The Jahangirnagar Review: Part II: Social Science, Vol. 46, No. 1, 2022
ISSN 1682-7422, © Jahangirnagar University

Macroeconomic Determinants of External Debt in Bangladesh

Ayesha Siddika[1]
Tanjir Ahmed Emon[2]

Abstract: The recent sharp increase of external debt in Bangladesh is slowly raising the question of future external debt sustainability. So, this paper tried to spotlight on the current condition of external debt of Bangladesh and attempted to find key macro-economic determinants of external debt in Bangladesh through a time series analysis. The study found external debt sustainability indicators such as external debt to GDP ratio, debt service ratio and short-term external debt to foreign exchange reserve ratio are well below the thresholds. So, the external debt position of Bangladesh seems not that risky despite recent sharp growth in external debt and debt servicing. Moreover, the study analyzed the macroeconomic determinants of external debt in Bangladesh by performing Johansen Cointegration Test and Vector Error Correction Model (VECM) by using annual data from 1991 to 2020. Macroeconomic variables that have been considered for analysis in this study are- Real GDP, Exchange Rate, Trade Openness and Fiscal Balance as a percentage of GDP. The study found that, in the long run, exchange rate depreciation and negative fiscal balance as a percentage of GDP increase the external debt burden of the Bangladesh which is in line with the economic rationales. However, no short-run causality was found among the variables. Both diagnostic tests and stability tests confirmed the model's reliability. The study recommends that formulation of stable exchange rate policy and expansion of government tax collection area might be useful for policymakers in prudent management of external debt.

Keywords: *Bangladesh, External Debt, Exchange Rate, Fiscal Deficit, Trade Openness, Debt Sustainability, VECM.*

1. Introduction

The recent sharp increase of external debt in Bangladesh is slowly raising the question of future external debt sustainability. The question gets the more importance in the context of recent persistent current account deficit. Moreover, Bangladesh's graduation from "Least Developed Countries" (LDC) in 2026 will also have implications in future debt servicing and debt burden of the country as the high-cost commercial loan will replace the existing concessional loan. As a result, external debt of Bangladesh in future will be costlier and less flexible. This paper attempts to understand the current condition of external debt of Bangladesh. Further, this study will also attempt to find out the key macro-economic determinants of external debt in Bangladesh through a time series analysis technique. And, finally, any policy recommendations from this research finding will be presented.

[1] Associate Professor, Department of Economics, Jahangirnagar University, Savar, Dhaka.
Email: asiddika12@juniv.edu

[2] Deputy Director, Financial Stability Department, Bangladesh Bank, Dhaka.

2. Concepts of External Debt

Definition : External debt, in simple term, is debt raised from the external sources. Definition of gross external debt, according to International Monetary Fund (IMF)-

"Gross external debt, at any given time, is the outstanding amount of those actual current, and not contingent, liabilities that require payment(s) of principal and/or interest by the debtor at some point(s) in the future and that are owed to nonresidents by residents of an economy."

Classification: External debt, according to the maturity, can be divided in to short-term external debt (repayable within a year) and long term external debt. Again, by type of borrower, external debt can be public sector external debt and private sector external debt.

Role in Economic Growth: External debt, as a means of finance, can play positive role in economic growth. This is particularly true for the capital scarce countries. For countries with low levels of domestic financing foreign currency debt is an essential source of finance *(Prasad et al., 2007)*. Moreover, external debt through better public and corporate governance, can enhance economic growth and stability *(Kose et al., 2009).*

Risk Factors: Despite the positive role of external debt in economic growth, improper management of external debt can cause massive instability in the economic and financial system.

According to *Debt-Overhang Hypothesis*, servicing of excessive foreign debt might consume a substantial part of income and therefore required investment for economic growth may become deficient. Eventually, this may restrain growth.

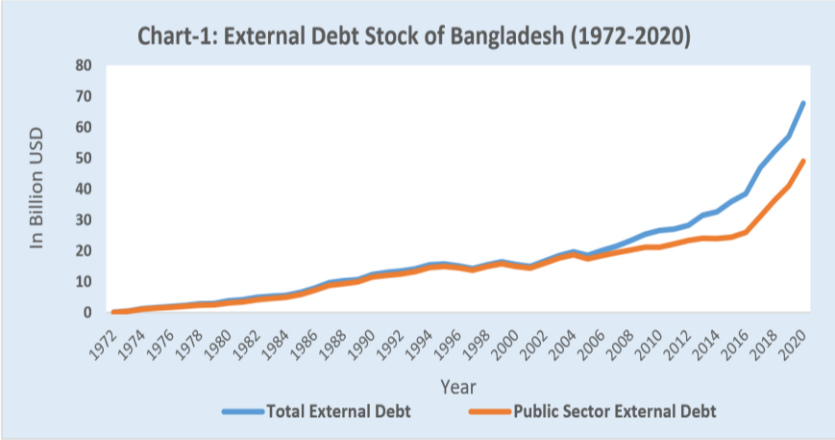
Moreover, continuous borrowing and subsequent growing debt service requirement can turn into a viscous cycle of debt. Even at the extreme case, excessive foreign borrowing may lead to sovereign default. *Awan et al. (2015)* states if countries cannot properly manage external debt that can provoke further borrowings and creates vicious circle of external debt. Sudden shock from short term debt may create turbulence in exchange rate and foreign exchange reserve. In this regard, *Jeanne (2000)* argues large quantities of short-term foreign currency liabilities have made crises in the borrowing country deeper, more contagious and generally more difficult to manage. External debt, in an environment of constant domestic currency depreciation, might be more burdensome.

Causes of External Debt: External debt can arise when country's investment appetite is greater than its domestic savings. Due to gap between saving and investment countries go for external loans *(Awan et al, 2015). (Umaru et al., 2013)* also maintain that debt is one of the sources of financing capital formation in any economy, where it is important for the government to borrow in order to meet the financial requirements in the case of deficit, so that it could close the resource gap between savings and investments.

Most of the countries, especially the developing and emerging economies that face saving constraint, consider foreign investments and external borrowings as the engines of economic growth *(Augastine & Kumar, 2020). Chenery and Strout (1966),* in their "Two Gap Model", assert that external debt is accumulated due to the savings constraint and the foreign exchange constraint.

3. Trend, Composition & Sustainability Indicators of Eternal debt of Bangladesh

The trend in external debt stock of Bangladesh for the period of 1972 to 2020 is presented in chart-1. In 2020, Bangladesh had approximately USD 68 billion amount of total external debt. 72% of total external debt, amounting USD 49 billion was public sector external debt. Public sector external debt in Bangladesh are mostly long term and concessional. Therefore, the public sector external debt can be considered as less risky than private sector external debt *(Financial Stability Report of Bangladesh Bank, 2020).*

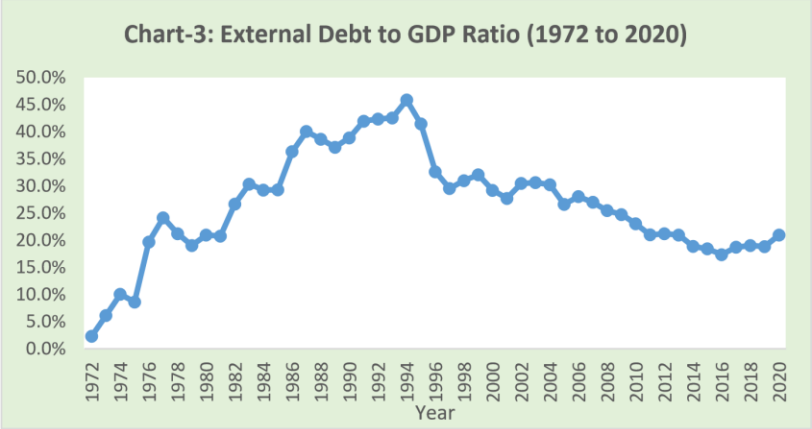


Data Source: World Bank, World Development Indicators.

Chart-2 shows the growth rate of external debt stock since 1976. It shows that growth of external debt has been gradually rising after 2001 amid some ups and downs. In 2020 growth rate was 19

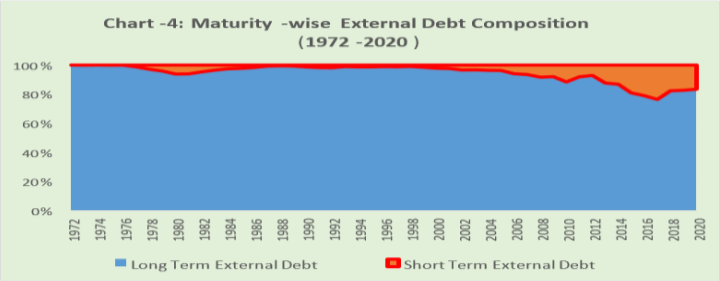
Data Source: World Bank, World Development Indicators.

The trend of External debt to GDP ratio of Bangladesh is shown in chart-3. It shows that the ratio is in declining trend amid some ups and downs since 1994. In 2020, the ratio was 21 percent which appears to be in safe level. Countries with more than 60% external debt-to-GDP ratio experienced a GDP weakening in growth rate per annum by 2% *(Reinhart & Rogoff, 2010).*



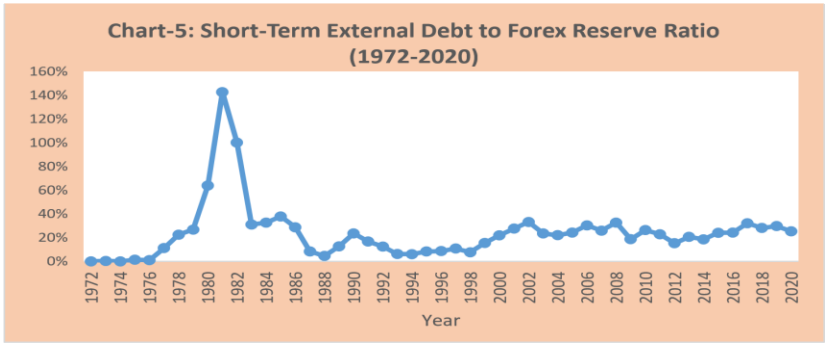
Data Source: World Bank, World Development Indicators.

Chart-4 shows the trend of maturity wise external debt compositions of Bangladesh since 1972. It shows that long-term external debt captures the most of total external debt. Short term external debt started to rise after 2000. However, the ratio in 2020 was 17 percent.



Data Source: World Bank, World Development Indicators.

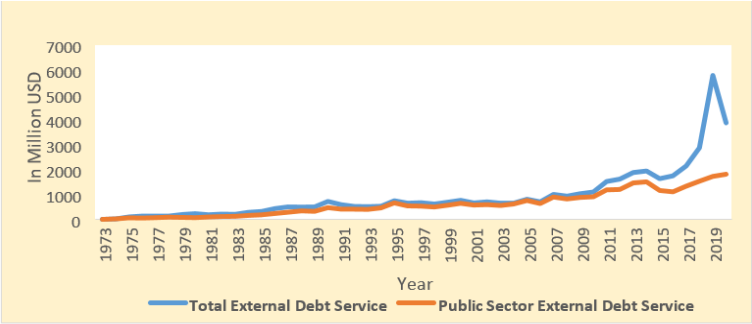
A rapid growth of short-term external debt might be alarming. Enough foreign exchange reserve is required to withstand any sudden shock from short-term external debt. However, short-term external debt to foreign exchange reserve ratio was 25 percent in 2020 which was well below the threshold level of 100 percent. Moreover, chart-5 shows that short-term external debt to foreign exchange reserve ratio of Bangladesh was always below 40% except few years during 19801982.



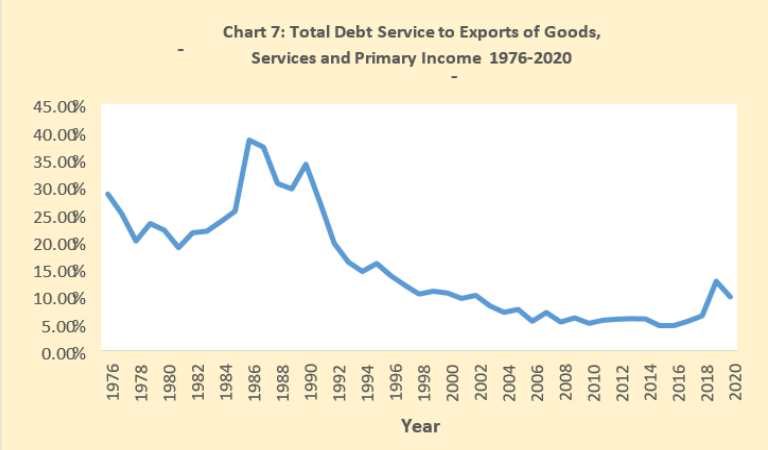
Data Source: World Bank, World Development Indicators.

Chart-6 shows the trend in debt service on external debt of Bangladesh since1973. It points out the recent increase and fluctuation of total external debt service (1973-2020).

Chart-6: The trend in debt service on external debt (1973-2020).



Data Source: World Bank, World Development Indicators.



Data Source: World Bank, World Development Indicators

Chart-7 shows the trend of total debt service to exports of goods, services and primary income of Bangladesh. Though the ratio in last few years slightly increased, it is far below the threshold level of 20 percent. In 2020, the ratio was 10 percent.

4. Literature Review

The literature regarding the determinants of external debt is rich and diversified. However, some particular studies are more important and relevant to this study. For example, *A. Awan et al*. in 2011 studied the impact of exchange rate, fiscal deficit and terms of trade on external debt of Pakistan for the period of 1974-2018 by using Vector Error Correction Model (VECM). They found that, in the long run, exchange rate have significant positive relationship with external debt.

Table-1: Summary Table of Literature Review

Author & Publication Year	Country & Time Frame	Econometric Model	Statistically Significant Result	
			Positive	Negative
Mulugeta (2021)	Ethiopia 1981-2018	ARDL*	Budget Deficit, Per Capita GDP Growth Political Instability	Trade Openness
Augustine and Kumar (2020)	India 2001-2018 Quarterly Data	ARDL	Exchange Rate, Interest Rate, Fiscal Deficit, Foreign Exchange Reserves, Trade Openness	GDP Growth
Beyene et al. (2020)	Ethiopia 1981-2016	ARDL	Savings-Investment Gap, Trade Deficit, Fiscal Deficit, Debt Service	GDP, Trade Openness, Inflation
Al-Fawwaz (2016)	Jordan 1990-2014	ARDL	Terms of Trade	GDP Per Capita
Rafik (2015)	Malaysia 1970- 2013	VECM**	Recurrent Expenditure	GDP
R. U. Awan et al. (2014)	Pakistan 1976-2010	ARDL	Fiscal Deficit, Nominal Exchange Rate, Trade Openness	-
Zakaria (2012)	Pakistan 1972 - 2010. Quarterly data	GMM***	Trade Openness, Terms of Trade, Fiscal Deficit, Inflation	Foreign Exchange Reserves, Foreign Direct Investment
A. Awan et al. (2011)	Pakistan 1974-2008	VECM	Exchange Rate	Terms of Trade

*ARDL-Autoregressive Distributed Lag
**VECM- Vector Error Correction Model
***GMM-Generalized Method of Moments

Zakaria in 2102, using Generalized Method of Moments (GMM), studied the impact of trade openness on foreign debt in Pakistan. The study found a significant positive effect of trade openness on foreign debt. Moreover, the study also revealed that terms of trade, fiscal deficit and inflation have significant positive impacts on foreign trade whereas foreign Exchange reserves and foreign direct investment have significant negative impacts on foreign trade.

R. U. Awan et al. in 2014 examined the macroeconomic determinants of external debt in Pakistan by applying Autoregressive Distributed Lag (ARDL) model results depicted that fiscal deficit, nominal exchange rate and trade openness are statistically significant determinants of external debt as they increase the debt burden of Pakistan. In another study by *Rafik* in 2015, using VECM, found that external debt accumulation in Malaysia during 1970 to 2013 is positively and significantly impacted by government recurrent expenditure whereas negatively and significantly impacted by gross domestic product (GDP). *Al-Fawwaz* in 2014 investigated the major determinants influencing the external debt in Jordan by applying ARDL model where independent variables were trade openness, term of trade, exchange rate, and gross domestic product per capita. He concluded that there is a positive statistically significant effect of trade openness on the external debt in the long run, and a negative statistically significant effect for the gross domestic product per capita on the external debt. *Beyene et al.* in 2020 examined the macroeconomic determinants of the external indebtedness of Ethiopia during 1981 and 2016 by using ARDL bound testing approach. They found that in the long run savings-investment gap, trade deficit, fiscal deficit, and debt service have a positive and significant impact on external indebtedness. However the growth rate of gross domestic product, trade openness, and inflation negatively and significantly affect the external indebtedness of the country.

Augustine and Kumar in 2020 found depreciation of domestic currency have significant positive impact on external indebtedness in case of India by applying (ARDL) model using quarterly data for the period 2001-2018. Besides, their study also showed that exchange rate, interest rate, fiscal deficit, foreign exchange reserves and trade openness impact external debt positively and significantly whereas GDP growth has a negative impact on external indebtedness. *Mulugeta* in 2021 examined the macroeconomic determinants of external debt accumulation in Ethiopia for the period of 1981-2018 by using ARDL model. He founds that budget deficit, per capita GDP growth & political instability have significant positive impact on external indebtedness whereas trade openness has significant negative impact on external indebtedness.

The abovementioned studies show that there are many different macro-economic determinants of external debt such as GDP, exchange rate, inflation, interest rate, trade openness, fiscal deficit, terms of trade, trade deficit, foreign exchange reserve, foreign direct investment etc. It is also noticeable that there are variations in application of econometric models for studies.

5. Data, Model and Methodology

To examine the impact of macro-economic factors on external debt of Bangladesh the four important macroeconomic variables *(GDP, Exchange Rate, Trade Openness, and Fiscal Balance as a percentage of GDP)* are taken into the consideration. Table-2 summarizes the variables definition, data source and time period of the study.

Table-2: Variable Description, Data Sources & Time Period

Variable	Definition	Source
ED	External Debt Stock	World Bank, World Development Indicators
RGDP	Real Gross Domestic Product	World Bank, World Development Indicators
EXR	Nominal Exchange Rate	World Bank, World Development Indicators
TO	Trade Openness	World Bank, World Development Indicators
FB	Fiscal Balance as a percentage of GDP	countryeconomy.com Database
	Time Period: 1991-2020 (Yearly Data)	

The relationship among external debt and its causative factors can be outlined as follows-

$$ED = f(RGDP, EXR, TO, FB) \quad \ldots\ldots \quad \text{(Equation-1)}$$

After taking the log of the variables and adding the error terms the model is-

$$\ln ED_t = B0 + B1\ln RGDP_t + B2\ln EXR_t + B3\ln TO_t + B4\ln FB_t + \varepsilon t \quad \ldots. \quad \text{(Equation-2)}$$

(+/-) (+) (+) (-)

In Equation-2, expected signs of the explanatory variables based on the economic theory are shown in the parentheses. The rationale of the expected signs are briefly discussed below-

RGDP- The impact of real GDP (RGDP) on external debt can be positive or negative according to the researchers. The increase in real GDP may reduce the external debt as higher income reduces the dependence on external financing. On the other hand, many argue that countries with higher real GDP may increase their debt burden due to their higher investment thirst and better debt taking capacity.

Exchange Rate- In an environment of constant domestic currency depreciation, impact of exchange rate on external debt should be positive since cost of external debt obligation rise which in turn increase demand for external borrowing. In another way, depreciation of domestic currency may discourage foreign direct investment and thus a country may rely on more on the foreign debt *(Awan et al. 2011)*.

Trade Openness- Similar to GDP, the impact of trade openness can be either positive or negative trade depending on the levels of imports and exports. If exports are higher than imports trade openness negatively affects external debt as higher level of trade guarantees the availability of foreign currency that is crucial for debt repayment while if imports are greater than exports openness will positively affect debt *(Chiminya and Nicolaidou, 2015).* As Bangladesh has higher imports than its exports, the sign should be positive.

Fiscal Balance- According to *(Bacha, 1990)*, negative fiscal balance directed the government towards external borrowing to meet up the necessary expenditures. Since Bangladesh has the constant fiscal deficit, the expected sign should be positive.

Now, as the data is multivariate time series, the recognized model like Vector Auto-Regression (VAR), Vector Error Correction Model (VECM) or Autoregressive Distributed Lag (ARDL) can be applied depending on the result of stationarity test & cointegration test. So, following steps need to be performed to conduct the empirical analysis.

i. *Stationarity Test* ***ii.*** *Optimal Lag Selection* ***iii.*** *Cointegration Test* ***iv.*** *VAR, VECM or ARDL Model* ***v.*** *Diagnostic Test* ***vi.*** *Stability Test*

6. Empirical Results and Discussion

i. Unit Root Test Results

To avoid the spurious result in time series analysis, variables need to be checked for stationarity. In this study, both Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests were performed.

Stationarity test of the variables done under following hypothesis-

***Ho*: ρ = 0**, Null Hypothesis: The data has a unit root

H1: ρ < 0, Alternative Hypothesis: The data does not have a unit root

For decision making, 1%, 5% or 10% significance level will be taken into account in the analysis.

Test results in Table-3 exhibit that all of the variables are non-stationary at their level and stationary at their first difference. As all the variables are integrated of order one **I(1)**, cointegration test needs to be performed.

Table 3: Unit Root Test Results

Variable	ADF Test		PP Test		Order of Integration - I(d)
	At Level	*At First Difference*	*At Level*	*At First Difference*	
lnED	0.511899	-3.937696*	4.403016	-3.923832*	I(1)
lnRGDP	-1.472645	-2.814701***	-1.497378	-2.814701***	I(1)
lnEXR	-0.976864	-4.008119*	-0.691542	-3.871663*	I(1)
lnTO	-0.724902	-4.767222*	-0.437752	-4.767222*	I(1)
lnFB	-2.867555	-8.001801*	-2.867555	-9.104125*	I(1)

Notes: * Significant at the 1% level
** Significant at the 5% level
*** Significant at the 10% level

ii. Optimal Lag Selection

Before applying the cointegration test, optimal lag selection needs to be performed as correct lag specification is very crucial for subsequent all inferences and interpretations. Table-4 exhibits optimal lag selection according to four different criteria [Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwartz Information

Criterion (SC) and Hannan Quinn Information Criterion (HQ). Except Schwartz Information Criterion (SC), all three other criteria have indicated that the optimal lag order is two (02). Therefore, two is selected as optimum lag. Now, after selecting the optimum lag, this study is set for cointegration test.

Table-4: VAR Lag Order Selection Criteria

Endogenous Variables: lnED lnRGDP lnEXR lnTO lnFB Exogenous Variables: C Sample: 1991 2020 Included Observations: 30				
Lag	**FPE**	**AIC**	**SC**	**HQ**
0	6.84e-10	-6.913820	-6.680287	-6.839111
1	1.30e-14	-17.81461	***-16.41341****	-17.36636
2	***9.54e-15****	***-18.27321****	-15.70435	***-17.45141****
* indicates lag order selected by the criterion (each test at 5% level)				

Cointegration Test

To find out any cointegration among the nonstationary variables that are I (1), the Johansen Cointegration test is commonly applied. This test utilizes two likelihood ratios test statistics for the number of cointegrating vectors which are the "Trace Test" and the "Maximum Eigenvalue Test". When the rank (r) is zero it means there is no cointegration. And, if the rank (r) is at most one it means there is maximum one cointegration equation and so on.

The null and alternative hypotheses of the tests are as follows:

H_0: There is no cointegration H_1: There is cointegration

Table-5: Johansen Cointegration Test Results					
Trend Assumption: Linear Deterministic Trend Series: lnED lnRGDP lnEXR lnTO lnFB Lags Interval (In First Differences): 1 To 1					
Null Hypothesis	**Eigenvalue**	**Trace Statistic**	**5% Critical Value for Trace Statistic**	**Max-Eigen Statistic**	**5% Critical Value for Max-Eigen Statistic**
***H0*: r = 0**	0.851344	**117.2298***	69.81889	**57.18371***	33.87687
***H0*: r ≤ 1**	0.721093	**60.04614***	47.85613	**38.30633***	27.58434
***H0*: r ≤ 2**	0.405163	21.73981	29.79707	15.58404	21.13162
***H0*: r ≤ 3**	0.183710	6.155767	15.49471	6.089554	14.26460
***H0*: r ≤ 4**	0.002205	0.066213	3.841466	0.066213	3.841466
Note: *denotes rejection of the null hypothesis at 5% critical value level.					

The Johansen Cointegration Test Results are shown in table-5 for five variables lnED, lnRGDP, lnEXR, lnTO and lnFB. At rank zero (*H0*: r = 0), both "Trace Statistic" and "Max-Eigen Statistic" exceeds their respective 5 percent critical values. Therefore, null hypothesis is rejected in each case which suggest time series variables lnED, lnRGDP, lnEXR, lnTO and lnFB are cointegrated. Similarly, at maximum rank one (*H0*: r ≤ 1), both "Trace Statistic" and "Max-Eigen Statistic" also exceeds their respective 5 percent critical values suggesting that variables (lnED, lnRGDP, lnEXR, lnTO and lnFB) are cointegrated. However, at maximum rank two (*H0*: r ≤ 2), values of both "Trace Statistic" and "Max-Eigen

Statistic" are lower than their respective 5 percent critical values, thus we failed to reject the null hypothesis for both test. Therefore, variables (lnED, lnRGDP, lnEXR, lnTO and lnFB) are not cointegrated. So, it can be inferred that there might be two cointegration relationships among these variables according to the both "Trace Test" and the "Maximum Eigenvalue Test".

Therefore, the normalized cointegrating coefficients are shown in table 6.

Table-6: Normalized Cointegrating Coefficients

Cointegration Equation	**lnED**	**lnRGDP**	**lnEXR**	**lnTO**	**lnFB**
Coefficients of Cointegration Equation(1)	1.000000	0.000000	-13.74595 (3.26637)	1.683308 (2.61426)	-16.96231 (2.36549)
Coefficients of Cointegration Equation(2)	0.000000	1.000000	-8.623281 (1.92347)	0.822728 (1.53946)	-9.927833 (1.39297)
Note: Standard Error in Parentheses.					

Now, since there are cointegration relationships among these variables, a vector error correction model (VECM) can be applied.

iv. Vector Error Correction Model (VECM)

As the variables are found to have cointegrating vectors according to the Johansen cointegration test, a suitable estimation technique is a VECM which adjusts to both short run changes in variables and deviations from equilibrium. So, the VECM equation will be as follows:

$$\Delta ED_t = \alpha + \beta_1 ECT1_{-1} + \beta_2 ECT2_{-1} + \beta_3 \Delta ED_{t-i} + \beta_4 \Delta RGDP_{t-i} + \beta_5 \Delta EXR_{t-i} + \beta_6 \Delta TO_{t-i} + \beta_7 \Delta FB_{t-i} + \epsilon \quad \text{(Equation-3)}$$

The test results of VECM show that Cointegration Equation(1) is negative and its p-value is significant at 5% level meaning that there is a long-term causality among External Debt (lnED) and its independent variables (lnRGDP, lnEXR, lnTO and lnFB). However, Cointegration Equation(2), as it is non-negative, does not imply any long term causality among the variables. So, we can proceed with the Cointegration Equation(1) which implies that model will restore its long run equilibrium by 51.6% annually following any disturbances.

Table-7: VECM Test Results

	Variable	Coefficient	Std. Error	t-Statistic	P-Value
Speed of Adjustment	**Cointegration Equation(1)**	***-0.516759***	***0.235957***	***-2.190058***	***0.0394***
	Cointegration Equation(2)	0.879300	0.399765	2.199541	0.0386
Short Run Relationship	D(lnED(-1))	0.246789	0.239343	1.031113	0.3137
	D(lnRGDP(-1))	0.232974	1.659092	0.140422	0.8896
	D(lnEXR(-1))	0.185741	0.370088	0.501883	0.6207
	D(lnTO(-1))	0.161598	0.170260	0.949129	0.3529
	D(lnFB(-1))	0.022410	0.074158	0.302187	0.7653
R-Squared	**0.444683**	**F-Statistic**		**2.516719**	
Adjusted R-Squared	**0.267992**	**Prob.(F-Statistic)**		**0.046186**	

The short run relationship results illustrate that there is no short run causality among the variables.

Now, the estimated long-run cointegrating vector is shown in equation form-

lnED = 13.74595lnEXR - 1.683308lnTO + 16.96231lnFB - 60.20482
(Equation-4) [t-statistics] [-4.11583] [0.62974] [-7.01311]

Both exchange rate (lnEXR) and fiscal balance as a percentage of GDP (lnFB) have their expected signs and they are statistically significant too. However, trade openness (lnTO) neither has the expected sign nor statistically significant.

So, with regard to long run parameters, it was found that both exchange rate and fiscal balance as a percentage of GDP has positive and statistically significant impact on external debt. These results are in line with the previous theoretical rationales. Constant domestic currency depreciation causes to higher external debt obligations and therefore demand for external debt rises further. Moreover, constant negative fiscal balance or budget deficit also leads to government towards higher external borrowing.

v. Diagnostic Tests Results

Table-x shows the result of diagnostic tests. The results show that there is no problem of serial correlation, non-normality and hetreroskedacity. So, the model can be considered reliable and can be used for economic policy formulation.

Table-8: Diagnostic Tests Results

Test	Test Statistic	Probability	Conclusion
Serial Correlation	LM-Stat (0.073)	0.79	Residuals are free from serial correlation.
Normality	Jarque-Bera (1.43)	0.49	Residuals are normally distributed.
Hetroskedasticity	Chi-Square (5.72)	0.84	There is no hetroskedasticity.

vi. Stability Test

The stability tests indicate that model is stable as the plots of both the CUSUM and CUSUMSQ are within the 5% critical value line.

Chart-8: Plot of Cumulative Sum of Recursive Residuals (CUSUM TEST)

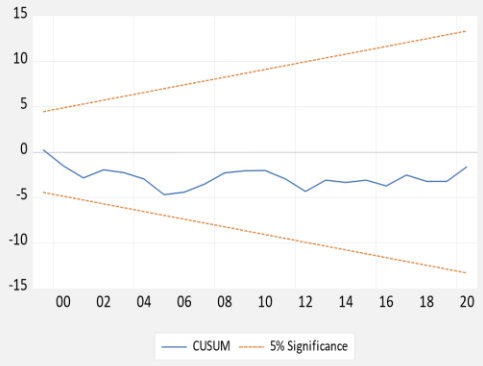


Chart-9: Plot of Cumulative Sum of Squares of Recursive Residuals (CUSUM SQUARE TEST)

Note: The straight lines represent critical bounds at 5% significance level.

7. Policy Recommendations

Based on the result of the study the following policy suggestions can be considered-

i Stable exchange rate policy needs to be formulated since the continuous depreciation of exchange rate results in higher external debt burden. Stable exchange rate policy will also encourage the Foreign Direct Investment which may lessen the external debt burden.

ii Government tax collection area needs to be expanded to finance the increasing government expenditures as the study found persistent fiscal deficit puts pressure on the external debt.

iii Though the debt sustainability indicators are satisfactory for the country amid the higher growth of external debt in recent years, still prudent external debt management is required to avoid any risk of vicious cycle of external debt.

8. Conclusion

The two broad objectives of this paper were to understand the current condition of external debt of Bangladesh and to find key macro-economic determinants of external debt in Bangladesh through a time series analysis. In regard to the first objective (to understand the current condition of external debt of Bangladesh), it has been found that external debt sustainability indicators such as external debt to GDP ratio, debt service ratio and short-term external debt to foreign exchange reserve ratio are within the limit. So, the external debt position of Bangladesh seems not that risky despite recent sharp growth in external debt and debt servicing.

Regarding second objective of the study (finding key macro-economic determinants of external debt in Bangladesh through a time series analysis), the study employed Johansen cointegration test and vector error correction model (VECM) to identify the key macro-economic causative factors of external debt by using 30 years annual data from 1991 to

2020. The study found the long run relationship among external debt and its independent variables (Real GDP, Exchange Rate, Trade Openness and Fiscal Balance as a percentage of GDP).

The study demonstrated that in the long run exchange rate depreciation and negative fiscal balance as a percentage of GDP increase the external debt burden of the Bangladesh which is in line with the prior expectation according to the economic rationale. However, no short-run causality was found among the variables. The system will converge to its long run equilibrium by 51.6% annually following any disturbances. Both diagnostic tests and stability tests confirmed the model reliable. Stable exchange rate policy formulation is required to avoid the external debt burden emanated from constant exchange rate depreciation. Furthermore, government tax collection area needs to be expanded to improve fiscal balance as fiscal deficit exerts pressure on external financing. Overall, a prudent debt management is required to avoid any risk and vulnerabilities from excessive external debt.

This paper focuses on external debt of Bangladesh and tried to spotlight on both the current status and determinants of the external debt of Bangladesh which might be constructive for policy makers and relevant stakeholders. However, further studies with different variables can be conducted to understand the determinants of the external debt in Bangladesh.

References

1. Awan, A., Asghar, N., & Rehman, H. U. (2011). *The Impact of Exchange Rate, Fiscal Deficit and Terms of Trade on External Debt of Pakistan*. Australian Journal of Business and Management Research.
2. Awan, R.U., Anjum, A., & Rahim, V. (2014). *An Econometric Analysis of Determinants of External Debt in Pakistan*. British Journal of Economics, Management & Trade.
3. Chiminya, A., Dunne, J.P., & Nicolaidou E. (2018). *An empirical investigation into the Determinants of External debt in Sub Saharan Africa.* Macroeconomic Discussion Paper Series 2018-02, School of Economics, University of Cape Town.
4. Rafik, R. A. M. (2018). *Determinants of External Debt: The Case of Malaysia.* Emerging Trend in Banking & Finance.
5. Zakaria, M. (2012). *Interlinkages between Openness and Foreign Debt in Pakistan*. Dogus University Journal.
6. Al-Fawwaz, T. M. (2016). *Determinants of External Debt in Jordan: An Empirical Study (1990-2014)*. Canadian Center of Science and Education.
7. Mulugeta, E. T. (2021). *Macroeconomic Determinants of External Debt Accumulation in Ethiopia: An ARDL Bound Testing Approach.* African Journal of Economics and Sustainable Development.
8. Beyene, S. D., & Kotosz, B. (2020). *Macroeconomic determinants of external indebtedness of Ethiopia: ARDL approach to co-integration*, Akademiai Kiado.
9. Augustine, B., & Kumar, L. (2020). *Original Sin, Currency Depreciation and External Debt Burden: Evidence from India.* International Journal of Economics and Financial Issues.
10. Bangladesh Bank. (2020). *Financial Stability Report.*

11. International Monetary Fund. (2003). *External Debt Statistics: Guide for Compilers and Users.*

12. *Prasad, E., Rajan, R., & Subramanian, A. (2007). The Paradox of Capital.* Finance & Development: A Quarterly Magazine of IMF.

13. Abdullahi, M.M., Bakar, N. A. B. A., & Hassan, S.B. (2015). *Determining the macroeconomic factors of external debt accumulation in Nigeria: An ARDL bound test Approach.* Procedia Social and Behavioral Sciences.

14. Kose, M. A. , Prasad, E., Rogoff, K., & Wei, S. (2009) *Financial Globalization: A Reappraisal.* Palgrave Macmillan Jou