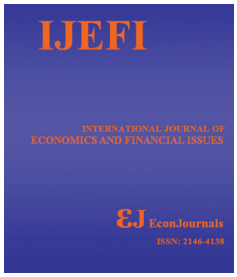

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Macroeconomic Stability in Bangladesh: Unraveling the Nexus between Exchange Rate, Inflation, and Export Dynamics through Nonlinear Modeling

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ABSTRACT

This study explores the effects of exchange rate and inflation on the export of goods and services in Bangladesh. Applying Nonlinear Autoregressive Distributed Lag (NARDL) model and using data from 1987 to 2021, in the case of a negative shock, this study finds a significant negative long-run association of exchange rate and inflation with export. Besides, in the case of positive shock, we see a meaningful positive relationship between inflation and exports. Following the findings, this study suggests exchange rate and inflation to ensure stability in Bangladesh's economy through the issuance of new policies considering the reduction of inflationary pressures, formulation of contractionary monetary policy, recapping exchange-traded funds, and modification of exchange rate determination.

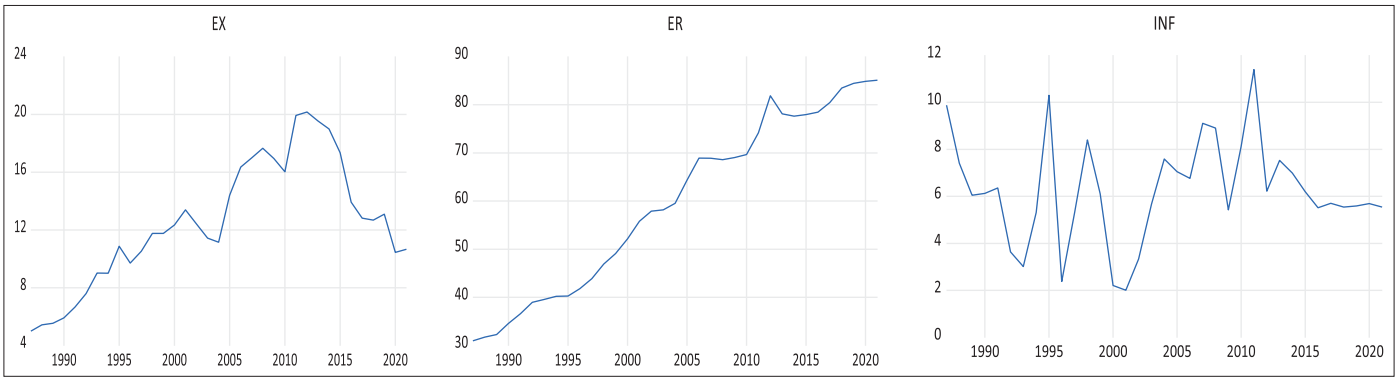
Keywords: Export, Inflation, Exchange Rate, NARDL, Bangladesh
JEL Classifications: E10, E31, E43, F3

1. INTRODUCTION

International trade affects an economy by allowing people to purchase various goods from other countries, determining comparative advantages. A nation cannot fully satisfy all of its own needs on its own. Therefore, international trade enables the sharing of resources between countries. Due to its favorable effects on reserves and the trade balance, every nation attempts to increase its export volume. Additionally, trading between nations allows people to experience various goods, fill needs for goods that are unavailable domestically, and maintain a stable economy (Helpman, 2011). In this regard, countries with a sufficient supply of inexpensive labor concentrate on producing labor-intensive goods and exporting them abroad. Also, nations export commodities and services that require much capital (Ilmas et al., 2022). Various factors, including export-stimulating government programs, inflation rates, availability of natural resources and raw materials, related rules and regulations, currency rates, export procedures etc. influence the final export rate of a country. Among these determinants, currency rate and inflation are considered crucial catalysts to influence exports as these factors determine whether the export country's currency is appreciated or depreciated (Ngondo and Khobai, 2018; Okpe and Ikpesu, 2021; Aladwani, 2023; Qabhobho et al., 2023).

Figure 1 shows that exports have been moving upward till 2015 and then downward shifting; on the contrary, exchange rates have been increasing upward manners. In the case of inflation, the trend line shows ups and down movements.

Figure 1: The time series scenario of exchange rate, inflation, and export in Bangladesh. EX, ER, and INF refer export, exchange rate, and inflation rate, respectively



After the liberation war of Bangladesh in 1971, the government implemented an industrialization plan that substituted imports but failed to fulfill the targeted goal (Hossain and Dias Karunaratne, 2004). The Bangladeshi government started liberalizing the economy and boosting exports from the year 1980. After that, export-led growth has taken the role of the import substitution strategy (Begum and Shamsuddin, 1998). The ability to compete internationally by selling its valuable exported products has allowed Bangladesh to establish itself on the world stage. Bangladesh's economic growth is still mostly driven by exports of goods such as clothing, jute products, fish, shrimp, prawns, leather items, vegetables, and different food products (Rahman et al., 2019). In the fiscal year 2021-2022, Bangladesh's exports climbed by more than 34%, according to the Export Promotion Bureau (EPB). Most of its export orders derived from the USA, the UK and Germany. It contributes approximately 29% of all exports, making it the country's main export market (Export Promotion Bureau, 2021). According to Figure 1, it is clear that the yearly data of exports does not reveal any specific trend. However, from the year 2010 export amount faced downturn trend. Moreover, the exchange rate represents an upward trend of this variable indicating the depreciation of Bangladeshi currency. Additionally, inflation does not disclose any trend and there exist fluctuations among years.

On a different note, some scholars believe that exports are a growth catalyst, while others perceive them as a handmaiden of growth. However, before making export decisions, some macroeconomic and microeconomic factors from home and abroad should be scrutinized to increase a country's export rate. Among many determinants, currency exchange rate and inflation rate should be considered especially (Akalpler, 2013; Asseery and Peel, 1991; Veeramani, 2008; Izatullayeva et al., 2023) because these determinants might impact the exports significantly, and the influence might be asymmetric. In this regard, several studies (Zou and Stan, 1998; Akalpler, 2013; Sousa et al., 2008; Ilmas et al., 2022) from different countries attempted to know the impacts of various determinants on the export rate. However, as most financial connections in the actual world seem to have nonlinear features, the magnitudes of the export rate might not always be changed in the same way with progressive and adverse variations in the inflation and currency rate. When these factors are symmetrically coupled, their influence on exports becomes equal in both rising and falling circumstances. Because the size of the change in the export could vary based on mutually the optimistic and deleterious aspects of the currency rate, investigating symmetric correlations might not be entirely applicable. An exchange rate increase might impact exports more than a decrease, or the opposite may be true. Because of this, the government and policymakers of Bangladesh need to comprehend asymmetrical relationships because doing so will allow them to develop more effective policies. Likewise, by examining the results of this research work, relevant parties may take the appropriate actions to control inflation and keep the exchange rate stable. Similarly, the nation's economy might not benefit if they are unaware of the asymmetric relationship between exports and inflation and if the same policies are implemented during rising and lowering inflation.

Therefore, this research studies the nonlinear possessions of inflation and currency rate on exports of Bangladesh using the asymmetric model named the Nonlinear Autoregressive Distributed Lag (NARDL) model. If home currency's exchange rate increases, it depreciates the home currency, leading to a rise in exports because the demand from importers increases in this situation. However, the percentage of changes might vary during the fall and rise of the currency rate. Similarly, the decision to export is impacted by the rise and fall of the inflation rate, which is also correlated with currency appreciation and depreciation. Therefore, it is essential to consider the nonlinear influence carefully. So, this study has taken the target of observing the effects of inflation and currency rates on exports so that exporters can consider them when making export decisions. The value of the Bangladeshi currency has been declining, and inflation has been increasing over the past several years (Muhibbullah and Das, 2019); thus, it is more important than ever for Bangladesh's government and central bank to understand how these factors affect exports. Besides, in their previous studies, most scholars (Hassan et al., 2017; Rahman, 2010; Hossain and Alauddin, 2005; Sieng et al., 2020 Islam and Pattak, 2017; Rahman et al., 2019). attempted to identify a linear link between different macroeconomic factors and exports of Bangladesh. The explanatory variables might, however, have nonlinear effects on the response variable, and in this study, we aim to ascertain whether the link is asymmetric.

Furthermore, the findings of this study might offer future academics and researchers a novel strategy to close the crack in

the export areas. Also, by considering the influence of inflation and currency rates before making export decisions, this study might help exporters and, consequently, the export sector flourish even more. Additionally, the research is projected to augment to the reservoir of prevailing understanding by investigating the asymmetric connection between the variables under study.

The residual parts of this study are ordered as follows. Part 2 represents literature review, while the methodology and outcomes are discussed in sections 3 and 4, respectively. Section 5 will offer conclusion and recommendations.

2. LITERATURE REVIEW

The exchange rate significantly impacts the export activities of a country (Roy, 1991). As far back as 1987, the influence of exchange rates on the development of exports from OECD nations was studied by Bailey et al. (1987). The authors gathered data from eleven OECD nations for two data periods, from the Q2 of 1962 to the Q4 of 1974 and from the Q1 of 1975 to the Q3 of 1985. The authors used a nonparametric test, Kruskal-Wallis statistic, and X-11 ARIMA technique in the study and found that, in several cases, the exchange rate impacted the total export volume of those countries positively. In contrast, only three cases showed negative impacts of exchange rates on total exports of the same.

Asseery and Peel (1991) conducted a similar study in five countries from Asia, Europe, North America, Australasia and Oceania to look into how exchange rates affect exports. They found that, in most of those nations, exchange rates had a progressive and statistically noteworthy influence on overall export volume. Their findings were based on quarterly data from the countries specifically named, West Germany, Australia, UK, USA, and Japan from 1972 to 1987. Du and Zhu (2001) also mentioned identical findings by conducting a study in six countries viz. France, the UK, Italy, Sweden, Japan, and the USA, where they wanted to seek the same effect as Asseery and Peel (1991) on those countries. The authors collected quarterly data from those countries from 1974 to 1995 and found that countries with a trade surplus, i.e., Italy and Sweden, have a favorable and significant influence of exchange rate instabilities on their factual exports.

Some similar studies were conducted in an East Asian country to catch on the consequences of exchange rate variations on export volumes. In 2007, Wang and Barrett (2007) took ten years of sectoral-level monthly data from 1989 to 1998 to study the influences of exchange rate variations on Taiwan's exports directed to USA. The authors deduced that exchange rates and US industrial production combined affect Taiwan's overall exports to the US positively and significantly.

When Bahmani-Oskooee and Ltaifa (1992) looked into how exchange rates affected the exports of 86 countries (19 developed and 67 developing), they unexpectedly discovered a negative effect. They conducted a time-series analysis for a timespan covering from 1973 to 1980 and found that the real exports of those nations are significantly impacted negatively by exchange rate uncertainty.

The above study encouraged some other authors to inspect the influences of rates of exchanges on export volumes closely. In the USA counterpart, a paper was steered to search the impacts of exchange rates on United States export size, analyzing data from the Q2 of 1973 to the Q3 of 1991 (Arize, 1995). The result of the study was in dissimilarity with those of Asseery and Peel (1991), and Bailey et al. (1987), who instituted some favorable effects of exchange rates on export quantity. Using techniques such as error-correction and standard cointegration, Arize (1995) came to the conclusion that the rate of exchange uncertainty significantly negatively affects the United States' actual exports.

Du and Zhu (2001) also found that countries with trade deficits, namely France, the UK, and the USA, have negative effects on their exports from exchange rates. The authors saw an exception in the case of Japan, which has a trade surplus but has adverse and significant outcomes of exchange rate on its total export value. Wang and Barrett (2007) also found a significant adverse influence of exchange rates in the circumstance of Taiwan's farming products exports to the US. In Bangladesh, Jonaed (2019) led a study to perceive the long-run consequence of exchange rates on the country's total exports and found some negative significant results. The author used data from 1972 to 2016 with the Vector Error Correction Model (VECM) for the investigation. Authors also came to the conclusion that the variables under study did not have any casual short-term associations.

To seek the effect of inflation on exports, Purwoko (2021) conducted a study in Indonesia, taking data from a port from 2017 to 2019. The author mainly focused the survey on non-oil and gas commodity exports and observed that inflation affected exports positively and significantly during the study period. However, an opposite result was found when Okpe and Ikpesu (2021) conducted a study in Nigeria, taking data from 1981 to 2017 and reporting that inflation affects exports negatively and significantly.

A recent study was carried out in five ASEAN nations: The Singapore, Thailand Malaysia, Indonesia, and Philippines, to see the effects of inflation and exchange rates combined as macroeconomic variables on exports as an international trade variable (Ilmas et al., 2022). From 2010 to 2022, using panel data, the study concluded that inflation and exchange rates of those countries negatively and significantly impacted the exports of the same. As their observations were limited, they suggested considering more observations and checking whether the result persists. An opposite result was found in the case of the Indian economy when Jacob et al. (2021) took a data set of exchange rates, inflation and exports of India for a period of 25 years from 1995 to 2020. The authors discovered that inflation and exchange rates had a favorable and substantial influence on India's exports using the Vector Error Correction Model (VECM). The authors also suggested managing the two determinants for better economic growth in India. In contrast, Shimu and Islam (2018) reported adverse and substantial influences of exchange rates and inflation on export sizes when the authors conducted a study to seek the impact of macroeconomic variables on the RMG export progress of Bangladesh, using data from 1995 to 2014.

After analyzing related literature, it appears to be lack studies in this area in Bangladesh and it is filled up by this work, which examines the asymmetric impacts of inflation and currency rates on the nation's total exports.

3. METHODOLOGY

The methodology that was used for the investigation is outlined in this section.

3.1. Variables

For the purpose of the research, time series data was used from the World Development Indicator on Bangladesh's export, inflation, and exchange rates from 1987 to 2021. Table 1 represents a general measurement scale and definition of all our variables taken into consideration.

3.2. Model Specification

According to the study of Odugbesan et al. (2021), we developed the following Equation (1) to evaluate the influence of the exchange rate and inflation on the export scenario in Bangladesh.

$$EX_t = \beta_0 + \beta_1 (ER_t) + \beta_2 (INF_t) + \varepsilon_t \quad (1)$$

Here, β_0 represents constant, β_1 and β_2 indicates the slopes or coefficients and ϵ_t is explained as the error term. Again, in a given time denoted by *t, ER* and *INF* represent exchange rate and inflation, respectively. The assumption made in equation (1) is that any change in the predictor variables will have a similar impact throughout the whole time series. However, this might not always be possible depending on the circumstances since most economic relationships are not linear. Furthermore, if the linear model is misused, it might be inappropriate and result in erroneous policy insights (Galadima and Aminu, 2019; Enders, 2008; and Meo et al., 2018). In contrast, as suggested by Shin et al. (2014), the NARDL model takes into consideration both short- and long-term nonlinearity by undertaking a positive as well as the breakdown of the predictor variables' negative fractional sum, accounting for the predictor variable's long-term effects on the predicted one and allowing examination of the positive and negative influences. Equation (2) can be used to define the functional variation of the model and investigate the relationships between export, inflation, and exchange rates in Bangladesh.

$$EX = \left(ER^+, ER^-, INF^+, INF^-\right) \quad (2)$$

Based on the study by Golder et al. (2023), Meo et al. (2021), Katrakilidis and Trachanas (2012), Galadima and Aminu (2019), and Bahmani-Oskooee and Fariditavana (2015), we developed Equation (3), which is an extended version of Equation (2), could be applied to explore the asymmetric long-run impact of inflation and exchange rate on export in Bangladesh.

$$EX_t = \varnothing_0 + \varnothing_1 \left(ER_t^+\right) + \varnothing_2 \left(ER_t^-\right) + \varnothing_3 \left(INF_t^+\right) + \varnothing_4 \left(INF_t^-\right) + \mu_t \quad (3)$$

In this scenario, $\emptyset_i$ denotes the long-run coefficients of parameters that require evaluation. The fractional sum breakdowns of ER and INF are represented by ER_t^+, ER_t^-, INF_t^+ and INF_t^-, respectively. Since Equation (1) only emphasizes the long-term effects of predictive factors, applying it solely is insufficient. However, in Equation (4), we represent the error-correction model specification used in this study.

$$\Delta EX_t = \vartheta_0 + \sum_{j=1}^{p} \vartheta_{1j} \Delta EX_{t-j} + \sum_{j=1}^{p} \vartheta_{2j} \Delta ER_{t-j} + \sum_{j=1}^{p} \vartheta_{3j} \Delta INF_{t-j} + {}_1 EX_{t-1} + {}_2 ER_{t-1} + {}_3 INF_{t-1} + \pi_t \quad (4)$$

In this case, the variations in the operator in period *t* is denoted by Δ, while lag orders are represented by *p*. Again, the responder variable's long-run fluctuations are denoted by , while the predictor variables' short-run effects on export are estimated by $\sum_{j=1}^{p} \vartheta_{ij}$. Thereby, the Equation (4) tries to anticipate the symmetrical relationship between the predicted variables. The formula for disintegrate regression is $z_t = \varnothing^+ f_t^+ + \varnothing^- f_t^- + \pi_t$, where $\emptyset^+$ and $\emptyset^-$ denote parameters in long-run. In case of Equation (5), f_t is a regressor vector which is fragmented into:

$$f_t = f_t^+ + f_t^- \quad (5)$$

The predictor variables in this case are f^+ and f^-, which are divided into the sectional total of positive and negative changes. The following equations i.e., Equation (6), Equation (7), Equation (8), and Equation (9) could be used to estimate the values of ER_t^+, ER_t^-, INF_t^+ and INF_t^-.

$$ER^+ = \sum_{r=1}^{t} \Delta ER_r^+ = \sum_{r=1}^{t} max\left(\Delta ER_r, 0\right) \quad (6)$$

$$ER^- = \sum_{r=1}^{t} \Delta ER_r^- = \sum_{r=1}^{t} max\left(\Delta ER_r, 0\right) \quad (7)$$

Table 1: Variable's description summary

Variables	Symbols	Measurement scale	Explanation
Export	EX	GDP percentage of exported goods and services	Goods and services (value) produced in the country of origin and supplied to foreign countries and adding to GDP.
Exchange rate	ER	Period average of the official rate of exchange	Rate set by the exchange market; typically, a local currency to the US dollar and computed as a yearly average from monthly averages.
Inflation rate	INF	Consumer price index (Annual %)	Yearly change (percentage) in the average consumer's cost of purchasing of goods and services.

Source: Developed by Authors

$$INF^{+} = \sum_{r=1}^{t} \Delta INF_r^{+} = \sum_{r=1}^{t} max\left(\Delta INF_r, 0\right) \quad (8)$$

$$INF^{-} = \sum_{r=1}^{t} \Delta INF_r^{-} = \sum_{r=1}^{t} min\left(\Delta INF_r, 0\right) \quad (9)$$

In line with Shin et al. (2014), this study substitutes Equation (3) for equation (1) to produce the nonlinear ARDL model, which might be stated in following Equation (10) and has distinct asymmetric relationships in long and short run.

$$\begin{aligned}\Delta EX_t &= \varnothing + \sum_{j=1}^{p} \varnothing_j \Delta EX_{t-j} + \sum_{j=1}^{p} \varnothing_j \Delta ER_{t-j}^{+} \\ &+ \sum_{j=1}^{p} \varnothing_j \Delta ER_{t-j}^{-} + \sum_{j=1}^{p} \varnothing_j \Delta INF_{t-j}^{+} \\ &+ \sum_{j=1}^{p} \varnothing_j \Delta INF_{t-j}^{-} + {}_1\, EX_{t-1} + \omega_2 ER_{t-1}^{+} \\ &+ \omega_3 ER_{t-1}^{-} + \omega_4 INF_{t-1}^{+} + \omega_5 INF_{t-1}^{-} + \pi_t \end{aligned} \quad (10)$$

Where, ω_i, and $\sum_{j=1}^{p} \varnothing_j$ symbolize the coefficients of exchange rate and inflation's fluctuations on export in long-run and short-run, respectively.

3.3. Data and Data Summary

We collected data from 1987 to 2021 from the World Development Indicator (WDI), backed by the World Bank (WB). The study variables are compiled in Table 2, demonstrating that all the variables are normally distributed as the probability value of all variables of the Jarque-Bera is more than the acceptable level.

3.4. Estimation Method

This study employs the NARDL model to ascertain the asymmetric association (Biswas et al., 2023) between exports, inflation, and exchange rates. Compared to the conventional ARDL model, the NARDL approach has several advantages. For example, it helps to identify nonlinearity assumptions by permitting the study of asymmetries. Linear time series regression models consider the fixed parameter assumption that a predictor variable's movement has the same impact throughout time, and this generic notion is considered true in all situations, even though it might not be accurate in many other cases. Traditional cointegration tests, such as the Engle-Granger (Engle and Granger, 1987) and the basic Johansen cointegration (Johansen, 1991), entail continuous adjustment as time passes. In reality, they would not always be attainable, and the linear estimate could not always be suitable, which could result in the wrong formulation of policy (Enders, 2008; and Galadima and Aminu, 2019). However, the NARDL model investigates the possibility of an interaction that is asymmetric between the predictor variable's long and short-term potential impacts on the predicted variable (Rumaly et al., 2023).

The NARDL estimation method follows some specific predefined criteria. Beginning with the unit root test, which verifies that no variables are integrated in the second order, e.g., I (2), is a necessary first condition in the NARDL model estimation process. To confirm all variables are stationary either at level or first difference, this research applies the Phillips Perron (PP) and Augmented Dickey-Fuller (ADF) unit root tests. In a further analytical step, (Pesaran et al., 2001) compare the *F*-statistics of the bound test with lower and higher critical values for *I*(0) and *I*(1). The cointegration test is used to ascertain whether an equilibrium association exists between the variables under study (Hassan et al., 2013). If the *F*-statistic exceeds the higher bounds, it confirms cointegration (Hassan et al., 2023) and demonstrates a long-term affiliation between the variables. Next, the asymmetric cointegration of the variables must be tested, which follows the logical determination of the long-term coefficients and the dynamic estimation of the NARDL model. In this case, the subsequent stage involves calculating the partial coefficients, or the explanatory variables' effects for changes in value on the explained variable, for each explanatory variable—exchange rates and inflation. Lastly, this study applies several diagnostic tests, such as heteroskedasticity, normality, and serial correlation. In addition, it employs the CUSUM and CUSUM-SQ tests to verify the firmness of the model.

Table 2: Descriptive statistics

Particulars	EX	ER	INF
Mean	12.497	59.606	6.239
Median	12.344	59.513	6.107
Maximum	20.162	85.084	11.395
Minimum	4.990	30.950	2.007
SD	4.327	18.336	2.211
Skewness	0.063	−0.116	0.111
Kurtosis	2.180	1.567	2.978
Jarque-Bera	1.005	3.0715	0.072
Probability	0.605	0.215	0.965

Source: Authors' computations

4. RESULTS AND DISCUSSION

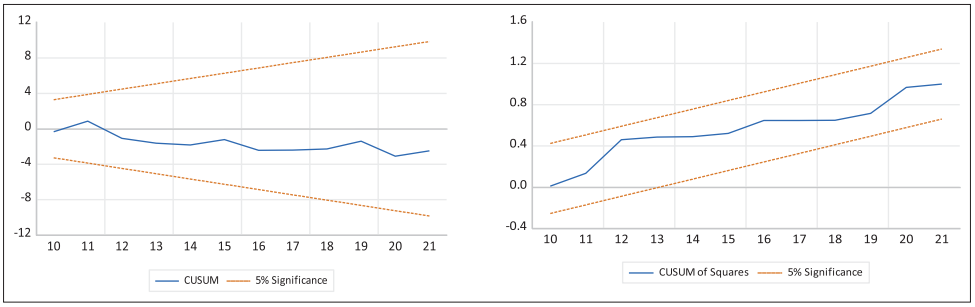
To observe the nature of the data, it is necessary to conduct the unit root test (Golder et al., 2020). It is a preliminary analysis of whether we can use these data to conduct this study through the NARDL model. The following results of the unit root test are shown in Table 3.

In the case of both Augmented Dickey-Fuller (ADF), and Phillips-Perron (PP), only inflation is integrated at level I(0); contrary, export and exchange rates are integrated at first difference I(1). Therefore, both the ADF and PP provide the same outcomes at first differences. Thus, we can use the NARDL model as the variables are in mixed order, but no variable is integrated at I(2).

The bound test has been conducted to see the long-run association between dependent and independent variables, shown in Table 4. Here, the value of the *F*-stat is more than the values of the upper bound, indicating a long-run connection among variables. However, Table 5 represents the dynamic NARDL assessment to calculate the long-run affiliation among the variables shown in Table 6.

Table 6 states that the affirmative shock of the exchange rate has no noteworthy control on exports. When exchange rate decreases by 1%, exports significantly decrease by 2.085%. So, there is a noteworthy adverse magnitude of the exchange rate on export,

Figure 2: CUSUM and CUSUM-SQ test



Source: Authors' computations

Table 3: Unit root tests

Tests	EX	ER	INF
ADF			
I (0)	−0.320	−1.931	−4.438***
I (1)	−5.009***	−4.237**	
PP			
I (0)	−0.422	−1.918	−4.448***
I (1)	−4.956***	−6.965***	

***P<1%, and **P<5%. Source: Authors' Computations. All the tests are computed with constant and trend

Table 4: Bounds test results

Model	F-stat	Upper bound	Lower bound
EX/(ER^+, ER^-, INF^+, INF^-)	6.116		
Critical values			
10%		3.09	2.2
5%		2.56	3.49
2.5%		2.88	3.87
1%		3.29	4.37

Source: Authors' computations

Table 5: Dynamic assessment of NARDL results

Variable	Coeff.	SE	t-Stat	Prob.
C	3.152	0.838	3.762	0.001
EX(−1)	−0.278	0.103	−2.688	0.013
ER^+ (−1)	0.079	0.052	1.521	0.142
ER− (−1)	0.579	0.226	2.560	0.018
INF^+	0.230	0.104	2.218	0.037
INF−	0.279	0.096	2.899	0.008
dER^+	0.391	0.117	3.337	0.003
dER−	−0.009	0.310	−0.029	0.977
dER− (−1)	−0.634	0.324	−1.959	0.062

Source: Authors' computations

Table 6: Long-run asymmetric linkup

Variable	Coeff.	Std. Error	t-Stat	Prob.
ER^+	0.285	0.206	1.380	0.181
ER^-	2.085	0.729	2.858	0.009
INF^+	0.829	0.441	1.881	0.073
INF^-	1.002	0.563	1.779	0.089
C	11.342	3.210	3.533	0.002

Source: Authors' Computations

signifying that when the exchange rate decreases, our currency is appreciated, and then the export also decreases due to a lower converted amount of home currency (Ilmas et al., 2022; Okpe and Ikpesu, 2021; and Bahmani-Oskooee and Ltaifa, 1992). When the inflation rate increases by 1%, exports also increase by 0.829%,

Table 7: Diagnostic inspection

Test	$\times^2$(P-value)/ Stability	Result
LM	0.215	No serial correlation
J–B test	0.657	Normally distributed residuals
Breusch-Pagan-Godfrey	0.875	Free from heteroscedasticity
CUSUM	Stable	Approves stability
CUSUMSQ	Stable	Approves stability

Source: Authors' Computations

which is significant. So, there is a noteworthy optimistic affiliation between inflation and export, meaning that higher inflation forces currency depreciation, causing the export value to increase (Jacob et al. 2021). But when inflation decreases by 1%, exports also significantly decrease by 1.002%, referring to lower inflation forces on currency appreciation, causing the value of exports to decline. So, inflation plays progressive and adverse substantial influences on exports. As the affirmative and adverse shocks of exchange rate and inflation on export differ, we can confirm the asymmetric connection between exchange rate and inflation with export.

To validate the previous test, some diagnostic inspections have been conducted and presented in Table 7. Here, Lagrange Multiplier (LM) test determines no serial correlation issues. The P-value of the Jarque-Bera (J-B) test result is 0.657, which specifies that residuals are normally distributed. Besides, the Breusch-Pagan-Godfrey test results of 0.875 claims that the model used is free from heteroscedasticity issues.

Both CUSUM and CUSUMSQ ensure the stability of the dataset shown in Figure 2, as the trend lines do not cross the upper and lower limits.

5. CONCLUSION AND RECOMMENDATIONS

This study examines how inflation and exchange rates affect Bangladeshi exports of goods and services between 1987 and 2021. It addresses the likely asymmetrical link, in contrast to past analyses that expected a symmetric link between Bangladesh's exports and its drivers. This study believes that the association between exports and the drivers might be asymmetrical. Thus, using the NARDL model, it finds some noteworthy outputs

regarding the relationship between the studied variables and confirms an asymmetric relationship between them. We find that exports decrease when Bangladesh's exchange rate declines since the value of the BDT increases throughout this period. Besides, as the inflation rate rises, the BDT currency depreciates, expanding the export demand and increasing the pace of exports. Unexpectedly, there is an asymmetric relationship between the variables due to the disparity in the fraction of constructive and negative exchange rates and inflation shocks over the export rate.

Intensification in the country's currency rate drives a growth in the mandate for Bangladeshi exports. It denotes a devaluation of the Bangladeshi currency that encourages exports because overseas consumers purchase more products during this time. Thus, this is something that the government should be thinking about. Exports may benefit from long-term currency devaluation even though this is not always good. Likewise, when inflation increases, it stimulates exports as the currency value depreciates. Alternatively, a negative inflation shock appreciates the host country's currency and decreases exports. However, there are initiatives that the government and relevant parties can take to increase exports. So, interested parties should look for export-stimulating policies.

Several domestic and global challenges heavily influence a nation's exports. Global pandemics, price increases, inflation, and other factors could impact the final export rate. Due to the significant increase in transportation costs caused by several recent international issues (e.g. the Russia-Ukraine war and the COVID-19 epidemic), Bangladesh is now concerned about the possibility of exports. This study suggests a few policy measures to boost exports. Most importantly, the inflation rate should be kept in a balanced position. Otherwise, it might complicate international trade. Finally, the government of Bangladesh should offer lucrative export-stimulating packages. These activities might induce export activities and assist in increasing Bangladesh's reserve. The issue with our study is that we only used data from Bangladesh to conduct our analysis. Future studies might extend the scope of our investigation to cover a more significant number of countries using the asymmetric panel ARDL approach.

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