MEASURING THE IMPACT OF EXTERNAL DEBT ON THE MACROECONOMIC INDICATORS OF ASIAN COUNTRIES

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ABSTRACT

The relationship between external debt and several macroeconomic variables over the long run in three Asian nations is examined in this study. We utilized 10 years of data from the World Development Indicators (WDI) databases to conduct an ordinary least squares (OLS) regression analysis using EViews 13 to investigate the effect of external debt on macroeconomic indicators. The results of this study show that these three countries differ in macroeconomic factors that are significantly impacted by external debt. External debt affects the exchange rate directly and significantly in all three of the countries, but Sri Lanka has the biggest impact. The findings show a positive and statistically significant correlation between rising rates of inflation, particularly in Pakistan, and rising amounts of external debt. A higher level of foreign debt has a positive impact on the trade dynamic in Sri Lanka, while it causes detrimental effects for Pakistan and Bangladesh. External debt has a negative effect on Bangladesh and Sri Lanka and a favourable effect on Pakistan's GDP growth rate. The findings have significant implications for economists and policymakers, suggesting that national debt management plans should be tailored to individual countries. Subsequent investigations ought to go deeper into these aspects and contemplate supplementary metrics to comprehend the influence of external debt on macroeconomic stability.

Keywords: *External Debt; Inflation Rate; GDP Growth Rate; Trade Dynamics; Exchange Rate.*

INTRODUCTION

A nation often borrows money from foreign sources to resupply its domestic resources for achieving growth and accomplishing other goals when there is insufficient money within its

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boundaries. A nation's ability to repay its external debt is significantly reduced if the money borrowed is not used for profitable endeavors. High debt levels make it difficult to maintain economic growth and fight poverty. After the 1980s global debt crisis, scholars and policymakers became very interested in the relationship between external debt and economic development. The crisis was caused by the accumulation of foreign debt and the resulting sustainability issues, especially in poorly indebted countries (Ale et al., 2023). Foreign debt refers to the portion of a debt that has been borrowed from foreign investors, such as governments, commercial banks, or international financial institutions, to finance imports. These loans are essentially repaid in cash if there was a previous credit. To generate the necessary currency, a borrowing state may sell or transfer assets to the investor state. External debt is a vital and primary source of finance that economies rely on for growth and to fund further public projects. Governments experience a lack of domestic savings and foreign currencies, leading to the accumulation of external debt due to insufficient reserves. In any economy, debt plays a crucial role in the process of capital production and finance. The government needs to borrow to meet economic obligations, especially in situations where resources are limited. Thus, the government can reduce the disparity in income between savings and investments (Safdar et al., 2021). The external debt of South Asian states has changed over time. Figure 1 displays the trend in external debt percentage of Gross National Income (GNI) for three South Asian nations from 1999 to 2022. Pakistan has long struggled with a significant external debt problem. This debt is long-term and expensive, making it challenging for the government, especially the newly elected administration, to repay. While this type of debt is generally considered detrimental to an economy, the government sees it as necessary to achieve important macroeconomic goals, such as improving the standard of living and promoting economic growth (Khan et al., 2022). Bangladesh has been dependent on borrowing money and continues to rely on foreign debt to address the gap between savings and investment as well as to manage its fiscal imbalance. External borrowing is only detrimental to a country if it fails to provide returns that exceed the borrowing costs. However, if handled improperly and without caution, it can become problematic (Ale et al., 2023). The primary causes of Sri Lanka's massive debt are the country's poor tax income and the dearth of FDI. For the past 40 years, the nation has been mostly dependent on foreign loans to develop the nation (Senadheera & Jeganathan, 2021).

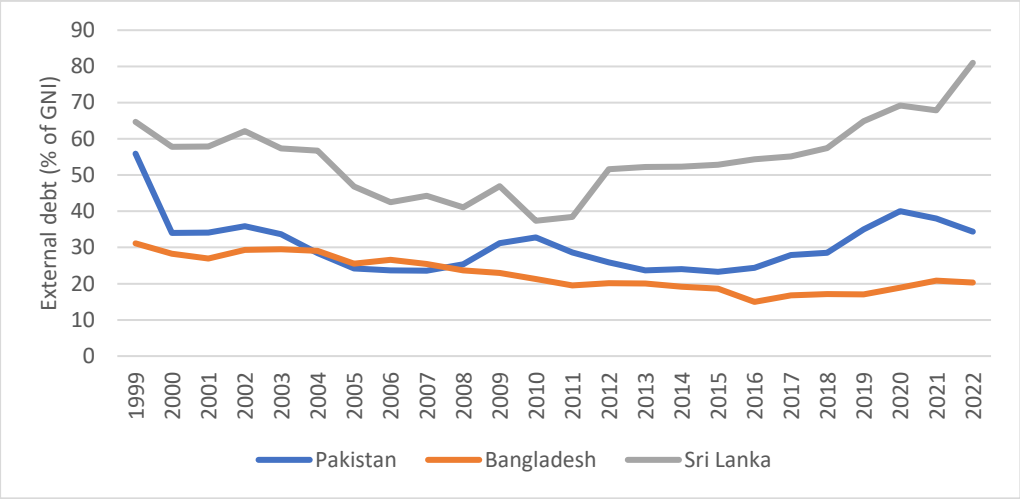

Figure 1. *External Debt (% of GNI) of Asian Countries*

The objective of ensuring the overall well-being of the people in emerging countries has not been accomplished. Poverty remains a persistent issue in these countries due to delayed economic development. As a result, these Asian countries have been unable to make significant progress in their economies. Therefore, the collection of foreign debt is primarily aimed at supporting social development programs that can enhance living standards, with little consideration given to the impoverished (Khan et al., 2022). External borrowing can increase capacity and accelerate output growth, making the debt productive and warranted. But this debt may result in excessive foreign borrowing and budgetary imbalances, making the nation more vulnerable to numerous shocks and crises. Because of its effect on the budget deficit and debt, it reduces the effectiveness of fiscal programs and limits the monetary authority's ability to raise interest rates for monetary policy. The amount of external debt is increasing quickly without contributing enough to output. We have exclusively addressed external debt mostly because of exchange rate volatility; servicing external debt is a major issue for emerging economies. Due to several mentioned factors, including a poorer economic condition and Pakistan's inability to manage its debt commitments. Pakistan has been struggling with debt sustainability for many years since it cannot pay off its debts without both local and foreign financial assistance. Due to the current state of the economy, the government will need to reallocate national resources to manage its debt obligations, both present and future. Investment initiatives, development plans, and initiatives to combat poverty are all negatively impacted by this situation. As a result, the economy is further weakened by the reduction of resources. Pakistan's external debt has been accruing rapidly (Baig et al., 2024). Economic

growth is essential for emerging economies to achieve sustainable development in the long run.

Developing nations are encountering a range of obstacles such as fiscal imbalance, trade deficit, a low ratio of savings to investment, and slow economic growth. Maintaining economic expansion is necessary to control their budget deficit. Additionally, emerging nations strive to decrease their fiscal deficit by effectively managing governmental spending, income, and taxation. Public debt is crucial for reducing fiscal deficits and promoting investment in emerging nations. To enhance per capita income, it is crucial to prioritize advancements in economic growth. Hence, investment is necessary to enhance economic growth. Governments fund their budget deficits through a range of methods, such as producing revenue through tax collection, printing additional currency, borrowing domestically and internationally, and utilizing previous budget surpluses. When public debt is effectively managed, it unequivocally leads to prosperity. However, when technology is utilized recklessly and inefficiently, it has a detrimental impact on the economy. An excessive burden of debt hampers the economy's capacity to allocate essential services to its inhabitants. Public debt is not typically viewed as an effective tool for stimulating the economy unless it is used wisely. However, when combined with real-world conditions and growth theories, it has the potential to promote prosperity and economic advancement by supplying additional resources (Padda, 2020). An assessment of the factors that influence changes in debt levels and the ability to manage debt sustainably is crucial for developing sound macroeconomic policies for any country. The significance of finance-constrained and deeply indebted countries has become more pronounced as the bulk of macroeconomic flaws are closely tied to the increasing levels of debt. Therefore, in these economies, maintaining debt sustainability is crucial for achieving macroeconomic stability, as huge public debt delays capital accumulation and economic expansion. Underdeveloped or impoverished nations are typically more susceptible to this problem, while economically robust countries can effectively handle their debt responsibilities. Thus, assessing the debt dynamics and sustainability of economies that exhibit persistently rising debt levels, feeble macroeconomic foundations, and persistent budget deficits is crucial. This assessment is essential for developing sound and successful macroeconomic policies for such economies (Sundus et al., 2022). The value of a unit of currency relative to other currencies is known as the exchange rate. It is essential to all international economic transactions, and it is critical to the development of any emerging nation's economy. Moreover, it is essential for all facets of global economic interactions as it includes trade and currency

speculation. The previous arguments are founded on the notion that when a country progresses and its government becomes more advanced, the foreign exchange rate becomes dynamic and can be used to gather insights about the country's economic condition. The currency exchange rate has a substantial impact on the economic activities of developing nations. Forecasting exchange rates is crucial for governments to achieve economic empowerment and analyze economic fluctuations. Multiple factors contributed to the devaluation of the currency. However, the most notable factors encompass the trade imbalance, stalled exports, rising imports, and growing domestic spending, which therefore resulted in a higher demand for dollars. Moreover, the fiscal deficit and current account conditions are discouraging (Akhtar et al., 2022; Asghar et al., 2020). International trade has a direct impact on the growth of domestic goods, which is an additional advantage. Products manufactured by a certain nation might be traded to a different nation (exports). Countries possessing ample natural resources, particularly in the agricultural and mining sectors, are motivated to engage in international trade. International trade, particularly exports, plays a crucial role in driving the national economy of many countries, including Indonesia. In economic literature, the inflation rate is defined as the difference between the nominal money growth rate and the economic growth rate. In recent decades, central banks in multiple countries have prioritized the implementation of inflation-targeting regimes as a crucial objective. The crucial inquiry is to determine the optimal inflation target and establish a suitable structure for the inflation target regime. Previous theoretical and empirical literature has demonstrated that inflation has an impact on both foreign exchange reserves and economic growth. Inflation refers to the persistent and widespread increase in the pricing of products over time. Each nation exhibits a distinct inflation rate. If a country has higher inflation compared to other countries, it will increase the value of its currency. Foreign currency reserves will be impacted by high inflation as the necessary funds are utilized to stabilize the value of the foreign exchange rate (Andriyani et al., 2020).

PROBLEM STATEMENT

The research on relationships between a country’s external debt and exchange rates, import-export processes, and inflation rates is an important field in international economics. Foreign debt is widely used to facilitate economic growth and development, but its effects on several macroeconomic factors are ambiguous and largely unpredictable. At the same time, while there have been several studies on the topic, most of the literature fails to provide comprehensive data on the relationships between external debt and the most important indicators of economics

for various countries and situations. Recent studies on the effects of high foreign debt on trade balances, inflation rates, and currency rates have mainly highlighted negative outcomes. However, research findings have at times suggested equal probabilities of positive outcomes, including high economic activity and foreign direct investments. Thus, policymakers, competent economists, and financial analysts would benefit substantially from an insightfully detailed comprehension of the magnitude and intensity of the connections. Ale et al. (2023) concluded that the results are paramount as they validate a long-term, robust correlation between economic growth, external debt, and other conventional indicators. However, new information and facts on the detrimental impact of external debt on countries' economic growth have been revealed through research. This has demonstrated that external debt is a great challenge that significantly undermines countries' economic development in the two periods, short and long run. Awan and Qasim (2020) indicate that external debt adversely affects both periods' economic growth because of repayment in foreign currency. Higher levels of external debt can devaluate the currency of the country, which in turn increases the fluctuations in exchange rates. However, Martín et al. (2024) imply that when a nation's external debt is less than 42.32%, it encourages economic growth, but when the external debt is more than 42.32%, it does not significantly explain growth. Thus, this study aims to examine the following inquiries:

- The relationship between foreign debt and exchange rate variations in Asian countries can be described as a cause-and-effect relationship.
- What is the relationship between foreign debt and inflation rates in different economic contexts?
- How does foreign debt affect import-export dynamics, such as trade balances and competitiveness, over the long term?
- Are there significant discrepancies in the impact of foreign debt on economic indicators among established, emerging, and developing economies?

The objective of this study is to explore the relationship between foreign debt and important macroeconomic indicators to have a thorough understanding. The results of this study will offer essential details for policymakers and scholars in the realm of international economics.

LITERATURE REVIEW

Exchange Rate

The swift devaluation of exchange rates has intensified the strains on countries that have borrowed extensively in foreign currencies and has triggered substantial outflows of capital from numerous emerging markets. These advancements may create pressure for developing market governments that have elevated their overall exposure to foreign currency loans and foreign investor ownership of local currency debt. In developing markets, a significant amount of debt is denominated in foreign currencies. This highlights the importance of implementing micro- and macro-prudential measures to effectively manage and mitigate risks arising from unexpected events. Regulators should conduct bank stress tests specifically focusing on risks associated with foreign currency and commodity prices. Additionally, they should rigorously and consistently monitor corporate leverage and foreign currency exposures, including derivatives holdings (Monetary & Department, 2015). Djalo et al. (2023) in their study, they investigated various economic indicator's impact on foreign debt. They revealed that the association between exchange rate and foreign debt is negatively significant, as the increase in foreign debt may fluctuate the exchange rate. Mehmood et al. (2023); Zahra et al. (2023) have also suggested that there is a negative relationship between exchange rates and foreign debt. The magnitude shows a negative and declining relationship. However, Aderemi et al. (2020) examined the short-run association between external debt and variations in the exchange rate in Nigeria from 1981 to 2018. In Nigeria, exchange rate variations in the short term are significantly influenced positively by external debt, debt service payments, and foreign reserves. Moreover, this study's findings suggest that policymakers in Nigeria should minimize, if not completely discourage, the use of external debt to finance budget deficits. This is because servicing and repaying such debt puts pressure on the foreign exchange market, leading to short-term fluctuations in the exchange rate and the depreciation of the country's currency. Figure 2 represents the historical exchange rates of Asian countries. Sundus et al. (2022) found that exchange rate (ER) depreciation has a significant effect on increasing the debt burden of the country. The depreciation of the Pakistani Rupee has resulted in elevated borrowing expenses and a rise in the local currency value of external debt. Consequently, this has added to the country's overall debt load.

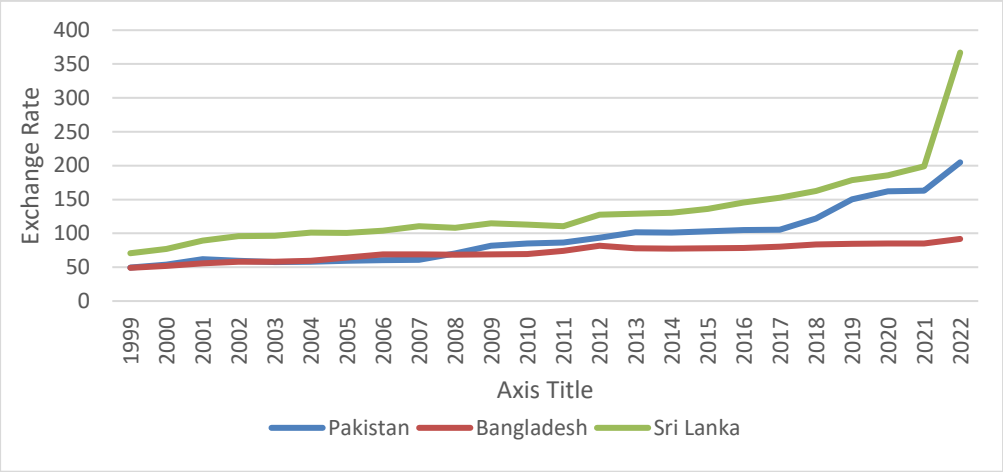

Figure 2. *Historical exchange rates of Asian countries*

The study conducted by Dissanayaka et al. (2023) reveals a significant positive relationship between foreign debt and exchange rate over an extended period. The gradual increase in Sri Lanka's foreign borrowings results in a corresponding rise in the exchange rate. Sri Lanka experienced significant and rapid growth in its external debt. It also results in a rise in the currency rate. In the immediate term. It exhibited an inverse correlation. Malik et al. (2023) examined how external debt and exchange rates affected economic stability in 20 Asian economies from 1990 to 2015. The study reveals that increased amounts of foreign debt might intensify variations in the business cycle. This renders economies more susceptible to shocks and maintains stable exchange rates. On the other hand, it assists in reducing these variations by fostering economic stability. The study emphasizes the necessity of implementing policies that effectively regulate the amounts of external debt and ensure the stability of exchange rates to promote sustainable economic growth in these nations. Turangan (2023) demonstrates a robust association between increased levels of government debt and an escalation in exchange rate volatility. The presence of significant debt loads can erode investor confidence and result in instability in the foreign exchange market. This occurs when the government faces difficulties in repaying its debts. This can ultimately lead to a depreciation of the currency.

H1. There is a significant impact of foreign debt on the exchange rate in Pakistan.

H2. There is a significant impact of foreign debt on the exchange rate in Sri Lanka.

H3. There is a significant impact of foreign debt on the exchange rate in Bangladesh.

Inflation Rate

Ahmed et al. (2023) investigated a positive relationship between inflation and foreign debt. implying that higher inflation rates are likely associated with larger amounts of external debt.

A thorough examination demonstrates a strong and statistically significant positive relationship between external debt and inflation. This discovery suggests a significant correlation, suggesting that an escalation in foreign debt levels is likely to be linked with a commensurate surge in inflation rates. Sharaf and Shahen (2023) offer a novel viewpoint on the factors that contribute to Sudan's inflation and the cumulative effect of external debt. Empirical data indicates that external debt does not exert a significant impact on long-term inflation. As a result, the conflict has had minimal effect on price levels in Sudan over some time. The result aligns with the research findings, suggesting that public debt does not have a significant effect on inflation in Nigeria. The linear ARDL model results imply that there is no statistically significant inflationary impact of foreign debt on prices, interest rates, and output in Nigeria. In addition, their study determined that the magnitude of external debt did not exert a substantial influence on either general price levels or economic production. Boshra Ghaly (2023) highlights that increasing external debt requires significant debt payments, increasing the demand for foreign currency and potentially devaluing the Egyptian pound further. Inflation has a generally declining impact on external debt. A positive shock to inflation (measured by the consumer price index) initially reduces external debt both in the short and long term. Broad money, when increased, has an unexpectedly significant negative impact on external debt by 0.09% in the short term. The study discusses how inflationary shocks can potentially reduce external debt. This reduction can occur through currency depreciation, which can raise inflation and diminish domestic demand or improve the trade balance by boosting foreign demand. Enongene and Etape (2023) explore the relationship between external debt and inflation in Cameroon from 1980 to 2020. The research highlights how both increasing and decreasing external debt asymmetrically impact inflation. In the long run, positive changes in external debt significantly raise inflation. While negative changes also affect inflation, but in the opposite direction. In the short run, the dynamics are reversed: positive external debt stocks reduce inflation, whereas negative stocks increase it. Figure 3 represents inflation rates from 1999 to 2022.

H4. There is a significant impact of foreign debt on the inflation rate in Pakistan.

H5. There is a significant impact of foreign debt on the inflation rate in Sri Lanka.

H6. There is a significant impact of foreign debt on the inflation rate in Bangladesh.

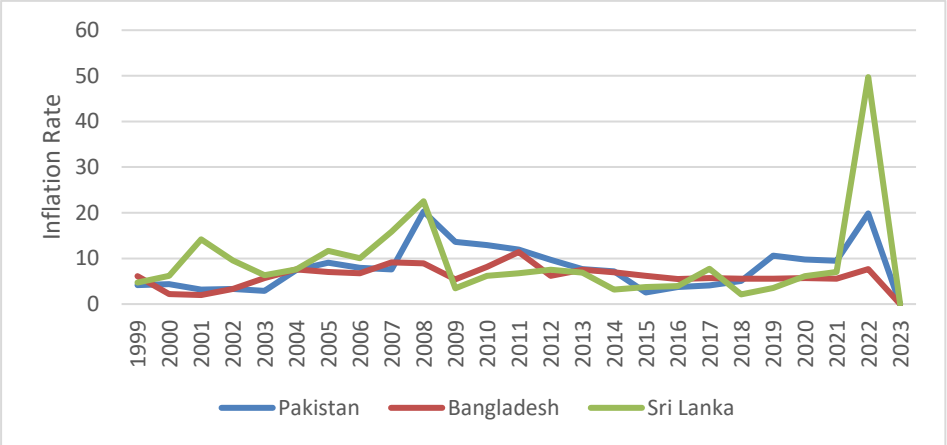

Figure 3. *Inflation rate of Asian countries*

Trade Dynamics

Raising export revenues is one way that Pakistan might get out of its dire debt predicament. The government ought to create regulations that support both big and small exporters and give them greater convenience when conducting business and producing goods abroad. Pakistan has somehow lost the trust of both domestic and foreign investors as a result of political unrest and other disruptions. To lower Pakistan's trade and current account deficit in the future, policies should be implemented to win over a variety of investors. (Baig et al., 2024). Asghar et al. (2020) conclude that there exists a negative association between the balance of trade and the exchange rate. This indicates that Pakistan is seeing a significant issue with its exchange rate as a result of its interest and inflation rates. Pakistan's savings are insufficient compared to its investment, resulting in a negative trade balance that impacts its economy. The continuous rise in the exchange rate leads to an increase in the interest rate, resulting in less savings. This, in turn, leads to an increase in imports to compensate for the investment deficit, ultimately resulting in a negative trade balance. Nicholas and Nicholas (2023) emphasize that Sri Lanka's significant reliance on international sovereign bonds has ensnared the nation in a recurring pattern of debt with exorbitant interest rates. The particular type of borrowing mentioned is more troublesome compared to bilateral or multilateral loans because it involves higher interest rates and shorter repayment periods, which have put pressure on Sri Lanka's financial stability. Highlight the inability of consecutive Sri Lankan administrations to transition towards an economy focused on exporting industrial goods. Implementing this economic approach is crucial for ensuring long-term and stable economic growth, as well as effectively managing debt. Sri Lanka's failure to prioritize the production of advanced manufactured goods has made the country susceptible to trade imbalances and current account

deficits. As a result, Sri Lanka has had to depend significantly on foreign borrowing to address these deficits. The IMF's strategy centres around implementing austerity measures to reduce the fiscal imbalance. They contend that this strategy fails to consider the underlying source of the issue, which is the exorbitant interest payments on the current debt.

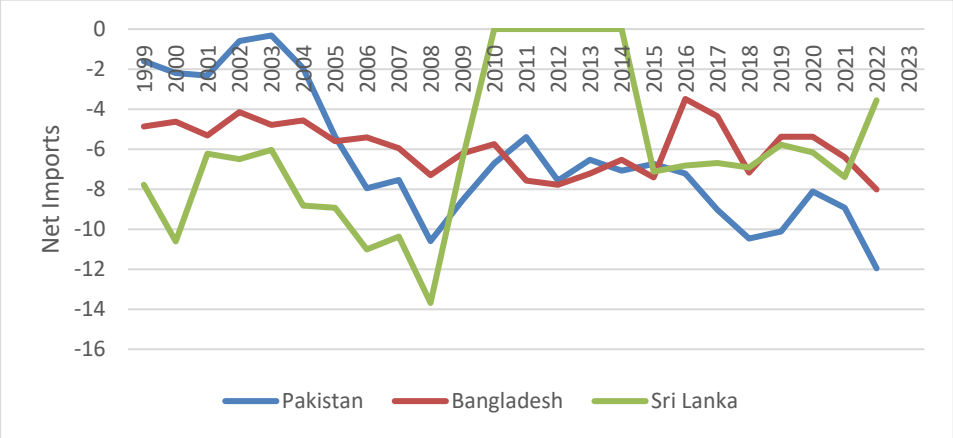

Figure 4. *Historical Trade dynamics (Exports – Imports) of Asian Countries*

Nath (2023) determined that Sri Lanka has consistently faced fiscal deficits as a result of excessive government expenditures and inadequate income production. This disparity has caused the government to significantly depend on borrowing, hence worsening the national debt. The economy of the country has been further stretched due to its current account deficit. This is mostly caused by a higher level of imports in comparison to exports. The over-dependence on imports without a corresponding rise in export earnings has significantly diminished foreign exchange reserves, resulting in a balance of payments crisis.

H7. There is a significant impact of foreign debt on the trade dynamics in Pakistan.

H8. There is a significant impact of foreign debt on the trade dynamics in Sri Lanka.

H9. There is a significant impact of foreign debt on the trade dynamics in Bangladesh.

GDP Growth Rate

The presence of foreign debt frequently results in a deceleration of economic progress as a consequence of the weighty obligations of interest payments. This exhausts the financial resources required for crucial investments in infrastructure, education, and healthcare. Many South Asian developing countries rely heavily on foreign debt to address economic crises. This dependency can lead to significant challenges in managing and repaying these debts, potentially resulting in economic instability and reduced growth. Improved institutional quality can mitigate some of the negative impacts of foreign debt. Efficient management of assets and

better governance can help countries manage their debts more effectively and avoid economic downturns. Research focusing on South Asian countries (India, Sri Lanka, Pakistan, Maldives, Bangladesh, Nepal, and Bhutan) using data from 1980 to 2020 found that foreign debt has a consistent negative effect on economic growth in both the short and long term. Research has demonstrated a detrimental correlation between foreign debt and economic growth. The rise in foreign debt might lead to a reduction in economic growth of approximately (Jamsheed, 2024). The presence of external debt imposes substantial financial obligations as a result of the expenses related to servicing the debt. This hinders the allocation of resources toward beneficial investments in the economy, which may otherwise facilitate economic progress. Several developing nations depend on restricted sources of income to repay or manage their external debt. This reliance worsens financial stress and impedes economic stability and expansion. The adverse consequences of external debt underscore the significance of effectively controlling debt levels and prioritizing the enhancement of local savings, human capital, and productive capital stock to reduce dependence on foreign finance (Epor et al., 2024). Figure 5 shows the annual GDP growth rates of Asian countries.

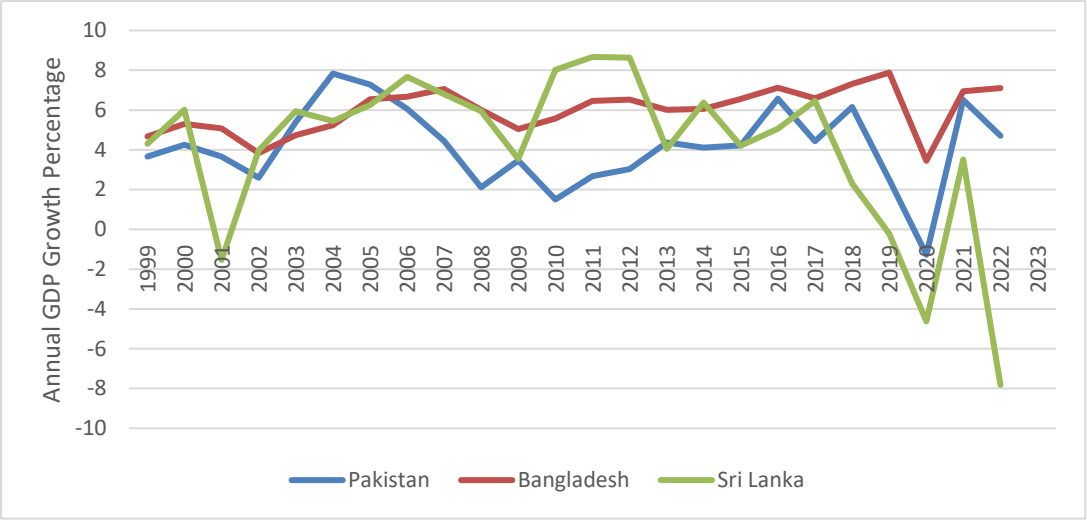

Figure 5. *Annual growth percentages of Asian countries.*

Baloch et al. (2024) explained that foreign debt exerts a statistically significant influence on long-term GDP growth. The analysis reveals a positive correlation between elevated levels of foreign debt and fluctuations in GDP growth. This highlights the critical importance of effectively controlling foreign debt levels to ensure long-term economic growth. foreign debt has a significant impact on GDP growth in the short term. This finding shows that there is variation. External debt levels can quickly affect the economy. This may be caused by changes

to investor confidence and government spending capacity. Aktar (2023) argues that this is excessive. External debt can be a burden on the economy and limit government capacity. Expends and diverts resources from productive investments to pay off debt. This might impede economic expansion and hinder development endeavors. Bangladesh's foreign debt has experienced a significant rise. By obtaining substantial loans to fund development initiatives and tackle budget shortfalls. The external debt reached a significant amount of $60.15 billion, indicating a notable increase compared to previous years. Mohamed and Abdulle (2023) conducted a study that analyzed the influence of varying levels of government debt on the growth of Somalia's GDP. The researchers utilized an asymmetric model technique for their analysis. The major findings indicate that government debt has a non-linear effect on economic growth. Low levels of debt can stimulate growth by financing crucial infrastructure and services. However, high debt levels negatively impact growth due to increased debt servicing costs and potential investor uncertainty. The study emphasizes the importance of maintaining sustainable debt levels to ensure positive economic outcomes. Yamin et al. (2023) explored the relationship between debt and economic growth by examining various studies. It notes that while some studies indicate a negative impact of public debt on economic growth, others suggest a positive or neutral relationship. They concluded that the effect of debt on economic growth is uncertain and varies depending on these diverse factors, suggesting that the notion of public debt being detrimental to economic growth is not universally supported.

H10. There is a significant impact of foreign debt on the GDP of Pakistan.

H11. There is a significant impact of foreign debt on the GDP of Sri Lanka.

H12. There is a significant impact of foreign debt on the GDP of Bangladesh.

RESEARCH METHODOLOGY

The objective of our study was to determine and evaluate the long-term consequences of foreign debt on macroeconomic measures. The analysis focuses on three Asian nations and covers a period of 10 years. The study uses secondary data that is inclusive and reliable since it is sourced from the World Development Indicators (WDI) database. The present work investigates the use of ordinary least squares (OLS) regression to calculate external debt using Eview 13. Macroeconomic measures, including the exchange rate (EXR), GDP growth rate (GDP), inflation rate (IR), and trade dynamics (TD), are the dependent variables (Harsono et al., 2023). Classical linear regression is the foundation of the econometric approach, which is usually based on a pooled OLS general model that does not take into consideration unique

entities, as stated in equation no. (1). Here, we provide the general model and time series model; at last, we concentrate on time series data, taking into consideration variations in individual means owing to national characteristics (Onofrei et al., 2022).

$$\boldsymbol{Y}_t=\boldsymbol{\beta}_1+\boldsymbol{\beta}_2 X_t+\boldsymbol{\mu}_t$$

The dependent variable is represented by Y_t. The intercept is denoted as β_1. The coefficient for the independent variable X_t is β_2, and the error term is μ_t. The variables used in this study are given below. External debt is used as the independent variable, and other variables are dependent variables.

EXT_DT = External Debt

EXR = Exchange Rate

IR = Inflation Rate

TD = Trade Dynamics (Export-import)

GDP = GDP Growth Rate

Sometimes, the error term may not exhibit white noise characteristics. In such instances, an enhanced version of the test, known as the Augmented Dickey-Fuller (ADF) test, is employed. This modified test incorporates additional lagged terms of the dependent variable to account for serial correlation in the test equation. We employ the Ordinary Least Squares (OLS) model to estimate and illustrate the long-term relationship. The Ordinary Least Squares (OLS) model is appropriate for analyzing the relationships between the variables of interest and allows for the examination of how the variables respond to an external shock over time. In contrast, the OLS model is employed to ascertain the stationary relationship across the full-duration (Sakurai, 2024). Before data transformation, the Augmented Dickey-Fuller (ADF) test indicated that the economic variables in Pakistan, Bangladesh, and Sri Lanka were not stationary, as the null hypothesis of stationarity was rejected presented in Table 1.

Table 1. ADF Test Results

	Pakistan		**Bangladesh**		**Sri Lanka**	
Variable	**T-stats**	**P-value**	**T-stats**	**P-value**	**T-stats**	**P-value**
EXR	-1.095	0.672	-2.643	0.120	1.794	0.998
IR	-0.191	0.911	-1.704	0.397	1.342	0.995
TD	-0.478	0.853	-2.393	0.168	-2.472	0.151
EXT_DT	-1.576	0.453	-1.401	0.534	1.496	0.996
GDP	-1.585	0.453	-1.820	0.349	-0.331	0.878

We have extensively examined many concerns, with a specific emphasis on a subset of the topic concerning trends in data. Statistical techniques often demand stationarity. Stationarity is achieved by transforming the data to remove unit roots. After the data transformation, the ADF test results showed a noteworthy enhancement, as evidenced in Table 2. The data transformation successfully resolved the non-stationarity problem for the economic variables in all three nations, as demonstrated by the ADF test results now showing stationary series for running regression estimation (Nasir & Morgan, 2023).

Table 2. ADF Test Results After Transformation

	Pakistan		Bangladesh		Sri Lanka	
Variable	**T-stats**	**P-value**	**T-stats**	**P-value**	**T-stats**	**P-value**
EXR	-3.021	0.042	-3.678	0.012	-3.256	0.028
IR	-3.145	0.034	-3.801	0.008	-3.343	0.024
TD	-3.102	0.037	-3.654	0.013	-3.278	0.027
EXT_DT	-3.065	0.039	-3.702	0.011	-3.235	0.030
GDP	-3.110	0.036	-3.721	0.010	-3.297	0.026

RESULTS

Descriptive Statistics

Table 3 presents a detailed statistical description and the outcomes of normality tests for five variables—Exchange Rate (EXR), External Debt (EXT_DT), GDP Growth (GDP), Inflation Rate (IR), and Trade Dynamics (TD)—across Pakistan, Bangladesh, and Sri Lanka. Regarding Pakistan, the data indicates that the majority of variables have an approaching normal distribution. The EXR has a mean of 119.109 and a standard deviation of 52.708. It has a skewness of -0.641 and a kurtosis of 3.760. The Jarque-Bera (JB) statistic is 1.018 with a p-value of 0.601, suggesting that the data follows a normal distribution. Similarly, the EXT_DT, GDP, IR, and TD variables likewise demonstrate normality, as indicated by their p-values significantly exceeding the 0.05 threshold.

In Bangladesh, the majority of variables, such as EXT_DT, GDP, IR, and TD, indicate normalcy. However, the Exchange Rate (EXR) stands out as it significantly deviates from a normal distribution. The data has a mean of 74.375, a standard deviation of 26.492, and a JB statistic of 19.885, giving a p-value of 0.000. In contrast to the other variables, which have p-values above 0.05, indicating their distributions are close to normal, this variable stands out with a significantly lower p-value. The outcomes for Sri Lanka are varied. The EXR has a mean of 171.909 and a standard deviation of 51.544. It has a skewness of 1.587 and a kurtosis

of 4.917. The JB statistic is 5.731 with a p-value of 0.057, indicating that it is close to the boundary of normality (Uyanık & Güler, 2013).

All of the variables exhibit normalcy, as seen by their respective p-values, which demonstrate that their distributions do not significantly deviate from normal. In general, Pakistan and Sri Lanka demonstrate predominantly normal distributions for their economic variables. However, Bangladesh's Exchange Rate stands out as a noteworthy outlier, deviating greatly from normalcy. (Aloulou et al., 2023). The skewness and kurtosis values for all countries and variables suggest minor deviations from perfect normality (Mqolombeni et al., 2023). Although these deviations are often not severe enough to warrant rejecting normality for most variables (Roy, 2023).

Model Specification and Estimation Results

The regression analysis findings for H_1, H_2, and H_3 demonstrate the substantial influence of foreign debt (EXT_DT) on the exchange rate (EXR) in Pakistan, Bangladesh, and Sri Lanka. (Aladejare, 2023). In Pakistan, the coefficient for the variable EXT_DT is 196.813. The t-statistic for this coefficient is 3.192, and the p-value is 0.013. These values suggest a significant positive influence. Bangladesh demonstrates a comparable favourable effect with a coefficient of 178.409 (t-statistic: 2.745, p-value: 0.025). The coefficient for Sri Lanka is 5.047, which is both tiny and very significant (t-statistic: 8.120, p-value: 0.001). The constant terms exhibit significance in all three countries, displaying negative coefficients. The R-squared values suggest that the models account for 56% of the variability in Pakistan, 48.5% in Bangladesh, and 89.2% in Sri Lanka.

Table 3. Statistical Description of Variables and Normality Test

	Pakistan					Bangladesh					Sri Lanka				
	EXR	**EXT_DT**	**GDP**	**IR**	**TD**	**EXR**	**EXT_DT**	**GDP**	**IR**	**TD**	**EXR**	**EXT_DT**	**GDP**	**IR**	**TD**
Mean	119.109	29.554	5.807	9.653	-8.797	74.375	18.378	6.802	6.200	-6.137	171.909	60.734	1.930	11.908	-0.700
Median	106.000	27.876	6.433	8.085	-8.927	81.952	18.760	6.746	5.697	-6.467	162.456	56.302	3.782	6.954	-0.305
Maximum	204.867	40.021	7.706	19.874	-6.535	91.745	20.877	7.882	7.697	-3.492	300.000	80.995	6.461	40.000	8.000
Minimum	0.000	23.276	3.028	0.000	-11.956	0.000	14.971	6.014	5.514	-8.016	125.582	52.246	-7.824	2.135	-6.000
Std. Dev.	52.708	6.178	1.594	5.556	1.904	26.492	1.852	0.669	0.872	1.449	51.544	9.644	4.774	13.171	3.853
Skewness	-0.641	0.540	-0.451	0.282	-0.303	-2.530	-0.373	0.243	0.854	0.533	1.587	0.941	-1.058	1.496	0.884
Kurtosis	3.760	1.745	1.792	2.615	1.680	7.703	2.164	1.717	2.007	2.163	4.917	2.759	2.824	3.442	3.839
Jarque-Bera	1.018	1.255	1.041	0.214	0.967	19.885	0.523	0.784	1.627	0.765	5.731	1.498	1.879	3.813	1.595
Probability	0.601	0.534	0.594	0.899	0.617	0.000	0.770	0.676	0.443	0.682	0.057	0.473	0.391	0.149	0.450
Observations	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

The corrected R-squared values exhibit a modest decrease, although they maintain a consistent pattern, indicating a favourable fit of the model. Pakistan has the largest standard errors of regression, whereas Sri Lanka has the lowest. The F-statistics are statistically significant for all three countries, indicating the general importance of the models. The Durbin-Watson statistics suggest the absence of significant autocorrelation problems. These data highlight the crucial influence of external debt on economic performance in these nations, with different levels of effect. Presented in Table 4.

The regression analysis demonstrates that there is a notable and favourable influence of external debt on the exchange rate in Asian countries. The size and significance levels differ. (Sharaf et al., 2024). Sri Lanka exhibits the highest correlation between the model and the observed data. As indicated by the highest values of R-squared and modified R-squared. It possesses the minimum standard error of the regression that signifies a significant degree of precision in forecasting the dependent variable. The relationship between external debt and the exchange rate has a greater impact in Sri Lanka than in Pakistan and Bangladesh.

Table 4. Regression Results for H_1, H_2 and H_3

Variable	Pakistan	Bangladesh	Sri Lanka
	Coefficient (Std. Error, t-Statistic, p-value)	**Coefficient (Std. Error, t-Statistic, p-value)**	**Coefficient (Std. Error, t-Statistic, p-value)**
EXT_DT	196.813 (61.651, 3.192, 0.013)	178.409 (64.993, 2.745, 0.025)	5.047 (0.622, 8.120, 0.001)
C	-543.903 (208.647, -2.607, 0.031)	-444.158 (189.005, -2.350, 0.047)	-134.639 (38.180, -3.526, 0.008)
R-squared	0.56	0.485	0.892
Adjusted R-squared	0.505	0.421	0.878
S.E. of regression	38.796	20.164	17.984
Sum squared resid	12040.888	3252.747	2587.443
Log-likelihood	-49.657	-43.113	-41.969
F-statistic	10.191	7.535	65.929
Prob(F-statistic)	0.013	0.025	0.001
Durbin-Watson stat	1.891	1.826	1.726

The relationship between foreign debt (EXT_DT) and the inflation rate (IR) in Asian nations is examined comparatively by the regression findings for hypotheses H4 to H6. With a t-statistic of 4.429 and a p-value of 0.002, Pakistan's EXT_DT coefficient is 23.156. This suggests a significant positive effect. The coefficient for Bangladesh is 13.240, with a t-statistic of 2.544 and a p-value of 0.034. These values indicate a substantial positive influence. The coefficient for Sri Lanka is 1.068, with a t-statistic of 3.545 and a p-value of 0.008. This confirms a positive and substantial impact (Onafowora & Owoye, 2019). The constant terms for all three nations are statistically significant, with Pakistan and Sri Lanka exhibiting higher levels of significance compared to Bangladesh. These findings suggest that external debt exerts a notable and favourable influence on the inflation rate in all three nations but with varying degrees of strength. Pakistan exhibits the most resilient connection, with Bangladesh and Sri Lanka following closely behind. Pakistan exhibits the highest R-squared value of 0.71, indicating that 71% of the variation in the dependent variable can be accounted for by the independent factors. Bangladesh and Sri Lanka have R-squared coefficients of determination of 0.447 and 0.611, respectively. The adjusted R-squared values display a similar pattern.

Pakistan's regression model demonstrates the smallest standard error in the regression. This indicates that the estimations are highly accurate. All models had significant F-statistics, with Pakistan demonstrating the highest value. This reinforces the overall significance of the models. The Durbin-Watson statistic for all countries is around 2, suggesting that there is no significant autocorrelation in the residuals presented in Table 5 (Guerard & Guerard, 2013; Shaw et al., 2023). The findings suggest that external debt exerts a noteworthy and favourable influence on the inflation rate in all three nations but with varying degrees of intensity. Pakistan exhibits the most resilient connection, with Bangladesh and Sri Lanka following suit. The regression analysis shows that there is a statistically significant positive relationship between external debt and economic indicators in Pakistan, Bangladesh, and Sri Lanka. Nevertheless, the size and significance levels differ. Sri Lanka has the strongest correlation between the observed data and the fitted model, as indicated by the greatest values of R-squared and adjusted R-squared and the lowest standard error of regression. This suggests a stronger and more stable correlation between external debt and the economic factor in Sri Lanka as compared to Pakistan and Bangladesh.

Table 5. Regression Results for H4, H5 and H6

Variable	Pakistan	Bangladesh	Sri Lanka
	Coefficient (Std. Error, t-Statistic, p-value)	**Coefficient (Std. Error, t-Statistic, p-value)**	**Coefficient (Std. Error, t-Statistic, p-value)**
EXT_DT	23.156 (5.228, 4.429, 0.002)	13.240 (5.204, 2.544, 0.034)	1.068 (0.301, 3.545, 0.008)
C	-68.283 (17.695, -3.859, 0.005)	-33.174 (15.134, -2.192, 0.060)	-52.935 (18.496, -2.862, 0.021)
R-squared	0.71	0.447	0.611
Adjusted R-squared	0.674	0.378	0.562
S.E. of regression	3.29	1.615	8.712
Sum squared resid	86.601	20.854	607.22
Log-likelihood	-24.983	-17.864	-34.721
F-statistic	19.615	6.473	12.57
Prob(F-statistic)	0.002	0.034	0.008
Durbin-Watson stat	1.624	1.379	1.63

The effects of external debt (EXT_DT) on the trade dynamics in Pakistan, Bangladesh, and Sri Lanka are highlighted by the regression results for hypotheses H7, H8, and H9. The EXT_DT coefficient for Pakistan is -7.637 (t-statistic: -4.010, p-value: 0.004), suggesting a statistically significant adverse effect. Bangladesh exhibits a negative impact as well, with a coefficient of -10.444 (p-value: 0.013, t-statistic: -3.163). On the other hand, Sri Lanka has a positive coefficient of 0.263 (t-statistic: 2.470, p-value: 0.039), indicating a favorable influence as presented in Table 6. All three of the countries have significant constant terms; the coefficients for Sri Lanka are negative, while the coefficients for Bangladesh and Pakistan are positive. The

models explain 66.8% of the variation in Pakistan, 55.6% in Bangladesh, and 43.3% in Sri Lanka, according to the R-squared values. Although they are slightly lower, the adjusted R-squared values still show a strong fit since they take the number of predictors in the model into consideration (Guerard & Guerard, 2013; Shaw et al., 2023). Regression standard errors differ by country, with Bangladesh having the lowest and Sri Lanka having the highest. The overall departure of the observed values from the fitted values is displayed by the sum of squared residuals, with Sri Lanka having the largest value. As would be predicted from regression analysis, the log-likelihood values are negative, indicating a high degree of model fit. The overall importance of the regression models is confirmed by the significant F-statistics for each of the three countries. The residuals of the models appear to lack considerable autocorrelation, according to the Durbin-Watson statistic (Skiera et al., 2021). These findings highlight the differing effects of external debt on the trade dynamics of Bangladesh, Sri Lanka, and Pakistan, with Bangladesh and Pakistan suffering negative repercussions and Sri Lanka demonstrating a favourable influence.

Table 6. Regression Results for H7, H8 and H9

	Pakistan	**Bangladesh**	**Sri Lanka**
Variable	**Coefficient (Std. Error, t-Statistic, p-value)**	**Coefficient (Std. Error, t-Statistic, p-value)**	**Coefficient (Std. Error, t-Statistic, p-value)**
EXT_DT	-7.637 (1.904, -4.010, 0.004)	-10.444 (3.301, -3.163, 0.013)	0.263 (0.106, 2.470, 0.039)
C	16.883 (6.445, 2.619, 0.031)	24.218 (9.601, 2.522, 0.036)	-16.662 (6.536, -2.549, 0.034)
R-squared	0.668	0.556	0.433
Adjusted R-squared	0.626	0.5	0.362
S.E. of regression	1.198	1.024	3.079
Sum squared resid	11.489	8.393	75.823
Log-likelihood	-14.884	-13.313	-24.319
F-statistic	16.083	10.008	6.1
Prob(F-statistic)	0.004	0.013	0.039
Durbin-Watson stat	2.054	2.265	1.673

The regression analysis findings for hypotheses H10, H11, and H12 reveal that the impact of foreign debt (EXT_DT) on the GDP growth rate (GDP) in Bangladesh, Sri Lanka, and Pakistan differs. The variable EXT_DT has a significant and positive effect on Pakistan, as indicated by its coefficient of 5.219 (t-statistic: 3.757, p-value: 0.006). However, EXT_DT has a detrimental impact on Bangladesh and Sri Lanka, as indicated by the coefficients of -0.242 (t-statistic: -2.546, p-value: 0.034) and -0.443 (t-statistic: -5.649, p-value < 0.001), respectively.

In Pakistan (-11.546, p-value: 0.040), the constant term is significant and negative, suggesting a negative baseline effect (Edo & Oigiangbe, 2024). In Bangladesh (11.240, p-value: 0.001) and Sri Lanka (28.815, p-value: 0.001), on the other hand, it is positive and very significant. Pakistan's R-squared score is 0.638, Bangladesh's is 0.448, and Sri Lanka's is 0.800, indicating the models' explanatory strength. Slightly smaller adjusted R-squared values show strong model fits even after considering the number of predictors presented in Table 7 (Guerard & Guerard, 2013; Shaw et al., 2023).

The regression's standard errors, which have the biggest value in Sri Lanka and the smallest value in Bangladesh, demonstrate how accurate the predictions were. Sri Lanka has the largest overall deviation of observed values from fitted values or the sum of squared residuals. Negative log-likelihood values indicate how well each model fits the data. The overall importance of the regression models is confirmed by the significant F-statistics for each of the three countries. Sri Lanka displays a Q closer to the optimum range, indicating a solid model fit without autocorrelation difficulties, while Pakistan and Bangladesh exhibit no significant autocorrelation according to the Durbin-Watson statistics. These comparative findings show how the three countries' experiences with external debt differ; Pakistan benefits from it, while Bangladesh and Sri Lanka suffer negative consequences. This emphasizes the need for each country to have specific economic strategies.

Table 7. Regression Results for H10, H11, and H12

Variable	Pakistan	Bangladesh	Sri Lanka
	Coefficient (Std. Error, t-Statistic, p-value)	**Coefficient (Std. Error, t-Statistic, p-value)**	**Coefficient (Std. Error, t-Statistic, p-value)**
EXT_DT	5.219 (1.389, 3.757, 0.006)	-0.242 (0.095, -2.546, 0.034)	-0.443 (0.078, -5.649, <0.001)
C	-11.546 (4.701, -2.456, 0.040)	11.240 (1.751, 6.418, 0.001)	28.815 (4.813, 5.987, 0.001)
R-squared	0.638	0.448	0.8
Adjusted R-squared	0.593	0.379	0.774
S.E. of regression	0.874	0.527	2.267
Sum squared resid	6.113	2.222	41.118
Log-likelihood	-11.729	-6.668	-21.259
F-statistic	14.113	6.482	31.909
Prob(F-statistic)	0.006	0.034	0.001
Durbin-Watson stat	1.584	1.971	2.8

Diagnostic Tests and Assumptions

Normality

The Jarque-Bera test for normality was performed on the residuals of each hypothesis (H1 to H12). The test findings, as displayed in Table 8, demonstrate that the p-values for all

hypotheses are above the 0.05 threshold. Therefore, we do not reject the null hypothesis of normality for any of the models, indicating that the residuals follow a normal distribution. This confirms the accuracy of our regression models and the dependability of our statistical findings. (Aloulou et al., 2023; Istaiteyeh et al., 2023; Yusuf & Mohd, 2023).

Table 8. Normality Test

Hypothesis	Jarque Berra Test	P-value
H1	3.605	0.164
H2	0.508	0.775
H3	0.344	0.841
H4	0.637	0.726
H5	0.265	0.875
H6	0.257	0.879
H7	0.199	0.904
H8	0.697	0.705
H9	1.251	0.535
H10	0.159	0.923
H11	1.031	0.957
H12	1.853	0.396

Serial Correlation and Heteroscedasticity Tests

Table 9 shows the results of the Breusch-Godfrey serial correlation LM test for hypotheses (H1 to H12), testing the hypothesis of no correlation up to 2 lags. Computed t-statistics show that the p-value is more than 5%. Therefore, the null hypothesis is not rejected, leading to the conclusion that there is no serial correlation among the variables. (Aloulou et al., 2023).

The Breusch-Pagan test is a statistical test used to detect heteroscedasticity in regression models. The evaluation of the null hypothesis that the variance of the error term is constant throughout all observations is its aim. The test statistic is obtained by first assessing the significance of the F-statistic that results from a regression analysis of the squared residuals versus the independent variables. The test results revealed that all the hypotheses contain no heteroscedasticity hence, we may not reject the null hypothesis, and there is no evidence of heteroscedasticity in H1 to H12 except H3. Because the H3 p-value for the F statistic (0.0278) and Obs*R-squared (0.02954) are below the 0.05 significance level (Mensah & Arku, 2024; Mignon, 2024).

Table 9. Serial Correlation Test

Hypothesis	F-statistic	Prob. F Stats	Obs*R-squared	Prob. Chi-Square
H1	0.329	0.730	0.944	0.624
H2	0.059	0.943	0.194	0.907
H3	1.014	0.417	2.527	0.283
H4	0.570	0.590	1.541	0.463
H5	0.039	0.962	0.128	0.938
H6	1.421	0.312	3.215	0.200
H7	0.190	0.831	0.565	0.754
H8	2.420	0.170	4.464	0.107
H9	0.280	0.765	0.854	0.652
H10	0.107	0.900	0.327	0.849
H11	2.224	0.189	4.257	0.119
H12	1.478	0.301	3.301	0.192

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

Table 10. Heteroskedasticity Test

Hypothesis	F-statistic	Prob. F Stats	Obs*R-squared	Prob. Chi-Square	Scaled explained SS	Prob. Chi-Square
H1	0.403	0.541	0.472	0.492	0.576	0.448
H2	2.921	0.131	2.650	0.104	2.936	0.087
H3	7.198	0.028	4.736	0.030	1.689	0.194
H4	0.101	0.758	0.122	0.727	0.090	0.764
H5	1.387	0.273	1.477	0.224	0.800	0.371
H6	3.957	0.082	3.309	0.069	1.599	0.206
H7	2.257	0.167	2.206	0.138	1.485	0.223
H8	0.018	0.898	0.022	0.882	0.007	0.931
H9	1.367	0.276	1.459	0.227	0.847	0.357
H10	0.557	0.475	0.641	0.423	0.392	0.531
H11	0.079	0.786	0.097	0.755	0.023	0.880
H12	0.728	0.418	0.835	0.361	0.669	0.414

DISCUSSION

The findings suggest that external debt has a notable impact on shaping important economic indices in Pakistan, Bangladesh, and Sri Lanka. Nevertheless, the consequences vary in terms of both direction and amplitude, indicating that the economic background and debt management policies in each country are of utmost importance.

Foreign debt inflows can cause the domestic currency to appreciate or stabilize, as seen by the positive relationship between external debt and exchange rates in Pakistan and Bangladesh. Comparably, the positive influence on inflation in every country suggests that higher spending and investment from foreign debt may raise prices. The diversion of resources from productive investments because of debt payment obligations has a detrimental impact on the trade dynamics of Bangladesh and Pakistan. Inequalities in trade result from this in both nations. Sri

Lanka, on the other hand, shows that it has effectively used external debt to increase its export capacity or lessen its dependence on imports. It appears from the conflicting impact on Pakistan's GDP growth that external debt can be effectively allocated to worthwhile projects. Still, the negative effects in Bangladesh and Sri Lanka raise questions about the sustainability of their debt and its tendency to obstruct economic growth if not well-managed (Iyoha, 1999; Reinhart & Rogoff, 2010).

External debt is a very important instrument for inspiring economic growth. Its effect on macroeconomic measures is multifaceted and highly dependent on specific circumstances. Efficient debt management implementation is very important for a nation that is customized to unique needs and circumstances to maximize its advantages and reduce its risks. (Clements et al., 2003).

CONCLUSION

The study aimed to examine the influence of external debt (EXT_DT) on many economic variables in Asian countries. The findings show significant correlations between external debt and a range of economic metrics, while the magnitude of these correlations differs among the three countries.

External debt has a large and positive impact on the exchange rate in Pakistan and Bangladesh. The effect is also favourable but smaller in magnitude in Sri Lanka. The inflation rate in all three countries is influenced by external debt, with Pakistan experiencing the most significant impact. External debt has a detrimental impact on trade dynamics in Pakistan and Bangladesh. Whereas it has a beneficial effect in Sri Lanka. The rise in the GDP growth rate in Pakistan is positively influenced by external debt. However, it has a negative impact on Bangladesh and Sri Lanka. Individual findings emphasize the intricate and diverse impact of external debt on the economic performance of individual countries. It emphasizes the necessity for customized economic strategies.

AREA FOR FUTURE RESEARCH

The particular debt management techniques used by different nations should be the focus of future studies to better understand why the implications of external debt differ. Comparison research could point up policies and best practices. Which forms of debt are more advantageous or damaging to economic performance can be ascertained by examining the makeup of foreign debt (e.g., bilateral vs. multilateral debt, concessional vs. non-concessional loans). A more comprehensive picture of the debt-economy relationship may be obtained by looking at how

macroeconomic policies (such as monetary and fiscal) interact with foreign debt to affect economic indicators. A deeper comprehension of the consequences of external debt on economic indicators can be obtained by carrying out longitudinal studies. Examining the role governance and institutional quality play in regulating the implications of external debt may reveal important elements that either increase or lessen its consequences. Future studies in these areas can help to clarify the function of external debt in economic development and guide more efficient policy-making in other comparable emerging nations (Krugman, 1988; Pattillo et al., 2002; Reinhart & Rogoff, 2010)

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