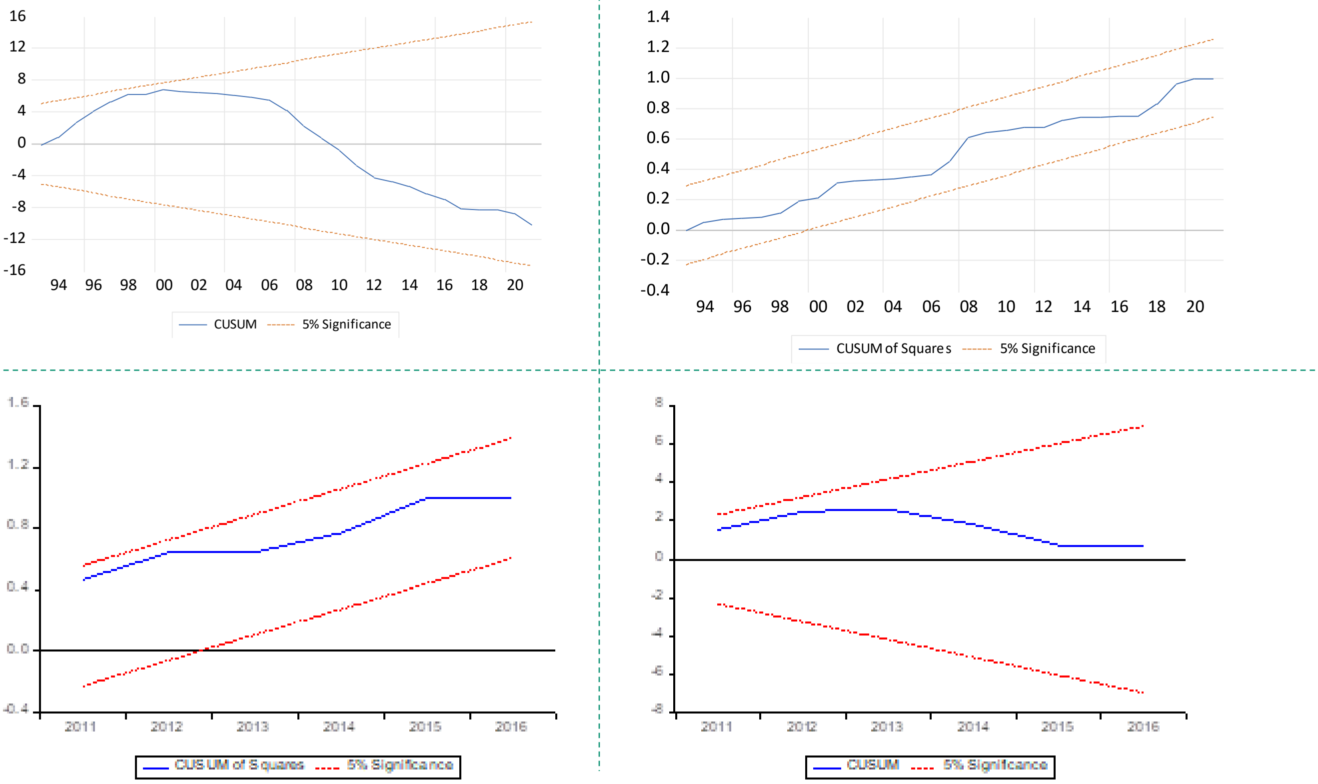
Table 8

Diagnostic tests

Heteroskedasticity			
F-stat	0.397065	Probability. F (22,12)	0.9709
Obs*R^2	14.74481	Probability. χ^2 (22)	0.8730
Scaled explained SS	2.239110	Probability. χ^2 (22)	0.9834
Breusch-Godfrey Serial Correlation LM Test (BG-LM test)			
F-stat	2.604261	Prob. F(3,9)	0.1162
Obs*R^2	16.26426	Prob. χ^2 (3)	0.0610

The Heteroskedasticity test is used to check whether the variance of the residuals in a model is reliable across various levels of the explanatory variables. The p-value of X^2 is 0.87, which indicates the significance level of the test. The p-value (0.87>0.05) suggests that the model is free from heteroskedasticity. Therefore, the BG-LM test is employed to notice the issue of serial correlation in a model. The p-value of X^2 0.06 indicates the significance level of the test. It suggests that there is no evidence of the presence of serial correlation.

Figures 1 to 4



Figures 1 and 4 display the results of ARDL and NARDL's CUSUM and CUSUM Square tests. It is used to monitor the stability of parameters over time in a regression model. It is particularly valuable when there is a concern about changes or shifts in the relationships between variables. When the blue line falls within the red region in CUSUM and SUSUM^^{2,} it means the model is a table with a 5% significance level. The fact that the blue line stays within the red region indicates that there is no strong evidence of structural changes or unusual patterns that would warrant concern. In other words, the model is stable.

Conclusion

In the short run, the socioeconomic condition has a statistically negative significant impact on the exchange rate. Similarly, religious tension and political stability have a negative impact on the exchange rate. Government stability plays a significant role in the economic activities of a state. Thus, government stability is negative and statistically significant on the exchange rate. Law and order do not impact the exchange rate in the short run. In the case of NARDL, the negative and positive shock and its impact on dependent variables. The socioeconomic conditions' positive shock in the short run increases the exchange rate decline, while the negative shock of socioeconomic conditions increases the exchange rate decline. Religious tensions have a significant impact on the exchange rate, especially in regions or countries where religion plays a significant role in social and political dynamics. Some important factors that can influence exchange rates are investor confidence, capital flight, trade disruptions, policy responses, tourism, and perception of risk. Religious tension positive (negative) shock increases the exchange rate decline (decline). In the same period, political stability positive (negative) shock increases due to decline, while negative shock is insignificant. Therefore, the ECM value is negative and significant. Therefore, in the long run, all-independent variables such as socioeconomic conditions, ethnic-religious tension, and political and government stability have a negative and positive impact on the exchange rate.

Reference

Bahmani-Oskooee, M., Hadj Amor, T., Nouira, R., & Rault, C. (2018). Political risk and real exchange rate: What can we learn from recent developments in panel data econometrics for emerging and developing countries? *Journal of Quantitative Economics*, *17*(4), 741-762. https://doi.org/10.1007/s40953-018-0145-4

Benedict, A., Mafika, S., Tutu, K. B., & Selase, A. M. (2022). The effects of political risk on foreign exchange demand: Evidence from Zimbabwe. *Cogent Economics & Finance*, *10*(1). https://doi.org/10.1080/23322039.2022.2111806

Butt, S., Ramakrishnan, S., Loganathan, N., & Chohan, M. A. (2020). Evaluating the exchange rate and commodity price nexus in Malaysia: Evidence from the threshold cointegration approach. *Financial Innovation*, *6*(1). https://doi.org/10.1186/s40854-020-00181-6

Compaoré, A., Mlachila, M. M., Ouedraogo, R., & Sourouema, S. (2020). *The impact of conflict and political instability on banking crises in developing countries*. International Monetary Fund.

Denzel, M. A. (2017). *Handbook of world exchange rates, 1590–1914*. Routledge.

Elkomy, S., Ingham, H., & Read, R. (2015). Economic, Institutional & Political Determinants of FDI Growth Effects in Emerging & Developing Countries. https://core.ac.uk/download/pdf/42415403.pdf

Fisher, M. J., & Marshall, A. P. (2009). Understanding descriptive statistics. *Australian Critical Care*, *22*(2), 93-97. https://doi.org/10.1016/j.aucc.2008.11.003

Frankel, J. A. (1979). A Test of the Existence of the Risk Premium in the Foreign Exchange Market vs. The Hypothesis of Perfect Substitulability.

Frankel, J. A. (1979). On the Mark: A Theory of Floating Exchange Rates Based on Real Interest Differentials. *The American Economic Review*, *69*(4), 610–622. http://www.jstor.org/stable/1808707

Gujarati, D. N. (2022). *Basic econometrics*. Prentice Hall.

Gul, A., & Khan, A. W. (2021), The Effect of Small-Scale Industries on Employment Level in Pakistan, Journal of Research and Reviews in Social Sciences Pakistan, 4(2), 1393-1404. https://journal.kinnaird.edu.pk/wp-content/uploads/2021/12/11.-Akhtar-Gul-1.pdf

Gul, A., Khan, S. U., & Abbasi, R. A. (2023). Vicious Circle of Health Expenditure: Time Series Evidence from Pakistan. *Journal of Contemporary Macroeconomic Issues*, 4(1), 57–77. https://ojs.scekr.org/index.php/jcmi/article/view/99

Gul, A., Sadiq, S., & Khan, S. U. (2023). Conflicts and The Structure of Economy: A Case of Trade in Pakistan. *Journal of Development and Social Sciences*, 4(4), 23-42. https://doi.org/10.47205/jdss.2023(4-IV)03

Kaur, P., Stoltzfus, J., & Yellapu, V. (2018). Descriptive statistics. *International Journal of Academic Medicine*, 4(1), 60. https://doi.org/10.4103/ijam.ijam_7_18

Nordal, K. B. (2001). Country risk, country risk indices and valuation of FDI: A real options approach. *Emerging Markets Review*, 2(3), 197-217. https://doi.org/10.1016/s1566-0141(01)00017-6

PHILLIPS, P. C., & PERRON, P. (1988). undefined. *Biometrika*, 75(2), 335-346. https://doi.org/10.1093/biomet/75.2.335

Ramakrishnan, S. , Butt, S. & Anuar, M. A. (2017). The Impact of Macroeconomic, Oil Prices and Socio-economic Factors on Exchange Rate in Pakistan: An Auto Regressive Distributed Lag Approach . International Journal of Economics and Financial Issues, 7(1), 489-499. https://dergipark.org.tr/en/pub/ijefi/issue/32002/353226

Rauf, A., & Khan, A. A. (2017). Impact of foreign debt on economic growth: Evidence from Pakistan. *Asian Economic and Financial Review*, 7(10), 1005-1013. https://doi.org/10.18488/journal.aefr.2017.710.1005.1013

Rehman, R., Sadiq, S., Khan, S. U., & Gul, A. (2023). Long Term Trends in Rainfall and Temperature Effects on Food Security in Pakistan: An Analysis of 75 Years (1947-2021). *Qlantic Journal of Social Sciences*, 4(3), 55-68. https://doi/org/10.55737/qjss.000490202

SAID, S. E., & DICKEY, D. A. (1984). Testing for unit roots in autoregressive-moving average models of unknown order. *Biometrika*, 71(3), 599-607. https://doi.org/10.1093/biomet/71.3.599

Sifat, U., K, Khan, Z., K, & Gul, A. (2023). Democracy's Role in Shaping Pakistan's Economic Growth: An Empirical Evidence from Pakistan. *International Journal of Contemporary issues in social sciences*, 2(3), 356-367.

Venâncio de Vasconcelos, M. (2020). Political stability and bank flows: New evidence. *Journal of Risk and Financial Management*, *13*(3), 56. https://doi.org/10.3390/jrfm13030056

Willett, T. D., Chiu, E. M., & Walter, S. (2014). Fixed exchange rate regimes and financial markets as sources of macroeconomic discipline. *Handbook of the International Political Economy of Monetary Relations*, 285-303. https://doi.org/10.4337/9780857938374.00022