Concept Note

Research title: The role of domestic and foreign political instability to determine the exchange rate of BDT

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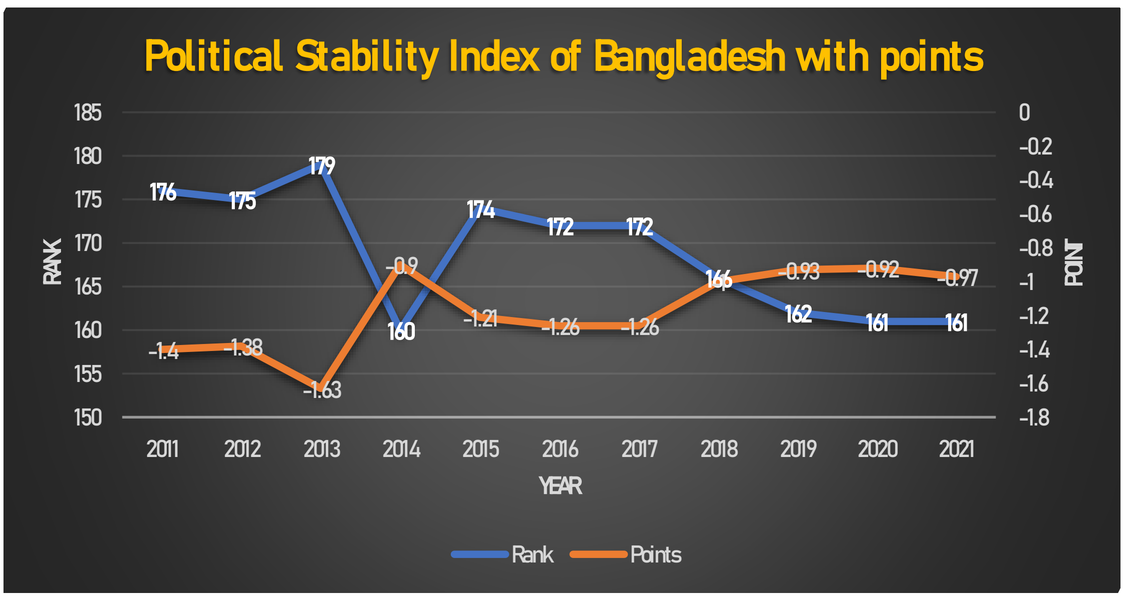
1: Introduction

1.1 Background

For decades, Political Conflict, Extremism, and Corruption remained central issues in Bangladesh. Bangladesh has positioned at 161st in the political stability index and 147th in the corruption index among 194 countries (The global economy, 2021). Economists consider political instability as a major ailment that harms economic performance. Political uncertainty must be accounted for in the traditional macroeconomic model and estimate the impact on macroeconomic variables. An exchange rate determination model is not an exception.



1.2 Problem statement

An exchange rate can be determined by macroeconomic variables such as interest rate, inflation, trade balance, the balance of payments, and government debt of a country. Scholars have found that the traditional approach cannot fully determine the exchange rate and the fluctuation in the short run. According to a group of researchers, the determination of the exchange rate is not only an economic but also a political matter (*Frieden, 1994*). For example, political factors such as political instability can cause uncertainty for investors & traders, which can dramatically affect currency rates. Also, an election can have an impact on currency values as a distinct govt. can have different diplomatic relations and trade policies with other countries. Political conflict and war between foreign countries can significantly affect domestic currency rates. However, political instability in foreign countries has different outcomes for different currencies. For example, political instability is associated with a significant drop in the value of domestic currencies of Arab Spring countries (*Bouraoui and Hammami, 2017*). Some scholars found that external political uncertainty has no significant impact on the RMB (*Liu and Pauwels, 2012*). In contrast, some researchers showed that US political instability increased the fluctuation of RMB (*Chao & Tung, 2013*). So, in different circumstances and for different countries, the impact of political uncertainty on currency can be different. However, it's still not clear that along with the economic factors, how much significant role they play as determinants of the exchange rate. There is a literature gap about the role of political factors as a determinant of the BDT exchange rate. From all the discussion, I think, there is a need to conduct study about the impact of political instability on BDT exchange rate

1.3 Research question

- How do political events affect the return of BDT exchange rate along with the economic factors?

1.4 Research objective

- The purpose of the study is to assess whether political events have any statistically significant impact on both the returns and the conditional volatility of the BDT exchange rate.

2: Literature review

The rise of political instability in numerous nations throughout the world and its negative effects on those nations' economic performance have piqued the curiosity of various researchers.

2.1 The role of exchange rate in an economy

The rate at which one currency can be exchanged for another is known as the exchange rate. On the international foreign exchange markets, where different currencies are traded, this rate is constantly fluctuating. Together with the US dollar, the Japanese yen, and the pound sterling, the euro is one of the most traded currencies. There are effects of exchange rates on growth and price stability. For instance, currency rates have an impact on prices in global trade. US goods cost less for persons in the euro zone when more US dollars can be bought for every €1, or when the euro appreciates. Prices of imports decrease as a result. Economic factors such as inflation, interest rate, current account deficits, public debt, and terms of trade and trade balance and also strong economic performance can influence the exchange rate.

2.2 Exchange rate determination theory

There are several economic theories have been found to determine the exchange rate such as Trade of Elasticities Approach, Purchasing-Power Parity Theory, Monetary Approach, Portfolio-Balance Approach. However, Scholars have found that the traditional approach cannot fully determine the exchange rate and the fluctuation in the short run. According to a group of researchers, the determination of the exchange rate is not only an economic but also a political matter (*Frieden, 1994*).

2.3 Impact of political instability on economic growth

There are several studies have found about the impact of political instabilities on economic growth. Aisen and Veiga (2013) look at 169 nations' GDP growth between 1960 and 2004 and the effect of political unrest on that growth. They demonstrate a significant and adverse relationship between political instability and growth rates of GDP per capita using a dynamic panel data method. Gurgul and Lach (2013) examined the connection between political unrest, as indicated by changes in the composition of the government, and economic expansion in ten CEE transition economies. Based on the regression model, their findings show a negative and unidirectional causal relationship between political instability and GDP growth rate. Brada, Kutan, and Yigit (2006) provide external sources of political instability (war, conflict between neighboring states, war, etc.) to assess their effects on FDI inflows in the transition economies of Central Europe and the Balkans in addition to domestic political unrest (strikes, civil unrest, etc.). They show that both political instability sources result in a sizable drop in FDI inflows using GLS panel regression. According to their findings, higher levels of political unrest are linked to higher inflation. This correlation is explained by the fact that more cabinet changes or political crises lead to heterogeneity in economic policy since each new cabinet establishes its own inflation-control strategy.

2.4 The role of political uncertainties on exchange rate

Kutan and Zhou (1995) examined the effect of political instability in Poland, currency's volatility was brought on by the economic changes implemented in the late 1980s and early 1990s. They report using a GARCH model that sociopolitical events seem to cause a significant increase in the bid-ask spreads. Between October 1985 and August 1990, Melvin and Tan (1996) also applied a GARCH approach to analyze changes in the South African currency as a result of sociopolitical instability in South Africa. They classify riots, protests, political strikes, and armed attacks as sociopolitical crises. Their findings suggest that the South African rand often strengthens by 540 basis points on days when political unrest occurs. Recently, Saeed et al. (2012) studied the factors that influenced exchange rates from 1982 to 2010 in Pakistan. Along with the stock of money, total debt, and foreign exchange reserves, they also add a dummy variable to represent political instability. Their findings highlight the fact that each variable had a major impact. Political unrest is specifically observed to result in a 44% decline in the PKR/USD exchange rate.

2.5 Trading in forex market

There are several factors have been found, which can increase the volatility of currency rate in the forex market. Inflation in a certain country is one of the most frequent variables affecting exchange rate fluctuations. Consumer prices for goods and services are anticipated to rise as a result of manufacturing slowing down as a result of resource shortages like fuel, labor, or raw materials. Additionally, it fluctuates as a result of positive or negative economic and political news. Baruník and others (2017) studied about asymmetric volatility connectedness on the forex market and they conclude that A combination of monetary and real-economy events is behind the positive asymmetries in volatility spillovers, while fiscal factors are linked with negative spillovers.

3: Theory

3.1 Extended monetary model

The monetary model of exchange rate can be expressed as follows when taking into consideration purchasing power parity, money market equilibrium, and uncovered interest parity:

$$\boldsymbol{s_{i,t} = \delta_0 + \delta_1\left(m_{i,t} - m^*_{i,t}\right) + \delta_2\left(y_{i,t} - y^*_{i,t}\right) + \delta_3\left(i_{i,t} - i^*_{i,t}\right) + \varepsilon_{i,t}}$$

Including Political Stability Index point (PSI), Extended monetary model can be expressed as:

$$\boldsymbol{s_{i,t} = \beta_0 + \beta_1(m_{i,t} - m^*_{i,t}) + \beta_2(y_{i,t} - y^*_{i,t}) + \beta_3(i_{i,t} - i^*_{i,t}) + \beta_4 psi_{i,t} + \beta_5 psi^*_{i,t} + \varepsilon_{i,t}}$$

where s is the exchange rate of corresponding domestic currency against foreign currency; m and m* are domestic and the foreign money supplies; y and y are domestic and the foreign GDP; i and i* are domestic, and foreign interest rates. i and t denote the i^{th} economy and t^{th} time. Here, B_1 = 1, which indicates that the exchange rate will rise proportionately if domestic money supply rises compared to foreign money supply.

We can obtain the estimated domestic exchange rate based on the above Panel Quantile regression, but the problem is exchange rate is highly volatile, it update daily but we have yearly data. I have seen in the literature that they used this kind of PARDL model but with quarterly data. But for Bangladesh, we don't have this kind of quarterly data on GDP and PSI. Because of the limitation we cannot apply the formula for Bangladesh.

3.2 Event study methodology

We can study daily data of exchange rate by adopting event study methodology to assess whether political event causes for higher volatility or depreciation of currency rate. According to Neely (2015), an event study requires events to be defined along with appropriate criteria and methodology to test their impact. To conduct an event study, events must be defined with appropriate criteria and methodology to assess their impact. By considering the event definition, the following equation can estimate the effect of Political event on the daily returns of the BDT exchange rate.

Mean equation

$$r_t^{BDT} = c + \gamma \boldsymbol{X}_{t-1}^{macro} + \theta \boldsymbol{I}_{t-1}^{event} + \delta \boldsymbol{d}_{t-1} + \varepsilon_t$$

Here,

- Daily return, $r_t^{BDT} = \ln\left(\frac{s_t}{s_{t-1}}\right) * 100$, s_t is BDT/USD exchange rate at time *t*.

- $\boldsymbol{X}_t^{macro}$, **X** is a k*1 vector of domestic macroeconomic news which can surprises to the conditions of economic activity, monetary policy, and external imbalances in Bangladesh. (Control variables)
- $\theta \boldsymbol{I}_t^{event}$, is a l*1 vector that contains various specifications of the political event indicators
- $\delta \boldsymbol{d}_t$, vector of dummies tracking the reforms to the BDT or any economic crisis.
- ε_t is the white noise

After estimating the mean equation, we can estimate the impact of political events on conditional volatility of the BDT exchange rate. The following variance equation can be conducted by using a conditional volatility model in the spirit of Engle (1982) and Bollerslev (1986). Following Neely (2005), we can use a GARCH (1,1) model specification and the political event indicators are also introduced in the conditional variance equation.

Variance equation:

$$\varepsilon_t \sim N(0, h_t)$$

$$h_t = \omega + \alpha \varepsilon_{t-1}^2 + \beta h_{t-1} + \theta \boldsymbol{I}_{t-1}^{event}$$

Here for example, A positive and statistically significant coefficient on political event indicator would imply that political pressure tends to increase the conditional volatility of the BDT/USD exchange rate.

4: Data and Sources

Indicators	Variables	Sources
$\boldsymbol{X}_t^{macro}$ (Domestic Macroeconomic news)	Any macroeconomic official news which can intervene the exchange rate model such as: Loan growth, CPI inflation,	By collating daily news: Official statements by Govt. or major International

	Money supply, Trade balance, Interest rate difference etc.	Organization (ADB, IMF, World Bank etc.)
$\theta \boldsymbol{I}_t^{event}$ (Political event indicators)	By dividing different regions: Bangladesh, US, Europe, Asia, etc.	By defining event with appropriate criteria: TERROR, RIOT, STRIKES, ELEC, REGIME, WAR
r_t^{BDT}	Daily rate of BDT/USD exchange rate	Bangladesh bank or investing.com

5: Sampling method and Sample Size

According to Hanke and Wichern that the sample size for time series should be at least 50. However, there is not a formula to determine the sample size for time series.

For this paper, I will use daily time series data. Here I will only study last year (2022) BDT/USD exchange rate return. So, according to investing.com, there are 244 observations available for the last year.

It would be challenging to collect macroeconomic news for every date because we don't have such directory where any macroeconomic statements were listed. So, it would be manual process by going through all the news and event which happened in the last year.

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Appendix

Title	Title of the research paper	Authors	Year of publication	Context (Method, country biased)	Method and tools adopted	Key findings and discussion	Conclusion	Remarks
The role of exchange rate in a economy	The Changing Role of the Exchange Rate in a Globalised Economy	di Mauro, Filippo and Rueffer	2008	Quantitative Method	OLS, Valuation effects	The responsiveness of euro area exports to exchange rate changes may have declined somewhat as a result of globalisation, reflecting mainly shifts in the geographical and sectoral composition of trade flows.	The impact of exchange rate changes on corporate profits, which suggests that overall this relationship appears to be relatively stable over time, although there are important crosscountry differences.	From all of the studies, exchange rate has important role in any economy such as movements in the exchange rate influence the decisions of individuals, businesses and the government. It serves as the basic link between the local and the overseas market for various goods, services and financial assets. Using the exchange rate, we are able to compare prices of goods, services, and assets quoted in

									different currencies.
	Real exchange rate levels and economic development: theoretical analysis and econometric evidence	Paulo Gala	2008	Quantitative Method	Theorectical Aanalysis with econometric evidence	An important empirical literature that relates overvaluations to low per capita growth rates.	This paper intends to contribute to the debate by bringing more theoretical elements and providing new econometric evidence to the connections between real exchange rate levels and development.	

	Exchange Rate Economics: Where Do We Stand?	JOHN M. LETICHE	1982	Quantitative Method	Regression equation	An increase in the money supply at home leads to an equiproportionate depreciation. As an increase in domestic real income raises the demand for real balances and thus leads to a fall in domestic prices, it induces an offsetting exchange appreciation.	Relatively higher domestic interest rates, by contrast, reduce the demand for real balances, raise prices, and therefore bring about exchange depreciation.	

Exchange rate deteriminati on theory	A Theory of Exchange Rate Determination	Alan C. Stockma n	1980	Quantitativ e Method	Cross country analysis	Changes in relative prices of goods, due to supply or demand shifts, induce changes in exchange rates and deviations from purchasing power parity	Changes may create a correlation between the exchange rate and the terms of trade, but this correlation cannot be exploited by the government to affect the terms of trade by foreign exchange market operations.	There are several ways to deternine the exchange rate by using economic indicators and theories but it's always not gives us the correct result or traditional exchange determination theories always cannot determine exchange rate completely especially the short run fluctuation
	An alternative theory of real exchange rate determination: theory and empirical evidence for the Mexican economy, 1970–2004	Francisco A. Martínez – Hernánde z	2010	Quantitativ e method. Country: Mexico and USA	Cointegrat ed VAR model	The empirical results show that the PPP hypothesis does not apply in its two versions (strong and weak) for a span of 35 years (1970–2004).	Alternative theory implies that, in general, competitive position of firms in the Mexican manufacturi ng industry has been far away of those international (regulating) firms of the manufacturi ng industry.	

The role of political uncertainities on exchange rate	Do external political pressures affect the Renminbi exchange rate?	Li-Gang Liu, Laurent L. Pauwels	2012	USA, China	ARCH/GARCH	1. Any political pressure from the US, don't impact the return of RMB 2. But US political pressure increase the condition volatility of RMB	External political pressure does increase the volatility of country's exchange rate.	From the studies, I have found that, political instability has significant impact on currency rate although all the impact can be different on different currencies. But political instability increases the volatility of most of countries currency.
	An Econometric Analysis of Determinants of Exchange Rate in Pakistan	Saeed, A., R. U. Awan., M. H. Sial, and F. Sher.	2012	Pakistan based Quantitative analysis	GARCH	Their findings highlight the fact that each variable had a major impact. Political unrest is specifically observed to result in a 44% decline in the PKR/USD exchange rate	Along with the economic variables political factor also impact exchange rate	

Impact of political instability on economic growth	The Effects of Transition and Political Instability on Foreign Direct Investment Inflows: Central Europe and the Balkans.	Brada, J. C., A. M. Kutan, and T. M. Yigit.	2006	Quantitative method	GLS panel regression	Political instability sources result in a sizable drop in FDI inflows using GLS panel regression	Political instability has significant impact on FDI. In order to increase FDI, country need to stable in politics	Political instability impact different sectors in a many ways. And it's harmful for economic growth
	How Does Political Instability Affect Economic Growth?	Aisen, A., and F. J. Veiga.	2013	Quantitative method. Based on 169 countries,	Panel data analysis	A significant and adverse relationship between political instability and growth rates of GDP per capita	Political instability can reduce economic growth on multiple sector	
Trading in the forex market	Chartists, Fundamentalists, and Trading in the Foreign Exchange Market.	Jeffrey A. Frankel and Kenneth A. Froot.	1990	Quantitative method	Analyzing different theory of exchange rate.	There are various economic factor can influence the return of exchange rate such as interest rate	Exchange rate can be influenced by many factors	One of the most frequent factors influencing exchange rate fluctuations is inflation in a given nation. Consumer prices for

	Asymmetric volatility connectedness on the forex market	Jozef Baruník, Evžen Kočenda, Lukáš Vácha.	201 7	Quantitati ve method	Measure volatililty (assymetry effects)	Dominating asymmetries in spillovers that are due to bad, rather than good, volatility	A combinatio n of monetary and real-economy events is behind the positive asymmetrie s in volatility spillovers, while fiscal factors are linked with negative spillovers.	goods and services are expected to increase as a result of manufacturi ng slowing down due to shortages of resources like fuel, labor, or raw materials. Also it fluctuates due to good or bad news of an economy