

AN EMPIRICAL INVESTIGATION INTO THE RELATIONSHIP BETWEEN INDIA'S EXTERNAL DEBT AND ECONOMIC GROWTH

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Abstract *This empirical inquiry elucidates the relationship between external debt and GDP in India, evaluating debt's role in the nation's economic growth path given its historically contentious yet rising foreign capital reliance. In this study, the researcher examined the external debt and GDP data for India from 1991 to 2023 from RBI and IMF sources. First, statistical tests checked if the time series data had stable patterns over the years. Then, using R programming, we built a VAR model to analyse dynamic interactions between the variables. Further tests on this model evaluated the lead-lag and cause-effect relationship between external borrowing and India's national income growth during the three decade-long economic reform era. The rigorous analysis provided empirical insights into the dynamics of external debt in India's growth path since liberalisation. The analysis showed that external debt levels affect India's GDP growth, but GDP itself does not influence external borrowing. Foreign capital inflows spur investment and expansion, evidenced by debt's unidirectional impact on national income over the long term. However, excessive reliance can prove risky. The study can be applied to refine monetary and fiscal policies, and develop governance infrastructure and frameworks for external debt oversight and management. The data-backed revelations on debt's impacts should help policymakers balance the risks and rewards of foreign capital reliance optimally.*

Keywords: External Debt, GDP, Economic Growth, Borrowings and Investment

JEL Codes: F34, F43

INTRODUCTION

Background

The Indian economy has been plagued by a history of fiscal imbalances, which have led to a distressing situation. The fiscal deficit has risen precipitously, while foreign reserves have significantly declined, prompting the country to open its economy to foreign capital in 1991. Since then, external borrowing has become a central theme in economic discussions. The critical role that external borrowing plays in the nation's growth and development remains an interesting area to explore. It is significant to note that simply increasing an amount of external borrowings is not a solution; rather, the increase must contribute to economic growth (Assoum & Alinsato, 2023). Moreover, the cost of borrowing should not outweigh the economic benefits derived from it. Therefore, the government must ensure the proper utilisation of external borrowing to support capital growth in the economy. However, the government should avoid the use of

such borrowing for revenue expenditures because it could lead to a vicious debt trap and fiscal imbalances. However, supporting capital expenditures, such as infrastructure development, through external borrowing can benefit the government by generating a positive return, thereby ensuring economic growth and development of the nation. Since the economic reforms of 1991, India's economy has experienced significant growth. The role of external borrowing in the country's growth story is an interesting aspect to explore (Chowdhury, 1994). Given the government's finances and its expenditure patterns, the extent of external debt is a critical component. Therefore, it becomes inevitable to analyse and understand the role of external debt in India's economic growth story and its policy implications. This study aims to investigate the relationship between India's external debt and its Gross Domestic Product. The paper is organised into sections that include a comprehensive review of the literature, the objectives of the study, the methodologies employed, the analysis and interpretation of the data, and finally, the findings, conclusions, limitations, and references.

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LITERATURE REVIEW

The expansion of the economy, over the years, necessitates the infusion of capital, along with a corresponding increase in foreign capital and the amount required for debt service payments, which ultimately enhances the productivity of domestically employed factors. Since emerging countries lack sources of funds to finance developmental projects, the need for borrowings from external sources arises. And so, later, the proper management of such borrowings also becomes vital for sustainable growth. Thus, external debt is crucial for developing countries like India to grow further (Singh & Kumar, 2022). Financial liberalisation policies and measures have continuously improved the sectoral productivity of the economy. Especially in the manufacturing and service sectors, the private and formal firms have been benefitted tremendously from such sectoral growth (Xu & Pal, 2022). The research conducted by Mohanty and Panda (2020) supports the view that public debt can impose a burden on the economy. Interest payments are an inseparable part of the borrowings. High levels of debt cause high interest payments, thereby creating a burden on the finances of the government. Their study emphasises the importance of utilising public debt productively to generate positive economic benefits. The study suggested that capital expenditure financed by external debt should be used for social welfare and to promote development in the country. In particular, investments in equipment have been found to result in quicker economic growth and a greater social return in well-functioning market economies. However, fixed investment expenditures are more reliant on external funding sources, such as debt, than on internal sources. Therefore, over-reliance on external debt can lead to increased vulnerability and potential negative consequences for the economy (Caglayan & Machokoto, 2024). Therefore, it becomes imperative for the government to ensure the proper utilisation of external borrowings to support economic growth. Ehikioya et al. (2020) highlight the importance of ensuring the proper application of external debt to achieve sustained long-term economic performance. The outcomes of this study underlined the requirement for policymakers to monitor the use of borrowed funds and to avoid mismanagement of external debt. It is essential to evaluate the costs associated with debt, such as interest payments, before borrowing and using it. Proper management of debt helps to avoid systemic risks arising from the failure of non-payment of debt and its associated interest. India's external debt interest payments amounted to \$19.66 billion during FY23 (Mint; New Delhi, 2023), which highlights the need for careful consideration of the cost of debt. Therefore, policymakers and development partners must work together to establish effective monitoring mechanisms to ensure the efficient use of borrowed funds. The utilisation

of external borrowing for revenue expenditures is generally not recommended, as it may lead to detrimental debt traps and fiscal imbalances. During financial crises and exchange rate misalignments, short-term external indebtedness can aggravate the likelihood of sovereign default (Eijffinger & Karataş, 2023). In the present economic climate, it is common to witness financial crises resulting from declining government debt repayment capacity. Such borrowing is also a crucial source of funding for various productive activities within the country, and its optimal utilisation ensures stability in the domestic economy. Empirical evidence suggests that external debt composition is a robust predictor of domestic credit booms and busts across a wide range of time horizons (Avdjiev et al., 2021). Singh and Kumar (2022) advocate for fiscal prudence as a preferable policy choice, emphasising its ability to target public expenditure more effectively and promote economic growth. Proper management of government finances with an aim of macroeconomic stability is a vital policy action. By influencing fiscal balances and hindering domestic credit cycles, external debt can impact the entire macroeconomic environment in a country, due to its interconnected nature, along with economic variables in the real world. Policy changes can significantly influence economic variables, as various determinants of these variables are impacted by such changes, which in turn affect external capital flows, creating a continuous cycle. Domestic factors, such as stock market performance, exchange rate volatility, and domestic growth rates, which play a crucial role in macroeconomic stability, are also significant drivers of foreign portfolio bond flows to India (Gupta & Ahmed, 2020). Policies on debt ought to be formulated following a comprehensive analysis of a nation's capital requirements and the implications that debt would have on shaping the trajectory of its economic growth. The political parties in power and the existing institutions play a crucial role in the formulation of policies. Ramzan et al. (2023) emphasise the role of institutional quality in the debt-growth nexus in the context of Pakistan. Institutional quality can mitigate the adverse effects of debt. Enhancing institutional quality is essential to attract both domestic and global investors. In this regard, it is necessary to strengthen not only financial and economic but also administrative institutions. Improving creditworthiness and policy credibility is essential to address the sporadic foreign portfolio investments in India's debt market (Gupta & Ahmed, 2020). Countries with robust public-sector management quality have been found to significantly influence economic growth through external debt (Sandow et al., 2022). Robust processes and techniques empower them to achieve their goals. Agénor and Bayraktar (2023) concluded that capital requirements can foster growth by mitigating the risk of financial crises and promoting growth through prudent lending. However, financial development and openness tend to offset the growth benefits of these

policies due to the increased scope for regulatory arbitrage and, in the case of financial openness, greater opportunities to borrow abroad.

Following the economic reforms in 1991, the Indian economy experienced significant growth. The role of external borrowings in India's growth remains an intriguing aspect to explore, particularly given the transformation of Indian markets. In July 1991, the IMF approved special loans of \$220 million and the World Bank approved \$150 million to cushion external shocks to the Indian economy. Fiscal retrenchment has been substantial over the years. Recently, India's external debt increased by \$5.6 billion from FY22 to \$624.7 billion in FY23 (The Economic Times (Online); New Delhi, 2023a). Although India's external debt figures are high, comparisons between countries show that India is among the less vulnerable nations. Loans account for the largest proportion of India's external debt, at 32.9%, followed by currency and deposits at 22.9%, trade credit and advances at 19.0%, and debt securities at 16.8% (The Economic Times (Online), 2023b). Recently, India was proposed to be included in the JP Morgan Emerging Market Bond Index, which is expected to bring prosperity to the Indian Capital Market (BT). In their study, Romero et al. (2021) noted a significant increase in foreign investor participation in the Colombian local public bond market due to Colombia's increased weight in JP Morgan's Government Bond Index. This resulted in inflows of capital that gradually reduced various bond instruments and loan interest rates and thereby, increased loan supply. Similar outcomes are expected in India. The growth of the debt market in India will facilitate easier access to funds by Indian business houses easily to finance various projects bringing prosperity to the nation. Though external capital poses concerns as it drains profit from the nation, it still empowers businesses by supporting their growth and expansion. The funds accessed by businesses are used to hire more staff, purchase raw materials, etc., which significantly improves the livelihood of many households. Over the years, India's external debt has played a significant role in economic growth and has important policy implications. However, the challenge for policymakers and the government is to strike the right balance in external capital. Rapid expansion of external debt involving excessive capital inflows can cause economic fragility (Wang et al., 2021). Moreover, in recent years, monitoring capital outflows from India to foreign countries has become challenging. Agyeman et al. (2022) found that capital flight negatively affects economic growth, as it leads to the transfer of the country's scarce resources to finance foreign investment in safe havens. Therefore, policymakers must devise a comprehensive approach to managing

foreign capital, curb the increase in capital flight, and avoid excessive inflows of foreign capital to achieve targeted long-term growth. Henceforth, it is imperative to analyse and understand its role, considering both downsides and upsides along with its policy implications. The present study was conducted accordingly.

Research Objective

This study analyses the relationship between India's external debt and its Gross Domestic Product. It focuses on understanding the influence of external debt on India's GDP values for the period 1991–2023. It aims to provide insight into the role of external debt in a nation's economic growth.

METHODOLOGY

In this study, the Vector AutoRegression (VAR) method was utilised to examine external debt and absolute GDP values, as outlined in the works of Holden (1995) and Sims (1980). A hypothesis was formulated and tested using the R programming language to find out the existence of statistically significant relationships between external debt and the highlighted dependent variable in question. Before conducting the analysis, the data series was subjected to the Augmented Dickey-Fuller test and the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test to ensure that they were stationary. Once the time series data was confirmed to be stationary, the appropriate lag length was selected for the formulation of the VAR model. Criteria like Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), or Hannan–Quinn Information Criterion (HQIC) were used to select an appropriate lag length. Using that lag length, the VAR model was formulated using specific software packages in R Programming. After formulating the necessary VAR model equations, the model was subjected to a Granger-causality test and Impulse Response Functions to determine whether external debt causes changes in the Gross Domestic Product. The outputs of such tests are discussed further in the results section. The entire analysis was conducted using the R programming language.

Type and Source of Data: The secondary data have been used to obtain information from the RBI Database on the Indian Economy and the IMF Data Bank. This study examined yearly data for the selected parameters (External Debt and Gross Domestic Product) over the period from 1991 to 2023.

Hypothesis: The relationship between external debt and GDP has been investigated using Vector AutoRegression (VAR) analysis.

H_0 : There is no significant relationship between external debt and GDP.

H_a : There is a significant relationship between external debt and GDP.

If external debt significantly influences GDP, policymakers need to be cautious about the amount, sources, and uses of such debt. It further impacts investor confidence in the country as well. Governments should focus on maintaining sustainable debt levels to support economic growth without risking economic stability. If there is no significant relationship, then policymakers might conclude that other factors, such as domestic investment, technological innovation, or trade policies, play a more significant role in influencing GDP. They might redirect focus and resources towards these areas and aim to achieve stability through a refocused approach.

ANALYSIS AND RESULTS

The collected data on external debt and GDP values of India for the period 1991–2023 were initially tested for stationarity using the unit root Augmented Dickey-Fuller (ADF) test and the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test (Table 1). The results of these tests are as follows:

Table 1: Augmented Dickey-Fuller Test Results

	Dickey-Fuller	P-Value	Stationary/Non-Stationary
External Debt	-5.1761	0.01	Stationary
GDP	-5.6029	0.01	Stationary

Source: Author's calculations.

Since the p-value for both variables in the ADF test is 0.01 (which is less than 0.05), the unit root test null hypothesis (that the data are not stationary) is rejected.

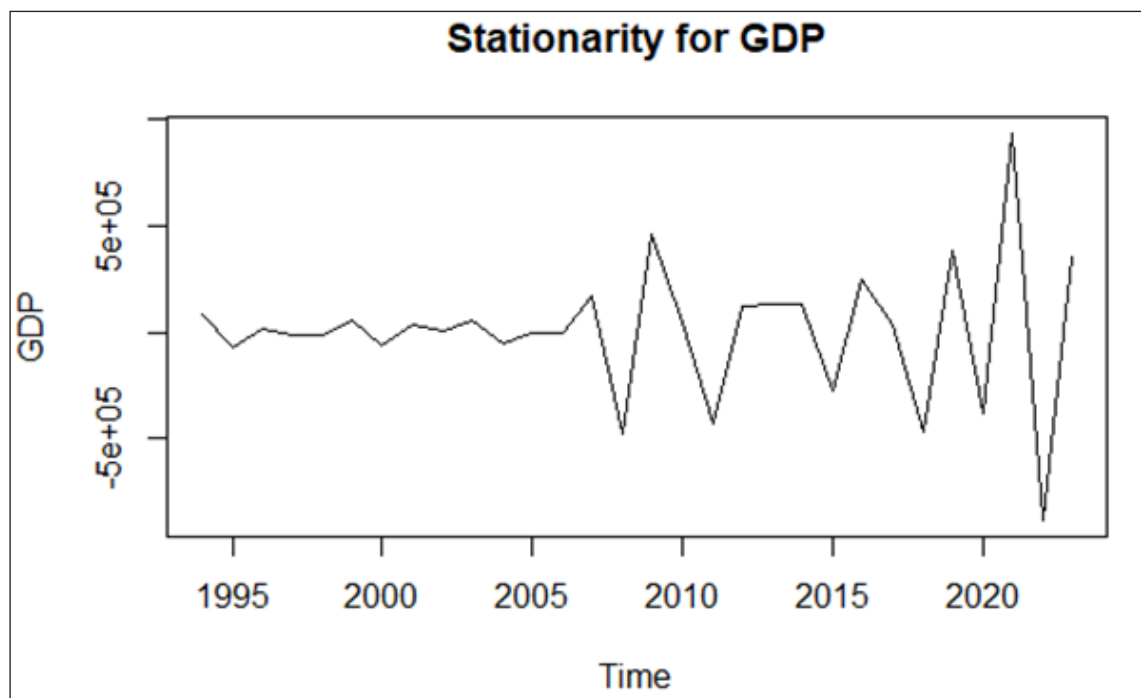
Table 2: KPSS Test Results

	KPSS Level	P-Value	Stationary/Non-Stationary
External Debt	0.09176	0.1	Stationary
GDP	0.04759	0.1	Stationary

Source: Author's calculations.

Since the p-value for both variables in the KPSS test is 0.1 (which is more than 0.05), therefore the unit root test null hypothesis (that the data are stationary) is not get rejected (Table 2).

The unit root tests ensured the stationary nature of the time series data used in the study. The same is presented through the graphs below.

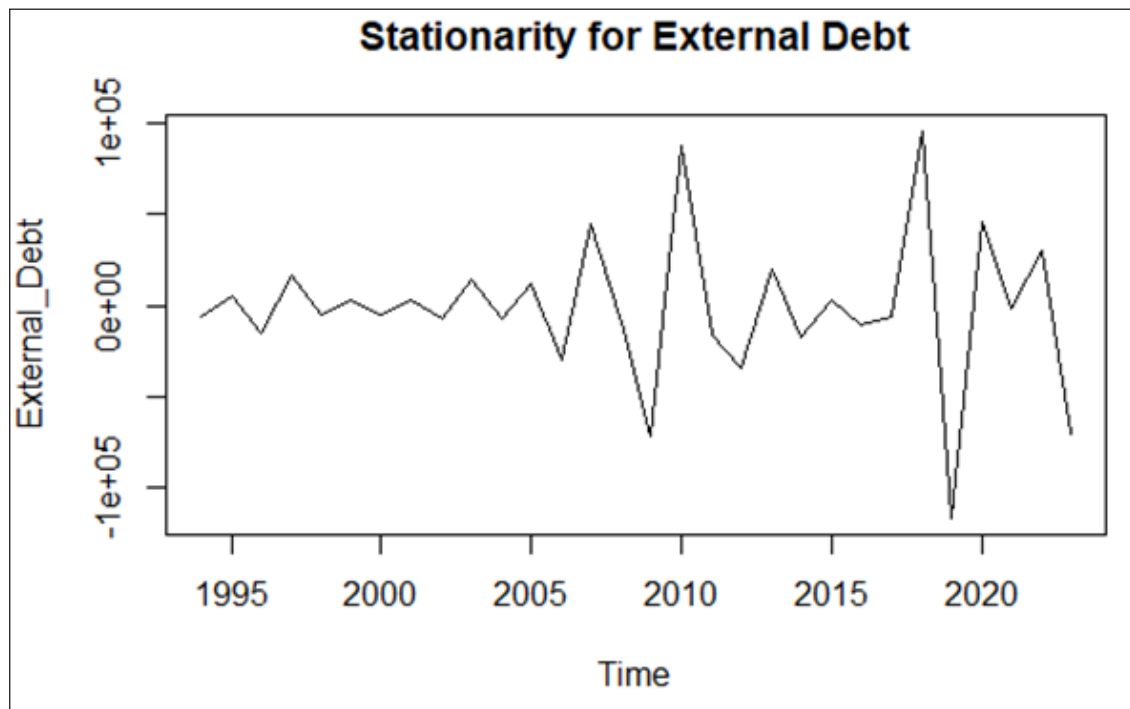


Source: Author's calculations.

Graph 1: Stationarity for GDP

Here, the time series data on GDP is stationary since the up and down movements of the graph are of similar magnitude. A stationary GDP series reflects a stable and balanced economy without rapid growth or significant decline. This stability in the economy indicates effective economic policies

and a robust economic structure (Graph 1). Analyses based on such stationary GDP time series help policymakers more accurately to evaluate the consequences of interventions, such as fiscal or monetary policy, when the underlying GDP-generating processes are stable.



Source: Author's calculations.

Graph 2: Stationarity for External Debt

Similarly, for external debt, the time series data is found to be stationary since the up and down movements of the graph are of similar magnitude (Graph 2). It implies stability and predictability in the country's external borrowing and repayment practices, which are beneficial for economic planning, policy analysis and risk assessment.

After checking the stationarity of the data, the optimal lag was selected using the VAR selection tool in R Programming Software (Table 3). To estimate the appropriate lag for the study, AIC, HQ, SC, and FPE values were found at different lag lengths, with results as follows:

Table 3: Optimal Lag Selection

Lags	1	2	3	4	5
AIC(n)	4.575384E+01	4.430143E+01	4.392779E+01	4.394582E+01	4.397681E+01
HQ(n)	4.583497E+01	4.443665E+01	4.411710E+01	4.418923E+01	4.427431E+01
SC(n)	4.604637E+01	4.478898E+01	4.461036E+01	4.482341E+01	4.504943E+01
FPE(n)	7.441281E+19	1.756353E+19	1.232938E+19	1.302451E+19	1.428495E+19

Source: Author's calculations

Since AIC, HQ, SC, and FPE values are at their minimum at lag length 3 (as shaded in the table), the optimal lag for conducting VAR analysis is 3.

Upon determining the appropriate lag length of 3 for this study, the VAR model was formulated at lag 3 using R

Programming Software.

Further, the Granger Causality Test and Impulse Response Function tests were conducted on the VAR Model to determine the interlinkage of the variables (Table 4). The results of these tests are as follows:

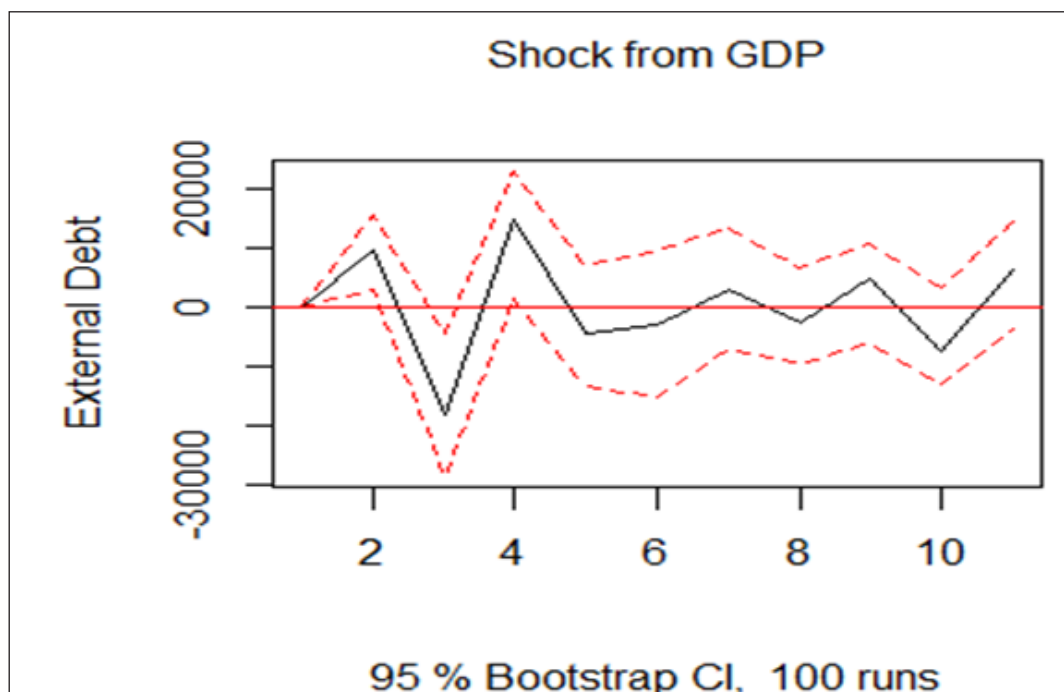
Table 4: Granger-Causality Test Results

Hypotheses	P-Value	H ₀ Rejected/Failed to Reject
Granger causality H0: GDP do not Granger-cause External Debt	0.1066	Failed to Reject
Granger causality H0: External Debt does not Granger-cause GDP	0.0001543	Rejected
H0: No instantaneous causality between External Debt and GDP	0.00963	Rejected

Source: Author's calculations.

Granger-Cause test results reveal that GDP does not influence external debt. Rather, there exists a statistically significant relationship between External Debt and Gross Domestic Product, as the level of external debt significantly impacts the GDP of India. Thus, this highlights the policy

implications of boosting economic growth by using external debt. Similar results can be observed in the graphs generated from Impulse Response Function tests, which are presented below:

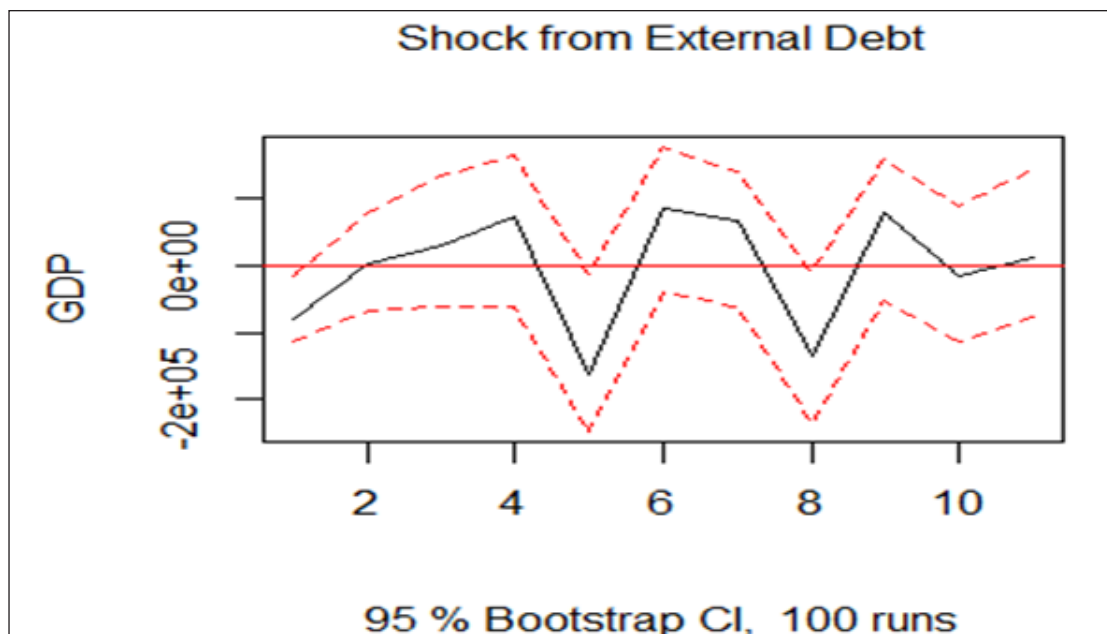


Source: Author's calculations.

Graph 3: IRF – Shock from GDP

Here, the shocks from GDP do not create many fluctuations in external debt, conforming with the results generated by Granger Causality Tests. The impulse response function graph illustrates the influence of a shock to GDP on external debt (Graph 3). Initially, a positive shock from GDP is observed, leading to a decrease in external debt, indicating that higher economic output reduces reliance on external borrowing. Over time, the response of external debt fluctuates around

zero, indicating an uncertain and variable relationship. The wide confidence intervals highlight significant uncertainty in the estimates. In an economic sense, this suggests that while a stronger GDP can initially reduce external debt, the long-term effects are less predictable. Policymakers should consider this variability when designing strategies to manage external debt in response to economic growth.



Source: Author's calculations.

Graph 4: IRF – Shock from External Debt

In the above graphs, the fluctuations in GDP due to the change in external debt are quite high. Such high variations imply the existence of a significant interconnection between external debt and GDP. The impulse response function graph here shows an initial negative impact of a shock in external debt on GDP, indicating that increased external debt initially reduces economic output (Graph 4). Over time, the response slopes upward, then becomes negative, rising upward again, and so this trend continues. The fluctuations suggest that the influence of external debt on GDP is variable and uncertain. The wide confidence intervals highlight significant uncertainty in the estimated impact. In an economic sense, this reflects that while external debt can initially affect growth adversely, its long-term effects depend on various factors, including debt management and utilisation of funds. Policymakers must therefore manage external debt prudently to avoid potential concerns regarding economic stability and growth.

DISCUSSION

The study reveals that GDP shocks initially cause significant fluctuations in external debt before fluctuating in a specified range around zero, as per Granger Causality Tests. The impulse response function graph reflects a positive GDP shock initially implying a decrease in external debt, indicating toward higher economic output, thereby reducing the

reliance on external borrowing. However, during the defined study period, the response of external debt fluctuates around zero, indicating an uncertain and variable relationship. The wide confidence intervals highlight significant uncertainty in the estimates. This clearly underlines that while a stronger GDP can initially pull down the quantum of external debt on the nation, its long-term effects are less predictable. Policymakers should consider this variability when designing strategies for the management of external debt in response to the economic growth story. This study also highlights the high fluctuations in GDP due to changes in external debt throughout, implying a significant relationship between external debt and GDP. The long-term effects depend on various factors, including debt management and fund utilisation, and policymakers must manage external debt prudently to avoid potential adverse effects on economic stability and growth. Considering the analyses conducted and conclusions drawn in this research study so far, here are the potential implications of this study.

Policymakers can use the study's results to refine monetary and fiscal policies. Governments might consider leveraging external debts for strategic investments, positively influencing economic growth. Strong correlations of external debt to GDP make the economy susceptible to external influence. The study's implications could have diplomatic and geopolitical consequences too. Foreign investors may perceive India as an attractive investment destination

underlining the importance of overseas investments in India's growth story. The government should implement robust debt oversight frameworks to ensure sustainable borrowing and repayment agendas, alongside government infrastructure to attract foreign capital. Such frameworks should record and monitor all money borrowed, as well as be accountable for their management to avoid corruption and improper use (Ohiomu, 2020). Alongside the highlighted implications, certain other limitations can also be associated with this study. Several macroeconomic factors impact the overall economic growth of the country. This study assumes that all other key macro variables influencing economic growth are constant while analysing the significance of external debt on GDP growth. In reality, that's not the case. Also, the defined period considered for this study exhibits a limitation on the scope of the quantitative analysis conducted.

CONCLUSION

This study examines the relationship between India's GDP and its external debt during the period of 1991–2023. The results highlighted that both public and private organisations borrow money from domestic and foreign sources for capital investments and long-term benefits. But they come with costs, including interest fees, transaction costs and other charges, that increase firms' and the government's obligations. From the entire nation's perspective, to ensure the endurance of such debt obligations, the benefits of external debt should exceed its costs. If the costs surpass the benefits of such debt, capital outflows can occur, reducing the economic progress of the country. In such a situation, the country's external debt exposes it to external risks such as fluctuations in interest rates, exchange rates, and foreign policy. When assessing the amount of external borrowings and ensuring their productive use in a way that yields greater long-term benefits than costs, policymakers need to exercise caution. Policymakers should emphasise striking the appropriate balance in economic growth through an increase in GDP and simultaneously, prudently managing the external debt to support infrastructure and economic growth, resulting in sustainable and prosperous development. That is how this study underlines the importance of external debt in India's economic growth, amid this rapidly growing globalised financial system. Proper external financing procedures have become the need of this era of globalised finance. Future research in this domain might include exploring the mechanics of external debts, such as the evolution of lending procedures with technology and regulations, the repayment mechanisms, and also exploring other factors impacting the economic growth trajectory of the nation.

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