Economics of External Debt: A Risk Management Perspective of South Asian Countries

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Abstract

External debt has emerged as a critical challenge for South Asian countries, threatening long-term economic growth and financial stability. In this context, effective debt management is essential to avert potential financial crises and to maintain macroeconomic resilience across the region. While previous studies have examined external debt in South Asia, many have concentrated predominantly on aggregate macroeconomic indicators, often overlooking the diverse geographic, institutional, and economic contexts specific to each country. This study addresses these critical gaps through a comprehensive investigation into the determinants and risks of external debt in South Asian countries, namely Bangladesh, India, Nepal, Pakistan, the Maldives, and Sri Lanka and its implications for economic growth. Specifically, it examines key macroeconomic and institutional factors influencing external debt, evaluates associated risks across varying debt levels, and proposes a country-sensitive, risk-informed debt management framework tailored to the region's unique context.

To achieve these objectives, the study uses secondary data from 2002 to 2021, drawn from the World Bank's World Development Indicators, Reserve Bank annual reports, and stock market publications. The dataset comprises 120 observations representing six South Asian countries. The dynamic panel regression models, particularly the Fully Modified Ordinary Least Squares (FMOLS) technique, is employed to explore the determinants of external debt. The Random Effects model explores the external debt-growth relationship, complemented by Pairwise Dumitrescu–Hurlin panel causality tests to assess causality directions and Quantile Regression analysis to evaluate debt risks at varying levels.

Key findings reveal a long-term relationship between external debt and explanatory variables. Trade balance, oil imports, debt servicing, foreign remittances, political stability, and unemployment are positively correlated with external debt, while foreign direct investment, government reserves, return on assets, control of corruption, and the stock market index show negative correlations. The analysis also indicates that, before and after the global financial crisis, the previous year's external debt strongly predicts the current year's debt, reflecting a persistent debt accumulation trend in the region. Quantile regression results show that the influence of key variables varies across debt levels.

Control of corruption and debt servicing remain significant risk factors at both low and high debt levels. Foreign remittances, political stability, and stock market performance are risk factors at lower debt levels but help reduce debt at higher levels. Government reserves are effective in reducing debt only at lower levels, while oil imports and return on assets help reduce debt at higher levels. Additionally, the study finds a negative impact of external debt on economic growth, with evidence of both homogeneous and heterogeneous causal relationships across countries.

Drawing on these insights, the study proposes a comprehensive, risk-based debt management framework that incorporates macroeconomic conditions, institutional governance, and country-specific contexts. This framework offers practical guidance for policymakers in developing sustainable, tailored strategies to manage external debt while enhancing economic resilience. By identifying nuanced risk factors and recognising the dynamic nature of debt accumulation, this research contributes new knowledge to the existing literature and provides actionable recommendations for improving debt governance in South Asia.

Keywords: External debt, determinants, risk assessment, risk management, South Asia

Student Declaration

I, Kahingalage Kalani Prasanga, declare that the PhD thesis entitled 'Economics of External Debt: A Risk Management Perspective of South Asian Countries' is no longer than 80,000 words in length, including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work".

"I have conducted my research in alignment with the Australian Code for the Responsible Conduct of Research and Victoria University's Higher Degree by Research Policy and Procedures.

Signature: Date:

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List of Abbreviations

ACC	Anti-Corruption Commission
ADB	Asian Development Bank
AIC	Akaike Information Criterion
AIIB	Asian Infrastructure Investment Bank
ARDL	Autoregressive distributed lag
ASPI	All share price index
BIDF	Bangladesh Infrastructure Development Fund
BLUE	Best linear unbiased estimators
BOI	Board of Investment
BP	Balance of payments
BPO	Business process outsourcing
BRI	Belt and Road Initiative
CAR	Cost at risk
CBN	Central Bank of Nigeria
CC	Control of corruption
CDS	Credit default swap
CIABOC	Commission to Investigate Allegations of Bribery or Corruption
CLRM	Classical linear regression model
CoVAR	Conditional value-at-risk
CSD	Cross-sectional dependency
DCSD	Developing Country Studies Division
DFE	Dynamic fixed effect
DOD	Disbursed outstanding debt
DOLS	Dynamic ordinary least squares
DPIIT	Department for Promotion of Industry and Internal Trade
DS	Debt service
DSR	Debt-service ratio
DSSI	Debt-Service Suspension Initiative
ECM	Error components model
EDV	External debt vulnerability
EFF	Extended Fund Facility

EIU	Economic Intelligence Unit
EMDE	Emerging markets and developing economies
EMH	Efficient market hypothesis
EPZ	Export processing zones
FDI	Foreign direct investment
FE	Fixed effects
FMOLS	Fully modified ordinary least squares
FPE	Final prediction error
FR	Foreign remittance
GD	Governance diagnostic
GDP	Gross domestic product
GETS	General to specific
GFC	Global financial crisis
GMM	Generalised method of moments
GNI	Gross national income
GNP	Gross national product
GR	Government reserves
GRS	Government reserve
HIPC	Heavily Indebted Poor Countries
IDA	International Development Association
IFES	International Foundation for Electoral Systems
IMF	International Monetary Fund
LASSO	Least angle and shrinkage selection operator
LM	Lagrange multiplier
MDRI	Multilateral Debt Relief Initiative
MG	Mean group
NAB	National Accountability Bureau
NIIF	National Investment and Infrastructure Fund
OBOR	One Belt One Road
OECD	Organisation for Economic Co-operation and Development
OI	Of mechanised imports
OLS	Ordinary least squares
OPEC	Organization of the Petroleum Exporting Countries
OSS	One-stop service

PIC	Pakistan Investment Corporation
PMG	Pooled mean group
PP	Phillips-Perron
PPP	Purchasing power parity
PRC	People's Republic of China
PS	Political stability
PSH	Public service halls
PURT	Panel unit root test
RCI	Regime Corruption Index
RE	Random effects
REM	Random-effects model
ROA	Return on asset
ROE	Return on equity
SDR	Special drawing rights
SIC	Schwarz Information Criterion
SOE	State-owned enterprises
SSML	Smoothly simulated maximum likelihood
SWF	Sovereign wealth funds
TB	Trade balance
TPI	Third-party indicators
UNCTAD	United Nations Conference on Trade and Development
VAR	Value at risk
VECM	Vector Error Correction Model
VIA	Velana International Airport
VIF	Variance inflation factor
WG	Within group

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Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

1.1 Background of the Study

This study examines the factors influencing external debt in South Asian countries, evaluates the associated risks and proposes debt management frameworks tailored to each nation in the region. As highlighted by Chenery and Strout (1966), external borrowing plays a pivotal role in bridging the gaps between limited domestic savings and investment needs, as well as between imports and exports. By temporarily expanding a country's financial resources, external debt enables higher spending and economic activities that might otherwise be unattainable. For instance, debt can drive economic development when funds are allocated to productive sectors such as infrastructure, energy, and agriculture (Ahmad, 2015; Festus & Saibu, 2019). Consequently, external debt often acts as a critical supplement to domestic resources in supporting developmental objectives and addressing national needs.

However, while external debt can stimulate growth, it poses significant risks. According to the International Monetary Fund (IMF, 2022), global debt levels reached nearly 100% of GDP in 2020, highlighting the scale of the issue. Past debt crises such as those in Latin America during the 1980s, including Costa Rica in 1981; Mexico in 1982 and 1994; the 1997 Asian Financial Crisis; Brazil, Russia and Pakistan in 1998; Turkey in 2000; and Argentina in 2001 underscore the vulnerabilities associated with excessive borrowing. These crises were often triggered by factors such as over-reliance on external debt, rising interest rates, currency mismanagement and declining export revenues (Cunningham, 1993; Ezeabasili et al., 2011; Fishlow, 1989; Hasan et al., 1999; Imer, 2008). The tendency to seek additional foreign capital during periods of debt stress frequently worsens financial instability, as demonstrated by these historical examples (Abd Rahman et al., 2020)

External debt can be an economic stimulant; however, when its accumulation reaches a significant level, a considerable portion of government expenditure and foreign exchange earnings must be allocated to servicing and repaying the debt. This results in substantial opportunity costs, affecting future generations. When debt is primarily utilised to pay off existing obligations or finance consumption without generating new income, it becomes a barrier to long-term financial stability and poverty reduction (Khan & Ajayi, 2000; Ale

et al., 2023; Festus & Saibu, 2019). Postponing debt obligations through additional borrowing or rescheduling often leads to significant compromises in a nation's economic stability. The resulting debt overhang[1] can undermine economic growth and erode political sovereignty (Ahmad, 2015; Cholifihani, 2008; Eaton & Taylor, 1986). The 2022 economic crisis in Sri Lanka illustrates these consequences, as unsustainable debt and depleted reserves triggered widespread anti-government protests, culminating in the resignation of the president and prime minister and necessitating the election of a new government (Samarakoon, 2024). Such crises highlight how rising debt burdens weaken repayment capabilities, increase default risks and exacerbate financial and political instability, ultimately hindering economic growth (Karadam, 2018).

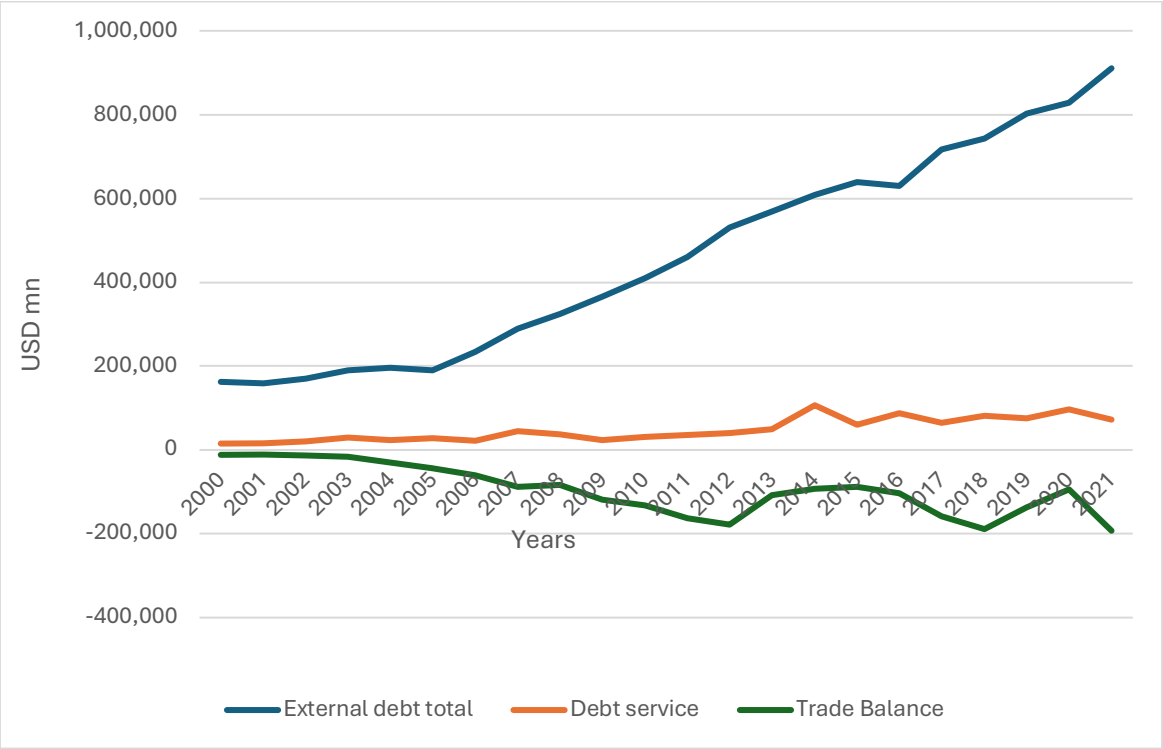
The consequences of debt accumulation extend beyond economic implications. Enyiuche and Obiefuna (2014) argued that increasing debt functions as a tax on future income, discouraging productivity and investment, which can entrap economies in cycles of debt that divert resources from essential development projects. Cholifihani (2008) emphasised that rising debt redirects foreign exchange earnings towards servicing obligations, incurring high opportunity costs and limiting expenditures on critical sectors such as education, healthcare and infrastructure. Similarly, Asley (2002) noted that heavy debt burdens impede a nation's trade capabilities and the implementation of economic policy, constraining both current development and future potential. This challenge is echoed in the work of Duodu and Baidoo (2020) and Baidoo et al. (2021), who highlight the difficulties developing nations face in managing debt while pursuing the necessary advancements in growth.

Many developing economies rely on external financing to sustain growth yet face challenges in managing their debt sustainably. This is particularly evident in South Asia, where balancing debt-driven investments with fiscal responsibility remains a pressing concern. Data from The World Bank (2021) indicate that the external debt of South Asia rose significantly from USD 460,000 million in 2011 to USD 910,000 million in 2021, doubling over the decade (see Figure 1.1). During this same period, trade deficits and

[1] A situation where a country's existing debt burden is so large that it inhibits economic growth. This happens because potential investors fear that future returns will be used to service the debt rather than support productive investments. The country’s high level of debt discourages new investment, as any potential earnings would likely go towards repaying creditors instead of supporting development. This can create a cycle where the economy stagnates owing to limited investment and growth opportunities, worsening the debt situation over time

debt-servicing obligations also grew. The trade deficit expanded from USD 162,000 million in 2011 to USD 192,000 million in 2021, while debt-servicing costs escalated from USD 35,000 million to USD 72,000 million, effectively doubling within the period.

Figure 1.1: South Asia's external debt, debt-service and trade balances (USD mn) from 2000–2021



These figures highlight an essential point: While external borrowing can aid immediate growth, excessive debt can trap countries in long-term dependency. Despite its significant role in economic development, the challenge is managing debt responsibly to avoid negative impacts on growth. This is especially critical in South Asia. As demonstrated in Table 1.1, South Asia recorded the highest average external debt-to-GDP ratio, approximately 38.06%, with an average debt growth rate of 9% from 2000–2019. This is contrasted by the region's average GDP growth rate of 5.43%, notably lower than the external debt growth rate (World Bank, 2021). Also, according to The World Bank and IMF statistics, South Asia's national savings-to-GDP ratio is only 24% from 2000 to 2019, which shows the region's limited capacity to manage its external debt effectively. Over the last two decades, the region's average external debt was more than USD 375,000 million (IMF, 2021). Despite substantial external funding since the 1950s,

South Asia remains one of the world's poorest regions, with around 34% of its population living on less than one dollar daily (World Bank, 2021). Table 1.1 further contextualises South Asia's debt landscape by comparing regional debt statistics between 2000 and 2019. South Asia, with an external debt-to-GDP ratio of 38%, experienced the highest debt burden relative to its economic output compared to other regions. This is notably higher than the ratios of Emerging and Developing Asia (20%), which includes major economies like China, India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam, Sub-Saharan Africa (34%), Latin America and the Caribbean (36%), and the Middle East and Central Asia (37%). The data highlights the economic pressures exerted by external debt across these regions, underscoring the need for strategic fiscal management to mitigate the risks associated with rising external debt levels.

Table 1.1: Regional external debt statistics 2000–2019

Region	GDP Growth Rate	External Debt-to-GDP	External Debt Growth
Emerging and developing Asia	8	20	9
Latin America and Caribbean	3	36	5
Middle East and Central Asia	4	37	8
Sub-Saharan Africa	5	34	6
South Asia	5	38	9

Note: *All these values are averages and in percentages.

Source: IMF (2021); World Economic Outlook Database (2021).

Examining individual countries within South Asia reveals significant variations in the volume and composition of debt. For instance, as indicated in Table 1.2, India had the highest absolute external debt, amounting to USD 269,000 million as of 2019, which aligns with its global debt ranking of 24th. This underscores India's prominent role in the international debt landscape, reflecting its substantial external financing needs. Pakistan's external debt-to-GDP ratio averaged 27%, with a more moderate debt growth rate of 5%. However, its lower savings rate of 15% of GDP limits its capacity to manage external debt effectively without structural economic adjustments. These figures suggest that while Pakistan's debt profile may appear more balanced, its economic resilience remains under pressure.

Bangladesh's external debt statistics indicate a moderate debt accumulation compared with other South Asian nations. Bangladesh has a relatively stable financial position with an average gross national savings rate of 28% of GDP. However, its external debt-to-GDP ratio of 19% shows that the country still relies on external borrowing to sustain economic growth. Nepal has an average external debt-to-GDP ratio of 24% and the lowest average debt growth rate of 3%. This suggests more controlled debt accumulation. Nepal's average savings rate of 29% of GDP contributes to a relatively stable economic outlook, indicating greater resilience than other nations with higher debt growth and lower savings.

Sri Lanka and India both demonstrated average external debt growth rates of 9%, reflecting notable debt accumulation over the study period. Sri Lanka's average external debt-to-GDP ratio of 51% is particularly concerning as it signals a high dependency on external financing. This dependence has been linked to recent economic challenges, underscoring the need for comprehensive debt management strategies. Bhutan has the region's highest average external debt-to-GDP ratio, at 85%. This figure indicates a significant reliance on external financing relative to economic output, which could pose potential risks if economic conditions weaken, or debt servicing becomes problematic. Despite its average gross national savings rate of 36% of GDP, Bhutan's substantial debt burden highlights that high savings alone may not sufficiently offset the risks associated with external debt dependency. Between 2000 and 2019, the Maldives' external debt increased by an average of 15%. When coupled with a low average savings rate of 7% of GDP, this rapid debt accumulation raises alarms about financial sustainability. Without adequate savings to act as a buffer, the Maldives remain vulnerable to economic shocks and face significant challenges in managing debt repayment obligations.

According to the macroeconomic statistics of each South Asian country presented in Table 1.2, managing external debt often siphons off savings and foreign exchange earnings that could be better utilised for domestic investments and social services. This situation can compel governments to pursue additional external borrowing to fulfil existing debt obligations, entrenching a dependency cycle. These findings highlight South Asia's diverse economic challenges and debt dynamics, stressing the necessity for specialised debt management and fiscal policies to reduce risks and achieve long-term economic stability.

Table 1.2: Selected macro-economic indicators of South Asian countries 2000–2019

Country	GDP Growth Rate % *	Gross Nation Savings % of GDP *	External Debt-to-GDP %*	External Debt Growth %*	World Debt Rank
India	6	31	20	9	24
Pakistan	4	15	27	5	63
Bangladesh	6	28	19	6	65
Nepal	4	29	24	3	54
Sri Lanka	5	26	51	9	127
Bhutan	7	36	85	14	144
Maldives	5	7	35	15	165

Note: *All these values are average.

Source: IMF, World Economic Outlook Database, April 2021, Index Mundi, 2021; Macrotrends, 2021.

Given the rising accumulation of external debt globally, especially in developing regions, researchers and policymakers have extensively studied this issue since the debt crises of the 1970s. The literature has examined various aspects of external debt, including its causes, the impact of global financial shocks, associated risks, and long-term sustainability strategies. Within the South Asian context, much of the existing research has focused narrowly on macroeconomic determinants such as inflation, exchange rates, gross capital formation, and economic growth (Allayannis et al., 2003; Barro, 1979; Bittencourt, 2013; Hajivassiliou, 1987; Selami, 2004; Tiruneh, 2004). While these factors are undeniably important, relying solely on them offers an incomplete picture of the complex dynamics driving external debt. The exclusion of political, financial, and human development variables such as political stability, corruption control, financial sector development, stock market performance, unemployment, and remittance inflows limit the depth of understanding and weakens policy relevance. These non-macroeconomic factors can significantly influence borrowing capacity, investor confidence, and fiscal discipline, which shape a country's external debt trajectory. Therefore, to develop more effective and holistic debt management strategies for South Asia, it is essential to broaden the analytical framework beyond traditional macroeconomic indicators and incorporate these underexplored dimensions into future research.

Recognising these limitations, recent scholarly efforts have begun to embrace a broader and more integrated analytical perspective. Increasing attention is now being given to the institutional, financial, and social dimensions of external debt, which were previously overlooked. However, much of this research remains confined to specific country contexts or primarily highlights the relevance of these factors, without offering comprehensive regional analyses or cross-country comparisons. For instance, studies on corruption control and political stability have been limited to selected countries such as Sub-Saharan Africa, highly indebted poor countries (like Ethiopia, Mozambique, Zambia), Pakistan and countries in West African states (Amoh et al., 2024; Awan et al., 2015; Azolibe, 2021; Nurudeen et al., 2015). Examining the financial sector and stock market as factors affecting external debt remains relatively new globally. Arestis and Luintel (2001) highlighted that an efficient stock market and a robust banking sector are crucial for increasing investments while managing external debt. Similarly, Ratha (2007) and The World Bank (2006) pointed out the significance of foreign remittances in boosting a country's creditworthiness. Hussain and Chani (2018) also found that foreign debt and remittances positively affect economic growth. Furthermore, Koczan et al. (2021) emphasised how overseas migrant labour influences their host countries' labour markets, productivity, innovation and fiscal balances while creating remittance flows and facilitating trade, foreign direct investment (FDI), and technology transfers. Low unemployment rates, another vital economic indicator, have been underscored in studies by Dalmar et al. (2017) and Cahyadin and Ratwianingsih (2020).

External debt scholars such as De Mello et al. (1999), Choong (2012) and Hermes and Lensink (2014) have noted that institutional quality, governance, sustainable debt limits, domestic financial system strength, human capital and business cycle phases can influence FDI and debt in the context of economic growth. However, most studies have focused on generalised macroeconomic factors and have yet to delve into specific determinants in individual countries (Dawood et al., 2021). Notable exceptions include country-specific research by Awan et al. (2015), Al-Fawwaz (2016), Belguith and Omrane (2017), Ozata (2017), Brafu-Insaidoo et al. (2019) and Wahyuni et al. (2019). For example, Dawood et al. (2021) studied the determinants of external debt across 32 Asian developing and transitioning economies. However, since the findings are generalised, they may not directly apply to countries with different economic and geographic conditions. This underscores the need for research that considers the unique

economic and country-specific factors influencing external debt in South Asia for a more nuanced understanding.

Regarding debt risk assessment, most previous research has focused on government debt risk through index systems, mainly for developed countries (Kaminsky et al., 1998; Gray & Jobst, 2010). For instance, some nations have implemented local government financial risk warning systems using debt risk indexes, such as the 'local fiscal monitoring plan and financial crisis method' in the United States, the 'local government borrowing limitation' in Brazil, and the 'traffic light system' in Colombia. Moreover, models such as the DCSD (Developing Country Studies Division) model for monetary crises (Berg, 2005), the artificial neural network model (Nag & Mitra, 1999), and the Markov switching model with variable transition probability (Abiad, 2003) have mainly focused on monetary crisis warnings for government debt. More attention should be paid to risk assessment related to external debt. The existing literature on external debt risk assessment often pertains to individual countries, such as Waheed's (2003) risk analysis on external indebtedness in Pakistan using an indicator approach and Karagol's (2006) study on the link between external debt, defence expenditures and gross national product (GNP) in Turkey using the impulse response function. Most other studies have focused on debt rescheduling and sustainability (Dhonte, 1975; Feder & Just, 1977; Frank & Cline, 1971; Mayo & Barrett, 1978; Sargen, 1977). While these studies underscore the importance of assessing debt-related risks, particularly for government debt and monetary crises, they reveal a critical gap in comprehensive external debt risk assessment, especially within the South Asian context. This gap has become even more pressing in light of recent global economic shocks, most notably the COVID-19 pandemic, which has significantly intensified debt vulnerabilities across developing and emerging economies. The pandemic not only exposed structural weaknesses in debt management systems but also highlighted the urgent need for robust, region-specific risk assessment frameworks to inform sustainable recovery strategies.

The COVID-19 pandemic has profoundly affected the global economy, leading to a sharp rise in total indebtedness, pushing many countries into debt distress or high risk (Kose et al., 2020). Debt-service burdens for middle-income countries have reached 30-year highs, exacerbated by rising oil prices and interest rates (Estevao, 2022). The World Bank (2020) projected a global GDP contraction of 5.2% in 2020, marking the deepest global recession

in decades, with emerging and developing countries experiencing a 2.5% contraction the lowest growth rate since 1960. Public finances suffered as governments increased spending for health responses and economic support while revenues plummeted, especially for commodity-exporting and tourism-dependent countries. Fiscal balances turned sharply negative, at −9.1% and −5.7% of GDP in middle- and low-income countries in 2020 (IMF, 2020). Even though the pandemic has posed severe challenges, it has also created an opportunity to reassess economic systems for sustainable recovery. Governments must prioritise debt sustainability as a critical goal in post-pandemic economic rebuilding. Identifying these risks and developing mitigation strategies will ensure long-term economic stability and resilience (Chien et al., 2021).

Despite numerous efforts to predict debt crises and address repayment challenges, a comprehensive, country-specific debt management framework for South Asia still needs to be discovered. Existing research and the economic downturns various nations face highlight the critical need for debt management strategies tailored to individual country contexts. Steil (2010) stresses that governments must ensure their policies do not inadvertently encourage excessive debt accumulation. Similarly, Shittu et al. (2020) underscore the importance of exploring alternative financing methods to mitigate the long-term adverse effects of financial mismanagement. Bangura et al. (2000) reinforce that effective external debt management is not just a financial necessity but a fundamental aspect of macro-economic stability.

Real-world examples within the region underscore this urgency. Sri Lanka's recent economic crisis, marked by an unsustainable debt burden and dwindling foreign reserves, is a cautionary tale of inadequate debt-handling practices (Moramudali, 2021; Perumal, 2021). While many South Asian countries utilise the Commonwealth Secretariat Debt Recording and Management System (CS-DRMS), Sangarabalan et al. (2010) argue that this tool falls short of addressing country-specific needs. Ajayi (2000) emphasises that external debt management must be comprehensive and strategic to avoid erratic repayments that compromise long-term development goals.

Given these challenges and the changing dynamics of debt structures in developing economies (Culpeper & Kappagoda, 2016), the need for a region-specific approach becomes even more apparent. This recognition leads to the focus of this study, which arises from the persistent issue of external debt accumulation across South Asia. Despite

past efforts, the region faces significant obstacles that hinder effective debt management. The recent global debt crises have underscored the severe impact of unsustainable debt on national and international economies, reinforcing the call for more robust, targeted strategies (Awan et al., 2011).

Despite the evident issues, there remains a significant gap in research aimed at developing a debt management framework, assessing external debt risks and conducting an in-depth analysis of external debt specific to South Asia. Motivated by these pressing challenges, this study seeks to bridge the gap by investigating both macroeconomic and country-specific factors contributing to external debt accumulation in South Asia, assessing the risk of external debt determinants for the region and developing a framework that incorporates country-specific characteristics and risk assessments. By focusing on a region that experiences notably high debt accumulation (Index Mundi, 2021; The World Bank, 2023), this research aims to support broader efforts to mitigate the negative impacts of external debt and promote sustainable economic growth.

1.2 Aims of the Study

As highlighted in the background of the study, external debt has become a significant issue for developing countries, particularly for South Asian nations. The economic landscape of South Asia marked by high external debt-to-GDP ratios and substantial levels of poverty demands a comprehensive approach to understanding the multifaceted drivers of external debt. This region has been flagged as one with recurrent debt-servicing challenges and unfavourable credit ratings, exacerbating the risk of economic instability (Index Mundi, 2021). The significance of collectively addressing these challenges has been highlighted by Khaliq (2008), who argued that coordinated efforts among South Asian countries are essential to avert potential financial crises. Insights from prior analyses indicate that unchecked debt accumulation can hinder long-term growth, as demonstrated by recent economic emergencies such as those in Sri Lanka (Perumal, 2021).

Given this backdrop, this study aims to investigate the determinants of external debt in South Asian countries from 2002 to 2021. By identifying these factors and assessing their risk at different debt levels, the research provides a nuanced framework for debt management tailored to the region's unique socio-economic conditions. This will

facilitate the development of strategies that address existing debt burdens and equip policymakers with data-driven tools to enhance debt sustainability and economic resilience.

The study sets out the following objectives to achieve these aims and provide actionable insights. They guide a comprehensive exploration of the factors influencing external debt in South Asia.

- To investigate the determinants (both country-specific and economic) that affect the external debt of South Asian countries from 2002–2021 (before and after COVID-19 and the financial crisis).
- To assess whether debt determinants show a short- or long-term impact on South Asian countries.
- To evaluate the relationship between the level of external debt and economic growth of South Asia from 2002–2021 (before and after COVID-19 and the financial crisis).
- To assess the level of risk in external debt in South Asian countries from 2002–2021 (before and after COVID-19 and the financial crisis); and
- To devise a debt management framework for South Asian countries.

Based on the issues and objectives outlined above, this study aims to answer the following questions and the sub-questions:

- RQ1: How do the determinants of external debt vary in South Asian countries from 2002 to 2021?
    - RQ1.1: How did the determinants of external debt vary in South Asian countries before the financial crisis (2002–2008)?
    - RQ1.2: How do the determinants of external debt vary in South Asian countries after the financial crisis (2009–2021)?
    - RQ1.3: How did the determinants of external debt vary in South Asian countries before COVID-19 (2002–2018)?
    - RQ1.4: How do the determinants of external debt vary in South Asian countries after COVID-19 (2019–2021)?
- RQ2: Do debt determinants have a short-term or long-term impact on South Asian countries?

- RQ3: How does external debt affect the economic growth of South Asian countries from 2002 to 2021?
- RQ4: What are the risk determinants of external debt in South Asia from 2002 to 2021?

1.3 Research Design and Methodology

The research follows a structured approach to address the study objectives and answer the research questions comprehensively. This approach involves collecting data, determining the period, formulating hypotheses and applying appropriate research methods. The sections covering the study's data, data sources, hypotheses, and research methods are detailed in Chapter 4. The South Asian region for this study comprises Bangladesh, India, the Maldives, Nepal, Pakistan and Sri Lanka. For the study the secondary data were collected from The World Bank's World Development Indicators, each country's reserve bank's annual reports, and official stock market publications. The study spans 20 years, from 2002 to 2021, to comprehensively analyse external debt and excluded data for 2000 and 2001 owing to the unavailability of data for the All Share Price Index of the Maldives, as the Maldives established their stock exchanges in 2002. . This study excludes Bhutan from the analysis owing to the inability to gather sufficient data.

This study's analysis of the economics of external debt is guided by 25 hypotheses, strategically categorised into three distinct fields: determinants of external debt, risk assessment of external debt, and the relationship between external debt and economic growth. The study formulates hypotheses that align with specific research questions to address these areas, ensuring a comprehensive examination of external debt dynamics in South Asia. This study employs panel regression analysis as the primary methodological approach to investigate the determinants of external debt. As detailed in Table 1.3, the fully modified ordinary least squares (FMOLS) method is used to examine the overall determinants of external debt from 2002 to 2021. The study applies this method to specific sub-periods, including the post-financial crisis (2009–2021) and pre-COVID-19 (2002–2018). This approach enables the analysis of the extent to which key determinants influence future borrowing capacities and assesses whether these determinants have short or long-term impacts on South Asian countries. The study utilises panel EGLS (cross-

section weights) and fixed-effects models to identify the determinants of external debt before the financial crisis (2002–2018) and after the COVID-19 pandemic (2019–2021).

Quantile regression analysis is employed to identify risk factors at varying levels of external debt across the selected countries and assess external debt risk. A random-effects model investigates the relationship between external debt and economic growth. At the same time, the pairwise Dumitrescu–Hurlin panel causality test examines causality between variables. Based on the findings related to external debt's determinants and risk factors, the study develops a comprehensive debt management framework tailored for each South Asian country. The data analysis process incorporates these methods alongside fundamental econometric procedures, including tests for co-integration between variables and unit root tests using the augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) tests. Additionally, cross-section dependency tests and diagnostic tests for serial correlation, heteroskedasticity and normality are conducted to ensure the robustness of the results. Descriptive statistics and correlation analyses are also employed to identify relationships between variables and the significance of these associations. Through these rigorous techniques, the study aims to provide a detailed understanding of the determinants and risks associated with external debt. This comprehensive approach equips policymakers with the insights to design effective debt management strategies that safeguard economic stability.

Table 1.3: Research methods

Research Question	Methods Used
RQ1-How do the determinants of external debt vary in South Asian countries from 2002–2021	Fully modified OLS method
RQ1.1-How do the determinants of external debt vary in South Asian countries before the financial crisis **(2002–2008)**	Panel EGLS (cross-section weights)
RQ1.2-How do the determinants of external debt vary in South Asian countries after the financial crisis (2009–2021)	Fully modified OLS
RQ1.3-How do the determinants of external debt vary in South Asian countries before COVID-19 (2002–2018)	Fully modified OLS
RQ1.4-How do the determinants of external debt vary in South Asian countries after COVID-19 (2019–2021)	Fixed effect
RQ3- Do debt determinants have a short-term or long-term impact on South Asian countries?	Fully modified OLS

Research Question	Methods Used
RQ4: How does external debt affect the economic growth of South Asian countries from 2002 to **2021?**	Random effect Pairwise Dumitrescu–Hurlin panel causality test results
RQ5: What are the risk determinants of external debt in South Asia from 2002 to **2021**?	Quantile regression analysis

1.4 Contribution to Knowledge (Academic Contribution)

The academic contribution of the study has been identified as follows, mainly focusing on five main aspects.

Holistic investigation of external debt determinants: South Asia is the second poorest region globally, with the highest external debt-to-GDP ratio and average external debt growth (Awan et al., 2011; IMF, 2021; Maitra, 2019; Wanniarachci, 2020; World Bank, 2021). Previous studies on external debt have been limited, with a focus on generalised macro-economic factors such as GDP, inflation, export, output, population, exchange rate and price levels (Allayannis et al., 2003; Chaudhary et al., 2000; Gur, 2001; Li, 2019; Maitra, 2019; Wanniarachchi, 2020) few have explored the specific determinants of external debt in individual countries (Al-Fawwaz, 2016; Awan et al., 2015; Belguith & Omrane, 2017; Brafu-Insaidoo et al., 2019; Ozata, 2017; Wahyuni et al., 2019).

Although some studies have examined external debt within specific countries or regions, the applicability of their generalised findings to countries with different geographical and economic conditions remains questionable. For instance, Dawood et al. (2021) study on the determinants of external debt in 32 Asian developing and transition economies is a notable example. However, since they generalised their findings the specification to countries with different geographical and economic conditions is questionable. Therefore, there is a pressing need to investigate the economic and country-specific factors contributing to external debt in South Asia separately to obtain a more nuanced understanding of this phenomenon. This study combines all aspects, offering a comprehensive investigation of external debt determinants by considering macro-economic and country-specific factors across all South Asian countries before and after the financial crisis and COVID-19.

Assessment of risk factors: This study assesses the risk factors associated with external debt for all South Asian countries. The issue of identifying countries with debt-servicing

difficulties, commonly referred to as ‘country risk’ by financial and economic researchers (e.g., Frank & Cline, 1971; Feder & Just, 1977), has garnered significant attention. Previous studies in this domain have predominantly focused on economic factors that influence a country's external debt situation, ultimately leading to debt rescheduling. These prior studies have primarily assessed the risk of external debt based solely on exchange rates and interest rates, neglecting the utilisation of other determinants (Chen & Lv, 2021; Gur, 2001), or the risk assessment was only limited to one or two countries of the region (Karagol, 2006; Waheed, 2003). Consequently, there needs to be more evidence regarding incorporating alternative factors in assessing external debt risk. By addressing this research gap, this study intends to offer a comprehensive understanding of the risk associated with external debt and contribute to developing effective risk management strategies.

Introduction of new variables: In this study, new variables are introduced into the external debt discourse, extending the model to include factors that have yet to be previously explored in South Asia. While some studies have considered foreign remittances as a determinant of external debt, these investigations were typically confined to one or two countries. Furthermore, including variables such as stock market performance and financial institution performance (e.g., return on assets) in the analysis of external debt is novel. Additionally, variables such as oil imports, control of corruption, and political stability as determinants of external debt for all South Asian countries before and after the financial crisis and COVID-19 were not previously explored. In addition, the risk assessments of these variables on external debt for South Asian countries were not found in the literature. These factors, which have not been addressed in previous studies of South Asian countries, offer fresh insights into the complex dynamics of external debt.

Identification of long-term relationships: This study uses dynamic panel models to identify long-term relationships between macro-economic and country-specific factors influencing external debt in South Asia. Its analysis spans periods before, during and after the global financial crisis and the COVID-19 pandemic, offering a nuanced perspective on the enduring trends and shifts in external debt dynamics.

Development of a debt management framework: This study aims to fill the gap by identifying a debt management framework for South Asia that encompasses all South

Asian countries. It emphasises the importance of developing country-specific debt management frameworks and strategies. Effective debt management is vital for long-term economic stability and resilience. However, more country-specific debt management frameworks are needed based on factors unique to each country and external debt risk measurements. By developing such frameworks, South Asian countries can effectively manage their external debt and mitigate potential risks.

1.5 Statement of Significance (Practical Contribution)

The practical significance of this study is underscored by its potential to inform the policy decisions of South Asian countries, helping them manage their external debt more effectively and avoid the pitfalls of past financial crises. First, the study's findings can potentially assist South Asian nations in managing their external debt, thereby preventing future economic crises. The challenges posed by escalating debt burdens were illustrated by Sri Lanka's economic emergency, triggered by its rising debt and dwindling foreign reserves (Perumal, 2021). As a middle-income nation, Sri Lanka has faced difficulties in securing favourable loans, resulting in increased reliance on commercial borrowings that are not sustainable given the structural weaknesses in its economy (Moramudali, 2021). These challenges highlight the urgent need for a robust debt management framework that can prevent similar crises in other countries in the region.

The situation is further exemplified by Malaysian authorities' seizure of a Pakistan International Airlines Boeing 777 over unpaid leasing fees amounting to $15 million (Sharma, 2021). Such incidents reinforce the need for improved debt management practices across South Asia. This study aims to provide valuable insights to help prevent similar occurrences and contribute to more sustainable financial practices in the region.

Second, policymakers can utilise the findings of this study to develop more effective debt policy guidelines that aid in safeguarding national economies during periods of crisis and facilitate improved management of savings, foreign reserves, and infrastructure investments. The study highlights that deficiencies in debt management policies persist as a significant challenge across South Asian economies. These challenges are frequently rooted in weak institutional frameworks, limited transparency, and politically motivated fiscal decisions, which collectively have contributed to unsustainable debt levels. For instance, Sri Lanka undertook substantial borrowing for infrastructure projects, such as

the Hambantota Port, financed through high-interest Chinese loans. When the project failed to generate the anticipated returns, the government was compelled to lease the port to China for ninety-nine years (Hillman, 2018). Similarly, Pakistan confronts a recurrent circular debt crisis within its energy sector, driven by untargeted subsidies and delayed tariff reforms, thereby exerting increasing pressure on public finances (IMF, 2024). These cases highlight the urgent necessity for stronger debt governance, enhanced fiscal discipline, and transparent debt reporting mechanisms throughout the region. In this regard, the findings of this study are also anticipated to substantially contribute to broader economic planning and stabilisation efforts by providing a more comprehensive understanding of external debt dynamics.

Third, establishing a debt management framework will enable policymakers to allocate resources more effectively, stimulate domestic production, and make informed decisions regarding FDI and private investments. Effective management of external debt can mitigate the risk of financial crises and foster sustainable economic growth. Although global models like those by the IMF, World Bank, and OECD have been developed, they are mainly normative and lack empirical support tailored to specific regional conditions. For example, the IMF World Bank guidelines provide general principles on legal, institutional, and operational aspects of public debt management, while OECD frameworks focus on risk-cost trade-offs and market integration, often reflecting advanced economies' experiences. The IMF–World Bank Debt Sustainability Framework (DSF), designed for low- and middle-income countries, is widely used to assess debt sustainability through projections and stress tests. Still, while the DSF offers thorough diagnostics, it does not give detailed, context-specific operational strategies adapted to various institutional and governance setups.

Furthermore, existing Debt Sustainability Analysis (DSA) tools evaluate fiscal risks but are often disconnected from local institutional, political, and structural realities, and do not produce region-specific, actionable policy models. There is currently no comprehensive, empirically based debt management framework that considers the unique institutional, political, and macroeconomic conditions in South Asian countries. This thesis fills that gap by proposing a new framework based on panel data analysis of six South Asian nations Bangladesh, India, Pakistan, Nepal, Sri Lanka, and the Maldives from 2002 to 2021. The framework incorporates region-specific risk factors such as

corruption, political stability, external vulnerability, and governance capacity, which are often overlooked or underemphasized in international models. By applying global best practices to the empirical realities of South Asia, this study offers original insights. It provides a practical, policy-focused tool to improve debt sustainability and institutional resilience in the region.

Finally, the study's examination of sector-specific performance, particularly within the financial sector, offers valuable insights that can help countries improve the efficiency of their financial systems. As Ncube and Senbet (1997) highlighted, an efficient financial system is crucial for supporting domestic capital formation and strengthening a country's competitiveness in the global market. By addressing inefficiencies within the banking sector, South Asian countries can enhance their economic position, attract more foreign investments and drive long-term growth.

1.6 Thesis Structure

The thesis is structured into seven comprehensive chapters, each contributing to the development and understanding of the research. An overview of each chapter is outlined below to provide clarity and coherence:

Chapter 1: Introduction

Chapter 1 sets the stage for the thesis by presenting the research aims, objectives, questions and hypotheses that guide the subsequent chapters. This chapter also briefly outlines the study's academic and practical contributions, establishing the research's context and significance.

Chapter 2: Overview of the South Asian Region

Chapter 2 provides a comprehensive introduction to the South Asian region, detailing the background of its countries in terms of geographical, political and economic contexts. It discusses the rationale behind focusing on South Asia and delves into the economics of external debt, including an analysis of each country's risk assessment and debt management practices.

Chapter 3: Literature Review and Theoretical Framework

Chapter 3 reviews the existing literature and theoretical foundations related to external debt. It highlights vital theoretical concepts, including the classical and Keynesian perspectives, debt cycle theory, Debt-cum-growth theory, Debt Overhang and gap theories. The literature review is approached from the perspectives of external debt determinants, risk assessment, and debt management frameworks, providing a comprehensive understanding of the study gap.

Chapter 4: Research Design and Methodology

Chapter 4 outlines the research design and methodology employed to investigate the determinants of external debt, assess risk and develop a debt management framework. It also details the formulation of the econometric model and the study's hypotheses, ensuring transparency and rigour in the research process.

Chapter 5: Data Analysis

Chapter 5 presents the study's empirical findings, systematically displaying statistical results and interpreting their significance. This chapter provides an overview of the data's main characteristics. It then discusses the findings about the determinants of external debt and risk assessments, enriching the analysis with critical insights.

Chapter 6: Policy Discussion and Debt Management Framework

Chapter 6 is dedicated to discussing external debt policies specific to the South Asian region and developing a tailored debt management framework. This chapter underscores policy recommendations that address the region's unique economic and financial challenges.

Chapter 7: Conclusion and Recommendations

Chapter 7 concludes the thesis by summarising the main findings and emphasising the theoretical and practical contributions of the research. It provides recommendations based on the study's insights, acknowledges research limitations and suggests avenues for future research in the field.

Chapter 2: Economic Background of the South Asian Countries

2.1 Introduction

This chapter offers a detailed overview of the economic and external debt situation of South Asian countries. It examines the growth, structure and external debt circumstances of each nation. The chapter is divided into four sections: Section 2 discusses the economic background of South Asia and the recent external debt situation in the region. Section 3 outlines the profiles of individual countries in terms of external debt perspectives. The final section summarises the chapter.

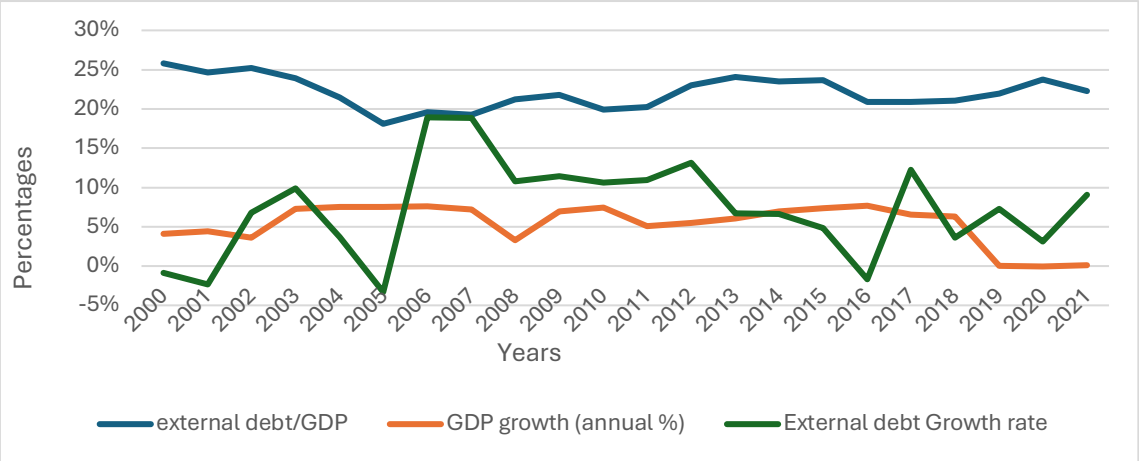
2.2 South Asian Region

Chapter 1 introduces South Asia as a region characterised by significant external debt growth, outpacing its GDP (gross domestic production.) growth rate over the past two decades. An analysis leveraging World Bank indicators from 2000 to 2021 illustrates this disparity. While South Asia's average gross domestic savings to GDP ratio stands at 27.3%, the average external debt-to-GDP ratio is 22% for the same period. Despite current gross domestic savings being sufficient to cover the existing external debt, the higher external debt growth rate of 7% compared with an average GDP growth rate of 5.68% signals a potential risk for future debt accumulation.

South Asia’s external debt has averaged over $907,000 million during the last 22 years (The World Bank, 2021). Despite substantial external resource inflows since the 1950s, the region remains one of the world’s poorest, home to 34% of the global population living on less than one dollar a day (The World Bank, 2021). Chaudhary et al. (2000) highlighted that although South Asian debt primarily benefits from subsidised rates and current levels of external debt and servicing are moderate, the prevailing trajectory may lead to significant debt and servicing burdens. Furthermore, Ahmed et al. (2000), utilising the Granger causality test, observed that external debt accumulation did not catalyse economic growth across the region except in India, where foreign loans have contributed positively to economic growth.

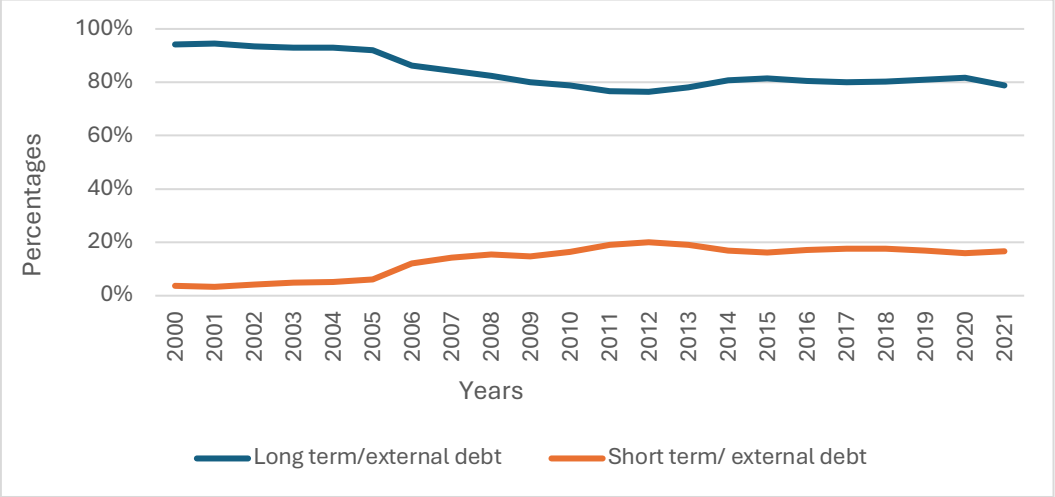
Figure 2.1 shows South Asia's total external debt growth was −1% in 2000 but surged to 9% by 2021, averaging 7% growth over 22 years. In contrast, GDP growth declined from 4% in 2000 to 0.08% in 2022, reflecting only a modest 5% increase.

Figure 2.1: South Asian debt and GDP statistics from 2000 to 2021



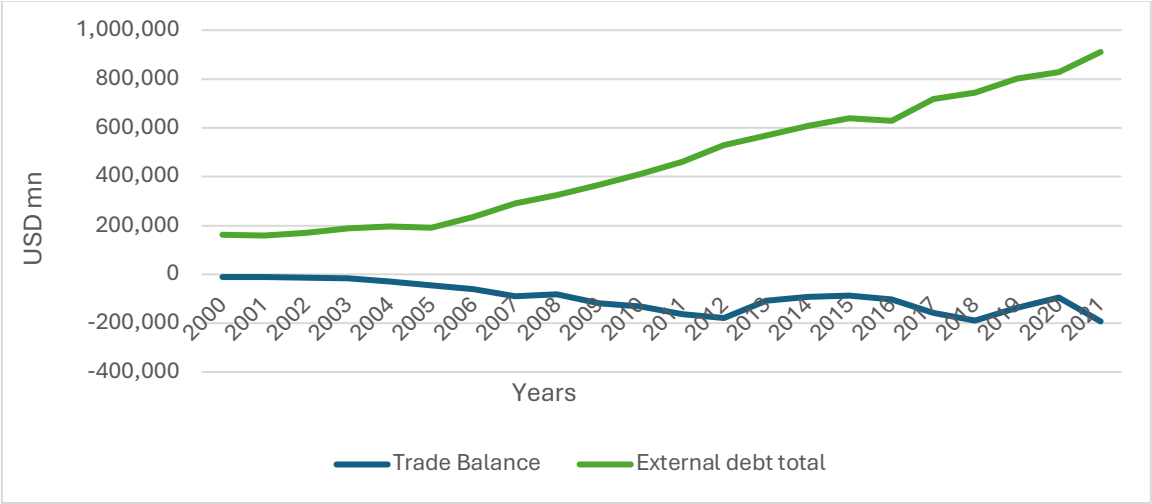
External debt comprises both short-term and long-term obligations. Short-term debt, defined as debt maturing within one year or less, has shown remarkable growth. As depicted in Figure 2.2, short-term debt escalated from approximately USD 6,000 million in 2000 to USD 151,000 million in 2021, rising from 4% to 17% of total external debt. Meanwhile, long-term debt's share declined from 94% to 79%. This shift indicates heightened exposure to fluctuations in exchange and interest rates, which could exacerbate debt vulnerabilities.

Figure 2.2: Long-term and short-term external debt growth of South Asia from 2000 to 2021



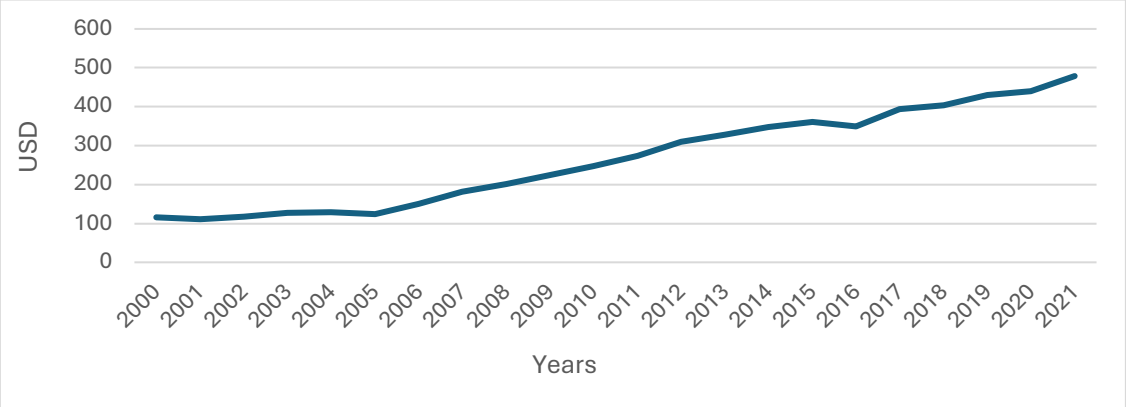
The transition towards short-term debt underscores future debt accumulation risks, especially given the region's stagnant gross domestic savings and persistent trade deficits. As shown in Figure 2.3, South Asia's trade deficit expanded from USD 12,000 million in 2000 to USD 192,000 million by 2021.

Figure 2.3: External debt and trade balance South Asia (USD mn) from 2000 to 2021



As highlighted in Chapter 1 and in Section 2.2, South Asia remains the world's second poorest region despite decades of external financial support, with 34% of its population subsisting on less than one dollar daily. Per capita external debt rose sharply from USD 115 in 2000 to USD 478 in 2021, illustrating the mounting financial burden on the region's population, as seen in Figure 2.4.

Figure 2.4 External debt/population (per capita external debt), South Asia (USD) from 2000 to 2021



This analysis highlights the need to examine each South Asian country's external debt profile in detail to understand the associated risks comprehensively.

2.2.1 Country Profiles

The subsequent sections will provide an in-depth analysis of individual country profiles, examining their respective external debt situations to offer a comprehensive understanding of the broader regional landscape. This analysis incorporates statistical data from the IMF, The World Bank and the annual reports of each country's central bank. As presented in Table 2.1, India has the highest proportion of external debt, accounting for 68% of its total debt, reflecting its substantial integration into global financial markets and strong access to international capital. Pakistan and Bangladesh maintain moderate levels of external debt at 14% and 10%, respectively, indicating a balanced approach between domestic and foreign borrowing to support economic growth.

Sri Lanka, with 6.24% external debt, holds a comparatively lower share; however, its recent financial crisis highlights the need for prudent debt management beyond mere percentage figures. In contrast, Nepal (0.98%), Maldives (0.42%), and Bhutan (0.34%) exhibit minimal dependence on external borrowing. These variations in external debt levels reflect the diverse economic policies, financial structures and international borrowing capacities of South Asian countries. Accordingly, the country profiles are presented in descending order based on their share of total regional external debt, beginning with India, followed by Pakistan, Bangladesh, Sri Lanka, Nepal, Maldives and Bhutan.

Table 2.1: Countries' external debts as percentage of total regional external debt in 2021

South Asian Country	Country external debt as a % of Total regional external debt
India	68%
Pakistan	14%
Bangladesh	10%
Sri Lanka	6.24%
Nepal	0.98%
Maldives	0.42%
Bhutan	0.34%

2.2.1.1 India

Following independence, India relied solely on its domestic savings to finance its investments until the 1980s, maintaining a cautious approach toward private commercial and foreign investments. The country predominantly allowed official concessional term multilateral flows and only turned to IMF assistance in times of crisis, such as the 1960s drought and the oil shock of the late 1970s. During this period, India focused on promoting local goods and import substitutes.

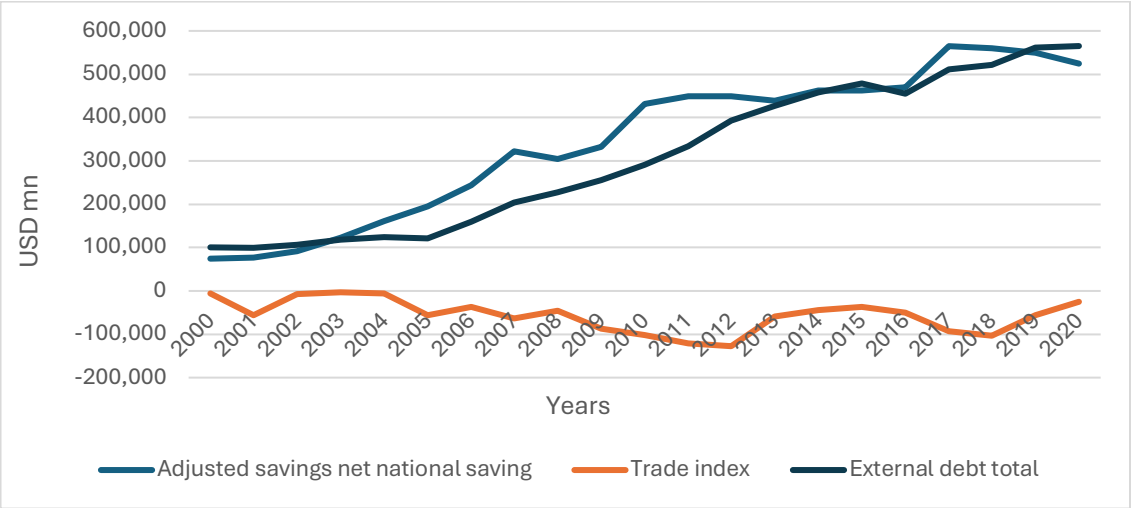
However, in the 1980s, as liberalisation took hold, India faced a decrease in the availability of official financial flows, compounded by repayments to the IMF, which further strained its access to international funds. In response, India increasingly sought external debt from institutional sources, such as export-import agencies, syndicated loans, bonds and deposits from non-resident Indians, marking a significant shift in its financing strategy.

The 1990s brought further economic challenges, particularly the Gulf crisis, which led to a substantial fiscal deficit. To address this, India turned to external debt financing, increasing its external debt from USD 2,800 million in the 1980s to an average of USD 6,200 million by the end of the decade—a nearly threefold increase. Short-term debt also rose from 4% of total external debt in 1988 to 7% in 1990–1991, and external debt servicing escalated dramatically, from 10.2% of current receipts in 1980–1981 to 35.3% in 1990–1991. India expanded its external debt in the face of mounting fiscal deficits and

debt repayments. By 1999, external debt had surged to approximately USD 99,000 million, a staggering 93% increase compared with the 1990s.

From 2000 to 2021, as illustrated in Figure 2.5, India witnessed a rapid rise in external debt from USD 101,000 million to USD 612,000 million. Simultaneously, the country's trade deficit widened significantly, from USD 5,000 million to USD 115,000 million. While the increase in external debt is evident, India's net national savings have shown volatility, experiencing declines between 2013 and 2015 and again after 2019. In fact, during these periods, the reduction in national savings outpaced the total external debt, highlighting the growing financial pressures faced by the country.

Figure 2.5: External debt, trade index/trade balance[2] and net national savings of India (USD mn) from 2000 to 2020



As the largest economy in the region, India accounted for approximately 68% of the region's external debt in 2021, as presented in Table 2.1. The external debt has experienced an average annual growth rate of nearly 20% from 2000 to 2021, as illustrated in Figure 2.7. This growth, in isolation, could be interpreted as a rising debt burden. Additionally, there has been a noticeable upward trend in short-term debt, as

[2] In this study, the term "Trade Index" is used interchangeably with "Trade Balance" and refers to the net difference between exports and imports of goods and services. A positive value indicates a trade surplus, while a negative value reflects a trade deficit. All values are expressed in USD millions unless otherwise stated.

evident in Figure 2.6. This trend suggests an increasing reliance on short-term borrowing, which could potentially jeopardise India's financial stability.

Figure 2.6: Long-term external debt v. short-term external debt as of total external debt (%) of India from 2000 to 2021

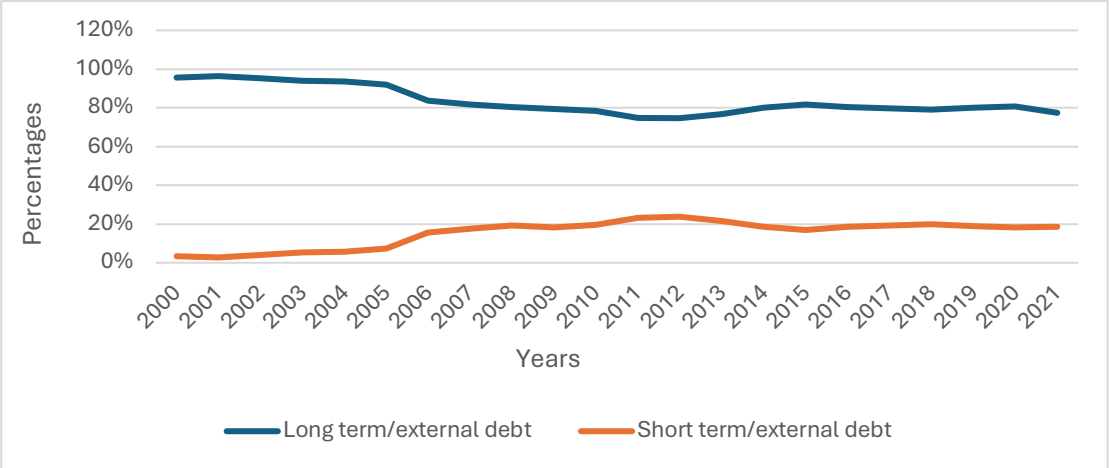
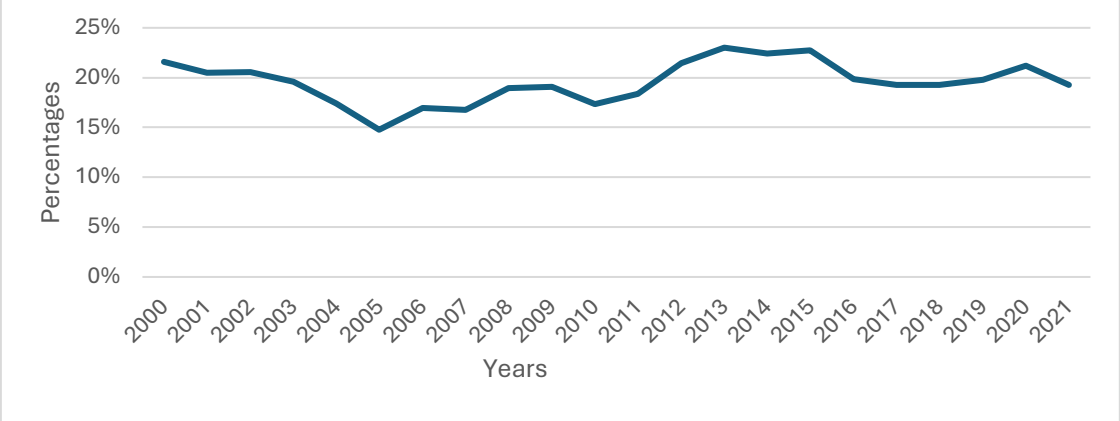


Figure 2.7: External debt-to-GDP of India from 2000 to 2021



Furthermore, over the past 22 years, the average growth rate of external debt has surpassed the country's economic growth rate. While the economy expanded at an average rate of 6%, external debt grew at an average rate of 8%, with the external debt-to-GDP ratio averaging 20%. This disparity highlights a significant imbalance between debt accumulation and economic expansion, underscoring the mounting financial pressures on India, where the growth of external debt is not proportionate to the pace of economic development. Consequently, debt management in India must prioritise enhancing the quality of borrowing, minimising reliance on short-term debt, and synchronising debt

growth with economic expansion. Strengthening institutional frameworks and fiscal discipline will be paramount to mitigate risks to financial stability.

2.2.1.2 Pakistan

Based on data from The World Bank and the annual reports of the State Bank of Pakistan, it is evident that Pakistan faces significant foreign exchange and fiscal challenges. It is the region's most foreign exchange-burdened and the second most fiscally burdened country. The consistent rise in external debt servicing each quarter highlights a trend of the government securing dollar-denominated loans at increasingly high commercial rates to meet its foreign debt repayment obligations.

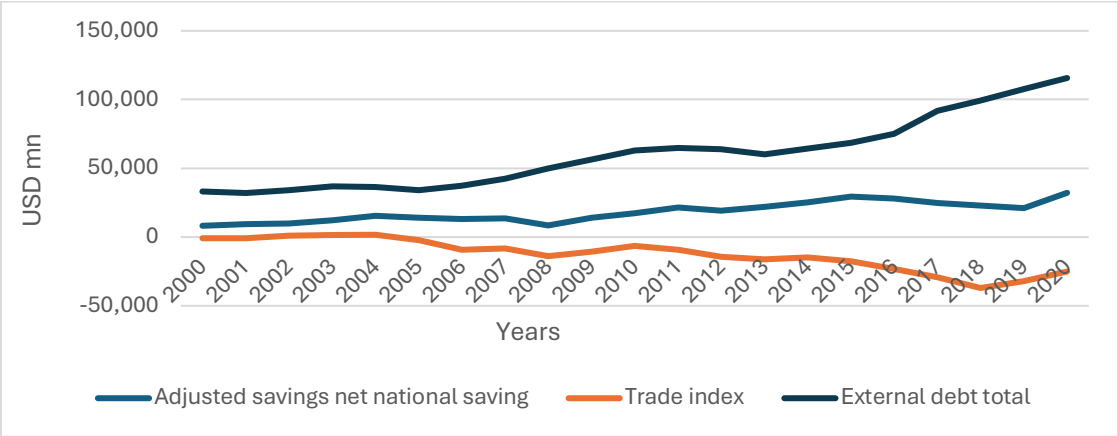
The need for foreign assistance in Pakistan also can be traced back to its early years post-independence. Between 1951 and 1955, Pakistan's external debt stood at $121 million. However, this figure more than tripled from 1955 to 1960 owing to geopolitical factors such as the Cold War. The period from 1965 to 1971 saw a decline in external debt levels, primarily owing to international sanctions imposed owing to the India-Pakistan war. This respite was short-lived; the Soviet occupation of Afghanistan marked a resurgence in debt accumulation, during which Saudi Arabia also began extending financial support to Pakistan. International assistance waned again in 1998 following Pakistan’s nuclear tests.

Between 2000 and 2006, external debt experienced modest growth, averaging around 2% annually. However, by 2007, external debt surged by 12%, driven by the need to finance a growing current account deficit and significant fiscal shortfalls. Notably, 62.5% of the debt increase in 2007 was attributed to floating interest-rate loans. The higher proportion of such loans posed a significant risk, potentially exacerbating debt-servicing costs. During this period, Pakistan also faced a devastating earthquake in 2005, prompting the Government of Japan to provide over $200 million in emergency grant assistance. The World Bank subsequently announced an $850 million aid package. In 2006, the International Foundation for Electoral Systems facilitated the implementation of a $9 million USAID contract to establish a computerised electoral roll system. Consequently, external debt rose from $33,000 million in 1999 to $45,000 million by June 2008.

In 2010–2011, Pakistan received an additional $900 million in assistance following severe floods. Despite numerous projects being initiated and funded, reports pointed out

that limited progress has been made owing to poor and ineffective leadership and corruption (Ahmad, 2015). External debt continued its upward trajectory post-2011, marked by an 18% increase in 2017 compared with the previous year (see Figure 2.8). This spike was primarily owing to additional borrowing to finance an expanding current account deficit, which ballooned to $12,100 million (4% of GDP) in 2017, up from $4,900 million (1.7% of GDP) in 2016. The driving factor behind this deficit was a record-high trade imbalance; imports surged by 17.8% while exports contracted by 1.3%, leading to an unprecedented trade deficit of $26,900 million in 2017. Over the period, net national savings (adjusted gross national savings) demonstrate moderate to substantial growth, escalating from USD 8.2 million in 2000 to a peak of USD 32.2 million in 2020. Despite this upward trajectory, the data indicate that savings consistently remained below the requirements of the economy's external financing needs, as evidenced by the persistent and widening trade deficits. To address this expanding trade deficit and in the absence of adequate national savings, the country increasingly depended on external debt. Furthermore, remittances, a critical revenue source for Pakistan—declined by 3.1% during the same year. The China–Pakistan Economic Corridor (CPEC) also contributed to the increased government external debt, further straining Pakistan's financial stability by 2018.

Figure 2.8: External debt, trade index/trade balance and net national savings of Pakistan (USD mn) from 2000 to 2020



In 2021, Pakistan's external debt reached USD 130,000 million, reflecting an 11% increase compared with 2020. Analysis indicates that, on average, 21% of export revenues were allocated to debt servicing from 2000 to 2021. The persistent growth in external debt servicing highlights a pattern of government borrowing at higher commercial interest

rates to fulfil its foreign debt obligations. Over the past 22 years, Pakistan has recorded an average external debt growth rate of 6% and an external debt-to-GDP ratio of 32%, while the economy has grown by only 4% annually on average. Additionally, total reserves as a percentage of external debt were recorded at a mere 22%.

The analysis of Pakistan's external debt dynamics reveals that external borrowing has been primarily driven by the need to cover current account deficits, with a significant import dependency. The country's reliance on worker remittances to bridge current account shortfalls is another prominent feature of its financial structure. Furthermore, Pakistan's reliance on commercial loans characterised by higher interest rates and shorter maturity periods has contributed to the mounting debt burden. According to reports from the State Bank of Pakistan, much of the country's investments have been consumption-driven, which limits the potential for long-term economic growth and sustainable development. Consequently, the nation must prioritise reducing its reliance on high-cost, short-term commercial loans and transitioning towards more concessional, long-term financing arrangements. The persistent current account and trade deficits, coupled with low national savings and declining remittances, underscore the imperative to bolster domestic revenue mobilisation, foster export growth, and manage import dependency effectively. Furthermore, enhancing governance, ensuring transparency in debt utilisation, and aligning external borrowing with productive, growth-stimulating investments are paramount to guarantee long-term debt sustainability and economic resilience.

2.2.1.3 Bangladesh

Referring to data from the IMF, World Bank and annual reports, it is evident that Bangladesh transitioned from being one of the poorest nations in 1971 to achieving lower-middle-income status in 2015, driven by steady economic growth. In 2000 and 2001, the country experienced a negative growth in external debt. From 2002 to 2004, external debt increased, albeit slower. By 2005, external debt growth turned negative owing to a current account surplus, attributed mainly to rising exports and increased worker remittances.

However, from 2006 to 2009, there was a resurgence in external debt growth, primarily driven by the need to finance current account deficits (see Figure 2.9). However, even though external debt started to increase, national savings surpassed the external debt,

emphasising the country's ability to repay it (see Figure 2.9). 2010 external debt growth slowed to 4% owing to a current account surplus. Post-2010, Bangladesh's external debt grew moderately, culminating in a 19% increase by 2021. This relatively slow growth was influenced by the fact that much of the debt was long-term, contributing to the stability of the external debt profile (see Figure 2.10).

Figure 2.9: External debt, trade index/trade balance and net national savings of Bangladesh (USD mn) from 2000 to 2020

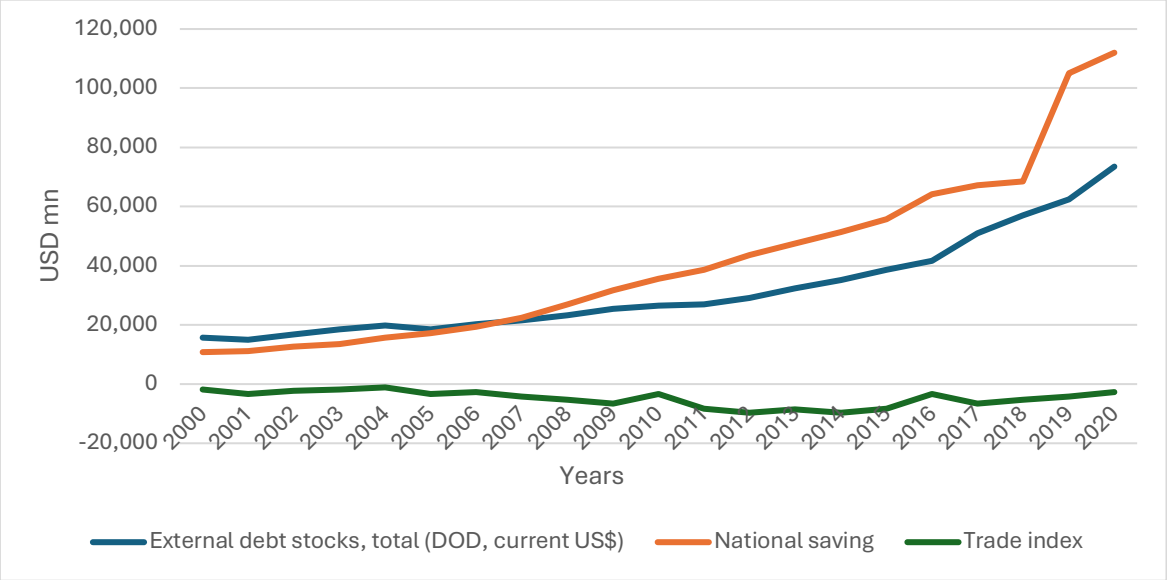
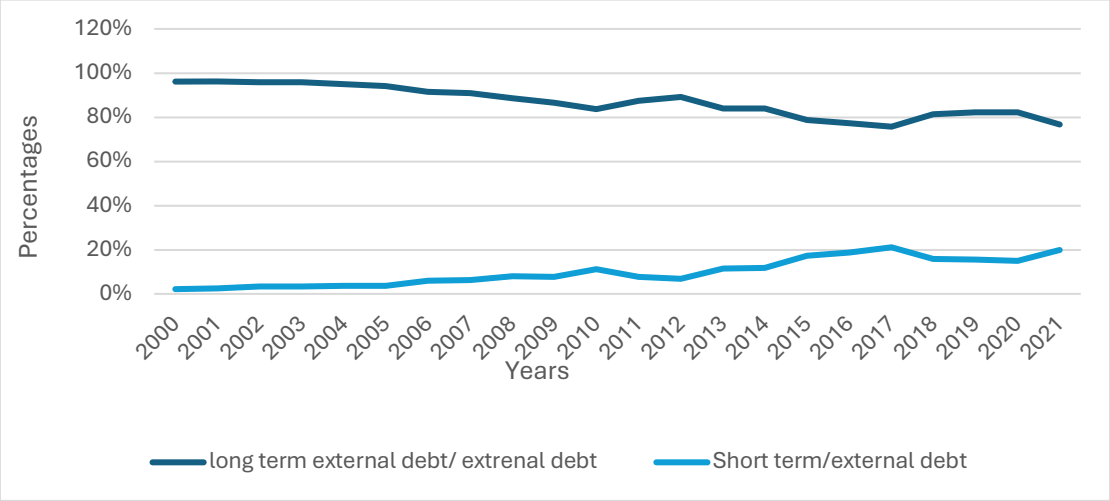


Figure 2.10: Long-term external debt v. short-term external debt as of total external debt (%) of Bangladesh from 2000 to 2021



One of the significant reasons for the slower growth in external debt in Bangladesh from 1971 to 2021 is that approximately 82.4% of foreign loans disbursed during this period were project loans. This allocation indicates that most external borrowing was directed towards socio-economic infrastructure and sectors such as health, education and social services rather than consumption-driven purposes. Despite this focus, Bangladesh's average external debt growth rate over the 22 years stood at 7.2%, surpassing the average GDP growth rate of 6%. Moreover, since attaining the status of a Lower Middle-Income Country in 2005, the concessional nature of external loans has diminished. The reduction in the grant component has limited Bangladesh's access to more favourable loan terms, subsequently increasing debt-service obligations owing to higher interest rates. Despite these challenges, Bangladesh has demonstrated the ability to maintain stable average total reserves sufficient to service its external debt. This approach highlights that the country has prioritised repayment capacity and financial stability over the accumulation of external debt for repayment purposes or consumption needs. The nation should concentrate on maintaining a stable and sustainable debt profile by continuing to prioritise long-term, project-based borrowing that supports socioeconomic development. Given the diminished availability of concessional loans and elevated debt-service costs, it is imperative to meticulously manage borrowing terms and bolster debt servicing capacity. Strengthening domestic savings and export growth remains paramount to support repayment capacity and mitigate external vulnerabilities.

2.2.1.4 Sri Lanka

Sri Lanka's external debt situation has evolved significantly since the country gained independence from the British in 1948. This evolution can be divided into six distinct periods: Period 1 (1948–1968)—Stability Post-Independence; Period 2 (1968–1977)—Slow Growth and Policy Shifts; Period 3 (1978–1995)—Rapid Debt Accumulation; Period 4 (1996–2003)—Fluctuations and Economic Shocks; Period 5 (2004–2009)—Tsunami and Debt Relief; and Period 6 (2010–2019)—Shift to Short-Term Borrowing. Each period is marked by unique economic and policy shifts that influenced the trajectory of the nation's external debt (Pathberiya & Wijeweera, 2005).

At independence in 1948, Sri Lanka's total external debt stood at USD 37.8 million and remained relatively unchanged until 1968. During this initial period, external debt primarily consisted of sterling loans incurred during the colonial era. However, starting in the 1950s, the country began receiving project-based assistance from nations such as China, the United States and the former Soviet Union, mainly in the form of loans and lines of credit aimed at specific projects. Between 1968 and 1977, Sri Lanka witnessed a slow growth in its outstanding external debt. This period saw significant policy changes, including the introduction of loans for commodity purchases in the late 1960s and the increasing participation of the private sector in external borrowing. The rise of external debt during this time was closely linked to export earnings and the policies of successive governments.

A pivotal moment occurred in 1977 when economic policies shifted from import substitution to export promotion and from inward-looking strategies to outward-oriented ones. These policy changes contributed to the gradual increase in external debt and marked Sri Lanka's early embrace of structural economic reforms in the late 1970s. Economic challenges such as balance of payments deficits, declining terms of trade, slow export growth, economic stagnation, heavy import dependency, and rising inflation ultimately compelled the country to undertake these reforms as a prerequisite for accessing structural loan facilities. Trade liberalisation in 1977 further influenced the growth of outstanding external debt.

The period from 1978 to 1995 saw a sharp increase in Sri Lanka's external debt, from USD 1,136 million in 1978 to USD 9,405 million by 1995. The government's extensive

investment in power and energy, irrigation, agriculture and significant currency depreciation were major contributors to this debt surge. Additionally, the private sector expanded its external borrowings, and by the mid-1990s, it accounted for approximately one-third of the total external debt. During these years, the proportion of government external debt grew substantially, rising from around 16% of GDP to 47% of GDP (Economic Progress of Independent Sri Lanka, 1998). From 1996 to 2003, the external debt levels displayed notable fluctuations. Initially, the outstanding debt had a downward; however, it rose again after 2000. By 2003, the external debt had increased from USD 8, 300 million in 2001 to USD 10,600 million, reflecting a 27% growth over the three years (UNESCAP, 2005). Key factors contributing to this trend included a widening current account deficit driven by military expenditures during the prolonged civil conflict (Pathberiya & Wijeweera, 2005). The share of government and government-guaranteed debt also rose significantly, with the government's long-term debt obligations comprising up to 85% of the total debt by 2003. The economy faced several severe shocks in 2001, including a prolonged power shortage, drought affecting hydropower and agriculture, the LTTE-led airport attack with estimated damages of USD 30,000 million, and a recession in the US market. Additionally, Sri Lanka's elevation to middle-income status in 1998 reduced access to concessional aid, prompting reliance on commercial borrowings with higher costs and shorter repayment terms even if the country has major structural weaknesses such as low trade percentage of GDP, low levels of FDI, declining tax revenues and foreign currency inflows, etc. These structural weaknesses and mismatch of forex inflows and outflows contract debt repayments.

The catastrophic tsunami significantly affected the economy from 2004 to 2009. In response, creditor nations, including Japan and the United Kingdom, offered debt relief measures such as write-offs and interest-free repayment periods. The Paris Club granted a one-year moratorium on Sri Lanka's debt repayments. While such debt relief packages were crucial for post-disaster recovery, they often came with stringent conditions that could hinder long-term economic stability (Pathberiya & Wijeweera, 2005). From 2010 to 2019, Sri Lanka and other nations grapple with global economic crises. During this time, the composition of Sri Lanka's external debt shifted from predominantly long-term to short-term borrowings, which posed increased repayment risks (see Figure 2.12). As highlighted in Figure 2.12, this rise was particularly pronounced between 2012 and 2015; while net national savings exhibit a gradual increase, they do not keep pace with the rapid

escalation in external debt, signalling potential concerns regarding financial sustainability. This shift was driven by the need to finance infrastructure projects and budget deficits, leading to a significant rise in debt accumulation, which reached USD 52,000 million by 2019 (see Figure 2.11). This trend continued into the COVID-19 pandemic, where external debt rose to USD 56,000 million by 2021, owing to economic downturns and currency depreciation during the lockdown period.

Figure 2.11: External debt, trade index/trade balance and national savings of Sri Lanka (USD mn) from 2000 to 2020

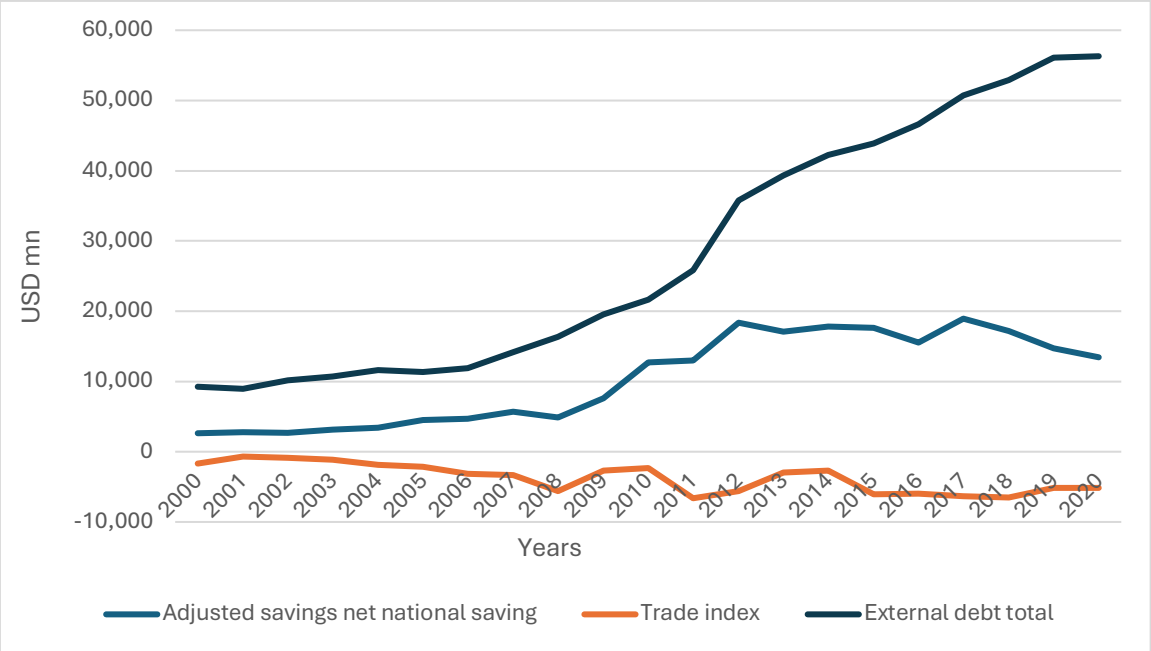
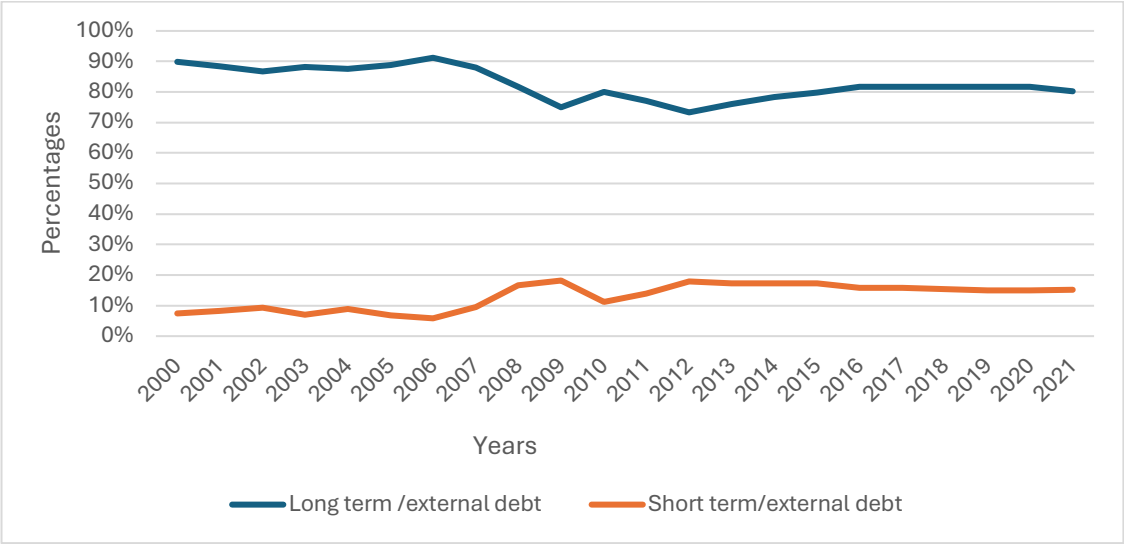


Figure 2.12: Long-term external debt v. short-term external debt as of total external debt (%) of Sri Lanka from 2000 to 2021

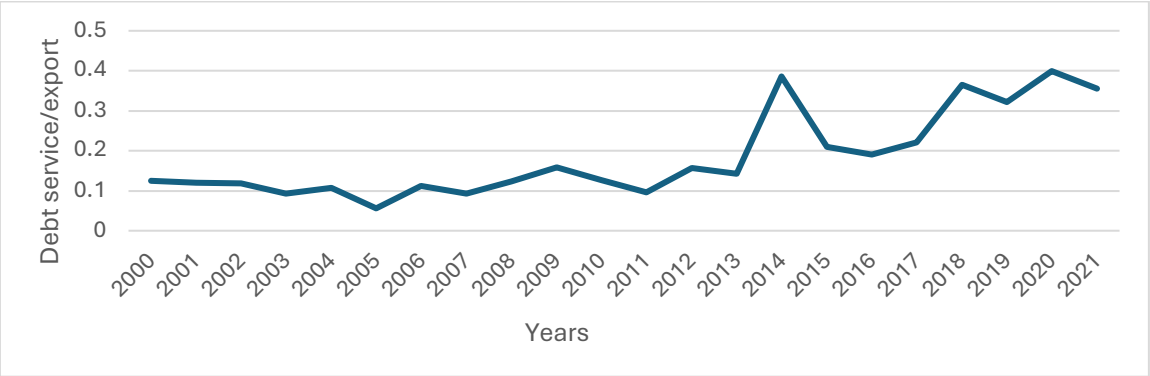


The economic and external debt burden on Sri Lanka has been exacerbated by the global disruptions caused by the COVID-19 pandemic, mainly owing to its significant impact on the country's key import and export markets. Sri Lanka's strong economic ties with China encompassing trade, investments, bilateral agreements and tourism have been crucial. However, China's economic slowdown during the pandemic substantially affected Sri Lanka, the second-largest source of imports and tourist arrivals. This has disrupted the procurement of essential raw materials, leading to delays in construction projects established through bilateral agreements. Local curfews have further intensified these disruptions, which have halted ongoing work. Moreover, the pandemic has restricted imports from other key trade partners with whom Sri Lanka maintains active economic and social connections, including Italy, Iran, South Korea, Germany, France and other European nations. Ordinarily, Sri Lanka's imports are distributed with 19% from China, 19% from India, 6% from Singapore and 9% from European countries, but the outbreak has effectively brought these imports to a halt.

On the export side, Sri Lanka's primary exports garments, tea and rubber products are sent to markets in the USA, UK and Europe. These sectors, however, have suffered from a decrease in demand during the pandemic, compounding economic challenges. Sri Lanka's severe debt situation is further highlighted by its debt-service ratio, which measures the proportion of export earnings dedicated to debt repayment. Historical data show that export earnings have often struggled to keep pace with the cost of borrowing,

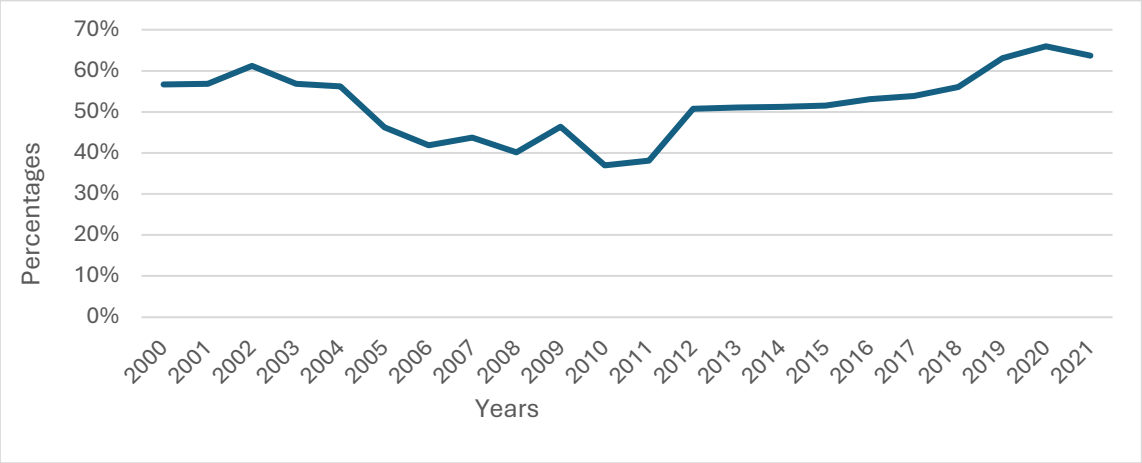
and in some years, negative growth has been observed. Recent figures indicate that nearly an entire year's export revenue would be required to meet the country's outstanding annual debt obligations for 2021, with approximately 35% of export earnings needed for annual debt servicing alone. This underscores the significant fiscal pressure and vulnerability posed by the high level of external debt (see Figure 2.13).

Figure 2.13: Debt-service/export-Sri Lanka from 2000 to 2021



Another way to assess Sri Lanka's debt situation is by examining the external debt as a percentage of GDP. Data from Figure 2.14 indicates that between 2000 and 2001, this debt-to-GDP ratio was steady at 57%. 2002, it rose to 61% before declining to around 56% in 2003–2004. From 2005 to 2011, the ratio experienced a gradual increase, averaging 42% annually, partly owing to measures taken to manage Sri Lanka's substantial external debt following the tsunami disaster. A significant rise occurred in 2012, bringing the ratio to 51%, and between 2012 and 2019, it grew further from 51% to 63%. The debt-to-GDP ratio remained at approximately 63% in 2020, reaching 64% by 2021. Proper allocation of resources obtained through external borrowing into infrastructure and development projects can promote GDP growth, mitigating concerns over debt management even when export earnings growth is low. Numerous studies, such as those by Borensztein (1990), Hoffman and Reisen (1991) and Savvides (1992), have explored the relationship between external debt and investment, concluding that substantial public spending and foreign exchange earnings are often directed towards debt servicing when a country is heavily indebted.

Figure 2.14: External debt-to-GDP-Sri Lanka from 2000 to 2021



Another significant concern for Sri Lanka is its rapidly aging population, a direct result of past social welfare policies that have led to a demographic transition. Sri Lanka stands out among developing countries, as it is projected to have over 20% of its population aged 65 and older by 2020–2025. This shift is occurring at an unprecedented rate compared with developed nations. While European countries took 45 to 145 years for their over-65 population to double, Sri Lanka is set to achieve this within just 20 years. This rapid demographic change will necessitate substantial revisions to social care structures.

The aging population also poses significant budgetary challenges. The current pension system requires urgent reform. Without changes, government pension obligations could consume approximately 20% of public expenditures, distorting fiscal priorities and impacting public investment and economic growth. There are nearly 400,000 pensioners in Sri Lanka, with pension-related expenses already accounting for 9% of current expenditures and around 2% of the GDP (Sanderatne, 2000).

The 2002 budget recognised the need for reform and introduced the first step toward establishing a funded pension scheme. However, these reforms must be accelerated and fully implemented to effectively address the challenges of an aging population and ensure fiscal sustainability. This approach will help maintain public investment levels and support long-term economic growth while ensuring adequate social support for older people.

In 2021, while Sri Lanka's external debt accounted for only 6% of South Asia's total external debt, the country’s external debt-to-GDP ratio was among the highest in the

region, trailing only Bhutan and the Maldives. At 64%, Sri Lanka's external debt-to-GDP ratio was striking, especially when coupled with a modest 8% growth in national savings (The World Bank, 2021). Over the past two decades, Sri Lanka's average GDP growth has been a mere 4%, while external debt has grown by 7% annually. This disparity low national savings and high external debt growth signals an urgent need for additional financial assistance. However, Sri Lanka's situation has become increasingly complicated. The government declared an economic emergency in response to escalating debt burdens and dwindling foreign exchange reserves. This makes it challenging to access further debt as foreign creditors become more cautious about the country's financial stability (Perumal, 2021). Considering the recent economic crisis and constrained reserves, Sri Lanka urgently requires comprehensive debt restructuring. This entails strengthening governance, reducing reliance on short-term and commercial borrowings, which increase refinancing and interest rate risks. Additionally, it is crucial to enhance fiscal discipline, increase national savings, and improve export competitiveness to better align debt servicing capacity with foreign exchange earnings. Furthermore, effective utilisation of borrowed funds towards productive infrastructure projects is essential to stimulate GDP growth and enhance debt sustainability.

2.2.1.5 Nepal

Nepal, a landlocked nation bordered by two significant regional powers, the People's Republic of China (PRC) and India, became a republic in 2008. Despite its rich cultural and geographical diversity featuring a variety of natural resources and a multiethnic, multilingual and multireligious society Nepal remains one of Asia's poorest countries. Its socio-economic challenges are compounded by frequent natural disasters, including floods, landslides, cyclonic winds and earthquakes, such as the devastating April 2015 earthquake, which exposed the nation's vulnerability.

Compared with its regional counterparts, Bhutan and the Maldives, Nepal is considerably larger in population, with 28.1 million inhabitants per 2014 UN data and a geographical area covering 147,181 km^2. However, Nepal's economic growth has been primarily driven by shifts in labour from lower to higher productivity sectors. Remittances play a pivotal role in the economy, contributing significantly to national income and reducing poverty and economic vulnerability for many households. However, despite these

contributions, Nepal continues to face persistent poverty and remains highly susceptible to exogenous shocks.

Regarding human development, the 2002 Human Development Report ranked Nepal 142nd out of 173 countries, underscoring its status as one of the least developed nations. According to the foreign aid policy of the Government of Nepal, Nepal's dependence on foreign aid has been substantial, financing an average of 55% of government expenditure. The country's initial venture into external borrowing dates back to 1963. Between 1996 and 2000, approximately 35% of government development expenditure was supported by external debt, and debt servicing accounted for nearly 11% of export revenue over the past 22 years.

Over the same period, Nepal's external debt grew at an average annual rate of 4.5%. Notably, in 2000, external debt decreased by 5% compared with the previous year, and it further declined by 4% in 2001. This reduction was primarily owing to a favourable balance of official reserves, a current account surplus and the concessional nature of long-term loans with extended maturities. As shown in Figure 2.15, Nepal's long-term external debt experienced a gradual and consistent increase over the two decades, rising from approximately $2,820 million in 2000 to $7,960 million in 2020**.** This steady growth suggests Nepal's increasing reliance on concessional and development-focused loans to finance infrastructure projects, public sector investments and economic development initiatives. Nepal's short-term external debt remained relatively low and fluctuating**,** ranging from $29 million in 2000 to $335 million in 2020. Compared with long-term debt, short-term debt was significantly smaller, indicating Nepal's preference for long-term concessional borrowing rather than short-term, high-cost loans.

Figure 2.15: Long-term external debt v. short-term external debt as of total external debt (%) of Nepal from 2000 to 2021

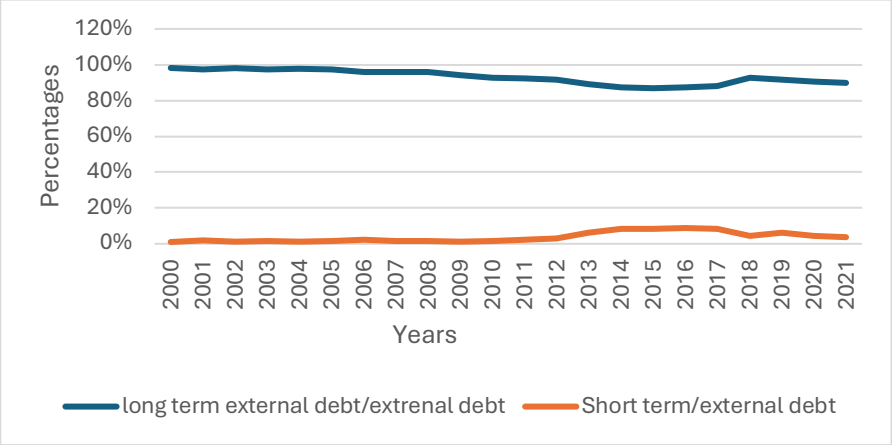
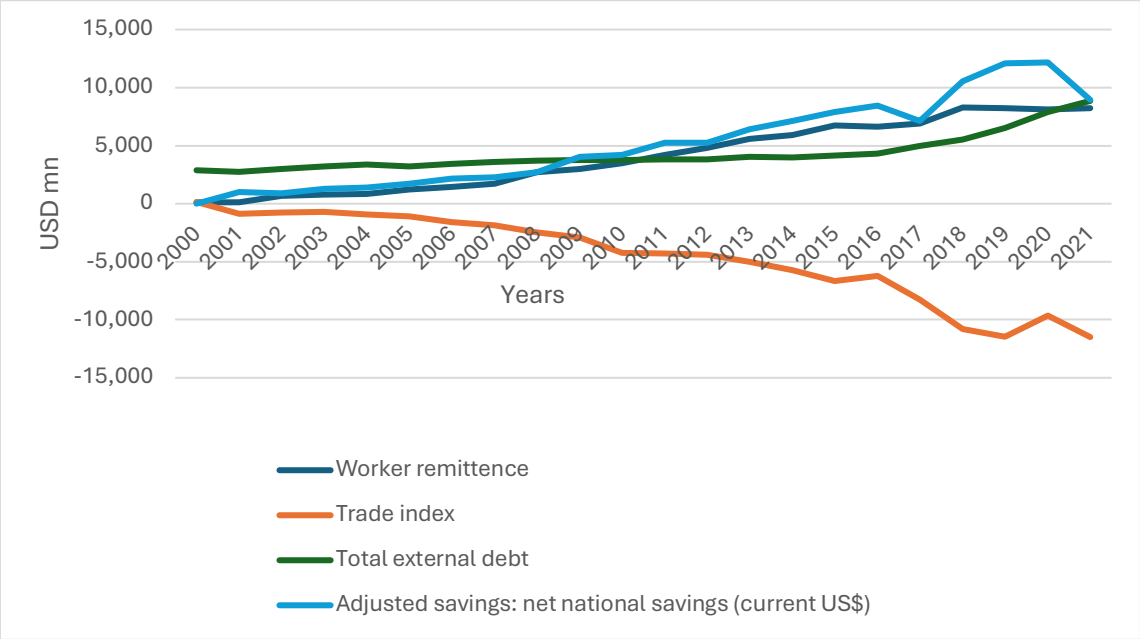


Figure 2.16: Trade index/trade balance, workers' remittance, national savings and total external debt (USD mn) of Nepal from 2000 to 2021



As depicted in Figure 2.16, despite the external debt reductions in 2000 and 2001, external debt levels rose again in 2002 and 2003 by 8% and 6%, respectively, driven by increased security expenditures, declining exports and a drop in tax revenue, as documented by annual reports from Nepal Rastra Bank. A subsequent 5% decrease in debt was observed in 2005, facilitated by a current account surplus and increased national revenue. From 2005 to 2011, debt growth remained subdued. 2012, another reduction occurred owing to solid remittance flows and a current account surplus, boosting foreign exchange reserves to $4,300 million, covering approximately 6.8 months of imports.

However, the following year saw a 5% rise in external debt and a slight 0.08% decline in 2014. From 2014 to 2016, external debt experienced a gradual 3% increase. Despite challenges such as declining exports and the impact of the 2015 earthquake, Nepal maintained a current account surplus mainly owing to robust remittance inflows, which accounted for nearly a quarter of the GDP. Figure 2.16 indicates that, although Nepal's trade index showed consistent deficits over 22 years, driven by higher imports than exports, remittances managed to turn the current account positive.

In 2017, external debt surged by 13%, driven by credit from the Crisis Response Window to address the aftermath of the 2015 earthquake. By 2019, a 15% increase was recorded, linked to a current account deficit owing to rising import costs for reconstruction efforts. Remittances continued to finance trade deficits, compensating for weak export and FDI performance. The most significant growth occurred in 2020, with a 17% rise in external debt as government expenditures outpaced revenue, partly owing to COVID-19-related fiscal measures. Over 22 years, Nepal's external debt growth has averaged 4.5%, surpassing the average economic growth rate of 4.2%. During this period, the external debt as a percentage of GDP has averaged 29%. Additionally, the country has maintained total reserves equivalent to 100% of its external debt, indicating a stable reserve position relative to its debt obligations. These patterns underscore that Nepal’s debt management strategy should prioritise resilience, sustainability, and the effective utilisation of concessional financing.

2.2.1.6 Maldives

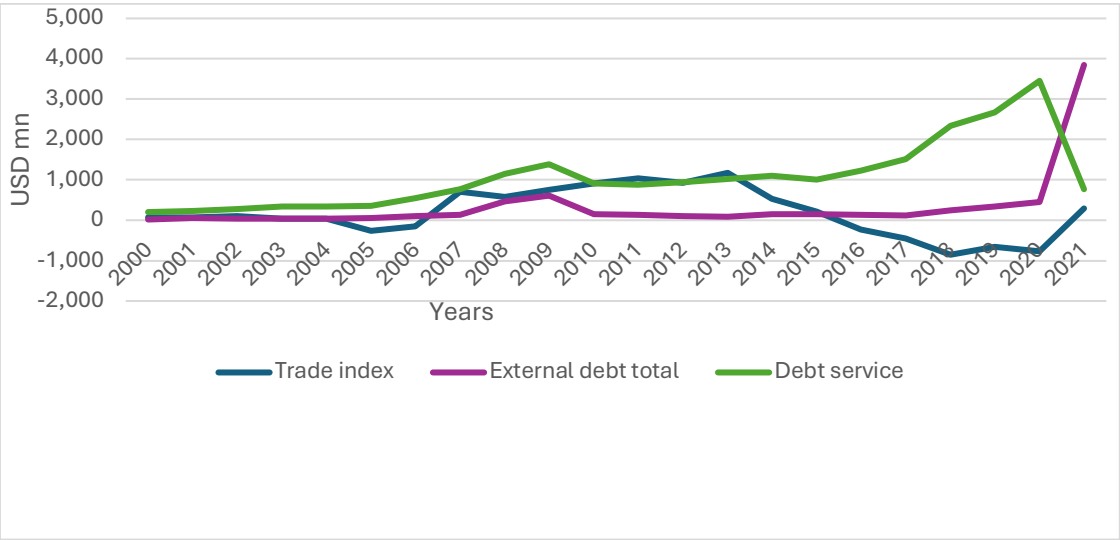
The Maldives, a small middle-income country with a low-lying topography, faces a clear existential threat from rising sea levels owing to global warming. The economy is highly reliant on two key sectors: fisheries and tourism. The geographical composition of the Maldives 90% covered by water and 80% of land less than one meter above sea level exposes it to environmental hazards such as sea level rise and tsunamis. The 2004 Asian tsunami devastated the country’s infrastructure, resulting in economic losses of approximately 62% of GDP (Maldives Monetary Authority, 2012). The nation’s sandy soil also constrains agricultural production with low water retention capacity.

Political instability after 2000 led to a 4% contraction in GDP growth, expanding fiscal deficits and increasing external debt by 12% to finance these deficits. External debt

growth continued post-2004, driven by the economic impact of the tsunami and a 40% rise in current account deficits as the country secured credit to develop its tourism and construction sectors. By 2007, long-term debt comprised most of external borrowing, with short-term debt representing only 2%. However, short-term debt began to rise from 2007 to 2010 (see Figure 2.17).

Figure 2.17: Long-term v. short-term debt as of total external debt (%) of Maldives from 2000 to 2021

Figure 2.18: Trade index/trade balance, debt services and total external debt (USD mn) of Maldives from 2000 to 2021



External debt growth persisted until 2009 before declining by 5% in 2010 as reserves increased owing to airport privatisation and a reduction in commercial loans. From 2012 to 2014, external debt growth resumed because of a widening current account deficit (see Figure 2.18). In 2015, the budget deficit was fully financed through domestic borrowing, and external debt growth decreased by 9% owing to repayments. By 2018, external debt surged by 35% as fiscal deficits were funded through foreign borrowing. Despite efforts to rely more on domestic borrowing, the Maldives experienced an average external debt growth of 11% over the past 22 years, compared with a mere 6% growth in GDP. At the same time, debt-service payments jumped significantly, rising from 19.74 million in 2000 to 761.02 million in 2021, highlighting the increasing strain on the country's financial resources owing to escalating debt obligations. These trends indicate that the Maldives should transition towards more concessional and long-term borrowing, augment domestic revenue generation, and implement a more resilient debt management strategy. Additionally, the nation's economic dependence on tourism and fisheries renders it vulnerable to external shocks, underscoring the imperative of diversifying the economy and investing in climate-resilient infrastructure to ensure stable and sustainable debt servicing in the future.

2.2.1.7 Bhutan

The Himalayan Kingdom of Bhutan, nestled between the PRC and India, has historically been classified as a low-income nation. Today, however, it has transitioned to a middle-income status, marked by a commitment to preserving its unique environment, culture, and religious heritage. This shift underscores the nation's strides in consolidating economic progress, even as development assistance gradually declines. A notable growth driver and source of economic vulnerability has been the rising contribution of tourism to Bhutan's national income (Guillaumont, 2017).

Natural disasters, including landslides and flooding, are recurrent in Bhutan and are predicted to increase as global warming raises the risk of glacial lake outburst flooding. Geopolitically, Bhutan has a long-standing history of regional tensions and remains heavily reliant on India, which accounts for 74% of its trade, reinforcing its economic and strategic dependence (Guillaumont, 2017).

Economically, Bhutan's reliance on hydropower production has defined its industrial landscape, while the transition from small-scale agriculture to more diversified manufacturing and service sectors has been modest. Most of the workforce remains in low-productivity agricultural activities. This economic structure, combined with a predominance of low-skilled and vulnerable citizens, heightens Bhutan's exposure to external economic shocks.

Before 2001, Bhutan's external debt levels were below those of Pakistan and Sri Lanka. However, post-2001, external debt increased to address financing needs, such as trade deficits and government expenditures surpassing revenue (see Figure 2.19). The Ninth Five-Year Plan (9FYP) saw substantial foreign inflows to complete critical power projects, including Kurichu, Basochu and Tala. Budget deficits surged to 6% of GDP double the previous year's figure. External debt grew, albeit slower, from 2004 to 2007 before declining in 2008 as major projects were completed. As shown in Figure 2.20, the increase in short-term external debt during this period led to a sharp rise in debt service between 2005 and 2008, resulting in debt accumulation (see Figure 2.21).

Figure 2.19: Trade index/trade balance, debt services and total external debt (USD mn) of Bhutan from 2000 to 2021

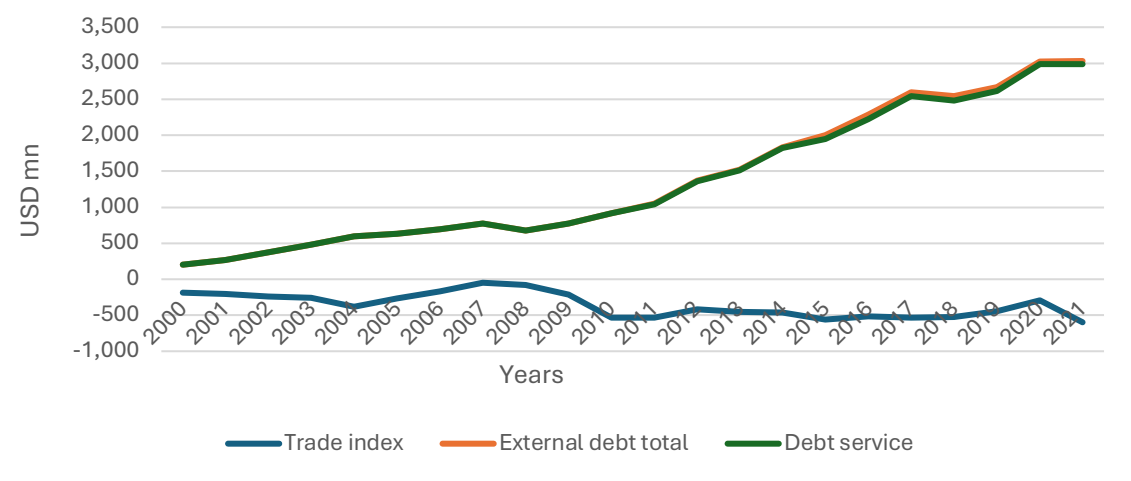


Figure 2.20: Debt-service-to-export ratio of Bhutan from 2000 to 2021

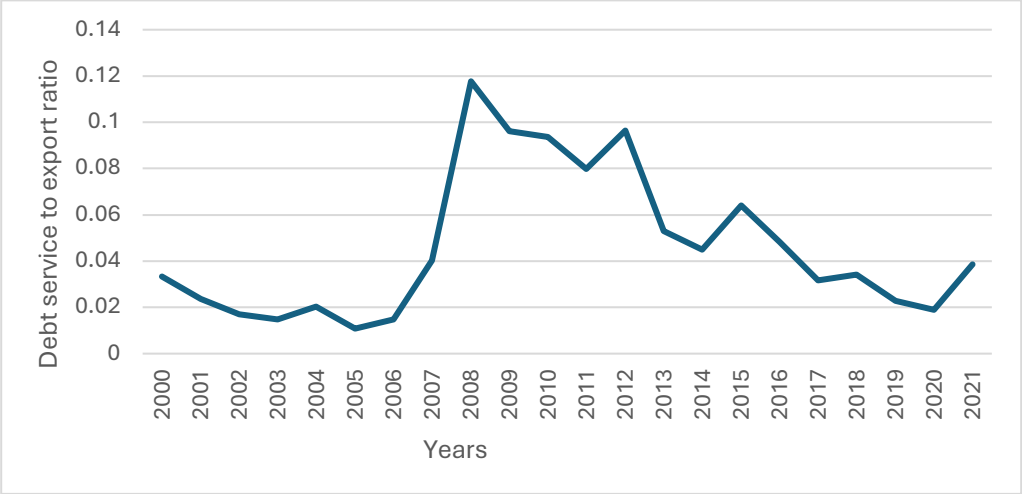
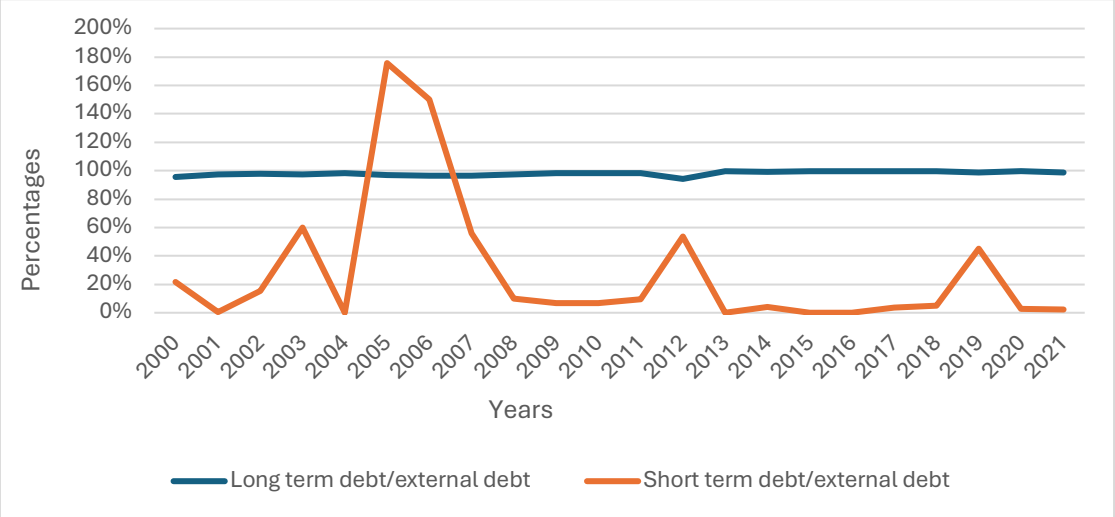


Figure 2.21: Long-term v. short-term external debt as of total external debt (%) from 2000 to 2021



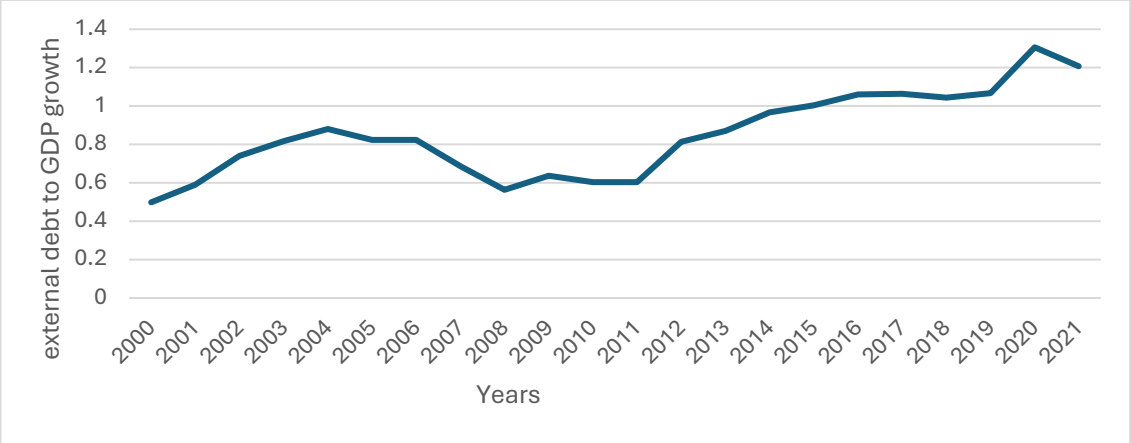
By 2008, Bhutan's external debt growth had decreased by 15% compared with 2007, which was attributed to reduced grants and debt inflows following the completion of the Tala project. In 2009, external debt growth rose by 11% owing to expanded current account deficits, which increased from 2% to 10% of GDP.

External debt growth was slow between 2010 and 2011, but 2012 recorded the second-highest growth since 2002, owing to financial flows needed for current account deficits and debt-service payments. A 5% decline in external debt growth was noted in 2013,

followed by a 17% increase in 2014, as external debt was leveraged for socio-economic development, primarily funded by India for hydropower projects.

Debt growth decreased slightly in 2015 but rose again from 2016 to 2017. By 2018, external debt constituted 97% of total public debt, mainly financing national deficits. The COVID-19 pandemic led to a significant contraction in GDP, which fell to 10.1% in 2020. By 2021, external debt reached 121% of GDP, averaging 84% over the 22 years (see Figure 2.22).

Figure 2.22: External debts to GDP growth in Bhutan from 2000 to 2021



On average, Bhutan's reserves over the last 22 years covered only 75% of its external debt, prompting the need for further borrowing to finance deficits, service debt and support investments. The average GDP growth of 6% during this period was overshadowed by an 11% average growth in external debt. This pattern signifies the necessity for Bhutan to diversify its economic activities, augment the efficiency and returns on hydropower investments, and enhance its reserve sufficiency. A judicious debt management strategy centred on export growth, fiscal discipline, and extensive economic diversification is imperative to mitigate long-term debt risks and sustain financial stability.

2.3 Comparative Analysis of External Debt Trends and Economic Characteristics Across South Asian Countries

From the country profile discussions, it is evident that South Asian countries are grappling with increasing levels of external debt. As illustrated in Tables 2.2 and 2.3, all South Asian countries recorded current account deficits over the past 22 years, highlighting their reliance on imports over promoting exports. Significant trade deficits further substantiate this dependency on imports. Additionally, these countries have shown limited diversification in export destinations, which exposes them to economic shocks in their primary trading partners. For example, Nepal's extensive economic reliance on India for trade, investment and remittances is a notable case.

Furthermore, a common characteristic across Pakistan, Bangladesh and Nepal is the reliance on remittance income to offset trade deficits. Another shared feature is that gross national expenditure has consistently surpassed government revenue, resulting in insufficient tax revenue to meet public financial needs. Over the last 22 years, these countries have prioritised consumption-driven government spending over income-generating investments. Government expenditures on military spending, inefficient urban infrastructure, subsidies and pension schemes have exacerbated fiscal pressures. Subsidies, such as grants for low-income households, are widespread across these nations.

Almost all South Asian countries have experienced high inflation rates and low economic growth. Domestic savings have been notably low compared with external borrowings, and total reserves have often been needed to cover external debt obligations. This shortfall has led countries to use external debt to finance government expenditures and address fiscal deficits. A common challenge among these countries is using external debt to repay debt, resulting in a reborrowing cycle and escalating debt levels. Debt-service payments as a percentage of exports remain high across the region, indicating significant financial strain. Most countries, except Bangladesh, rely on short-term external debt with variable interest rates. As low-middle-income nations, their access to concessional loans with favourable terms has diminished, leading to an increased reliance on commercial loans and sovereign bonds.

Additionally, external borrowings have often been used to address natural disasters, while low political stability has prompted increased military expenditure, which does not

contribute to income generation. Weak growth in domestic production, particularly in agriculture, has further driven these countries to import essential goods, compounding their economic challenge. The depreciation of local currencies has also escalated the cost of external debt repayments. The COVID-19 pandemic further exacerbated economic hardships, compelling these countries to rely heavily on external borrowing to sustain their economies.

Table 2.2: Macro-economic indicators of South Asian countries from 2000 to 2021

Country Name	Current Account Balance (BoP, USD) Millions*	Gross National Expenditure (USD) Millions*	Inflation %*	Military Expenditure (% Of GDP) *	Tax Revenue (USD) Millions*	Gross Domestic Savings (USS$) Millions *	Trade Deficit (USD) Million *
Bhutan	(306.06)	1,836.00	5.36	0	16.00	528.00	(360.00)
Bangladesh	(610.88)	173,037.00	6.28	1.24	2,717.00	59,743.00	(4,836.00)
India	(23,869.56)	1,684,400.00	6.14	2.68	26,402.00	529,895.00	(56,455.00)
Maldives	(460.12)	1,896.00	3.00	0	62.00	952.00	186.00
Pakistan	(5,017.00)	220,471.00	7.93	3.73	3,825.00	30,909.00	(13,357.00)
Sri Lanka	(1,702.00)	60,191.00	7.82	2.73	1,224.00	14,923.00	(3,498.00)
Nepal	(229.00)	22,450.00	6.28	1.53	289.00	6,555.00	(4,630.00)

Table 2.3: Average growth statistics of South Asian countries from 2000 to 2021

Country Name	External Debt Growth Rate %*	GDP Growth Rate %*	External Debt-to-GDP Growth*	Debt-Service-to-Export*
Bhutan	11	6.2	85	4.6
Bangladesh	7	6.0	23.7	7.5
India	8	6.0	20	13.3
Maldives	11	5.6	39	6.5
Pakistan	6	4.1	32	21.0
Sri Lanka	7	4.7	52	19.0
Nepal	5	4.2	29	10.5

*All these values are average.

As listed in Appendix A, the comparative analysis of external debt trends and economic characteristics across South Asian countries reveals shared and unique economic trajectories influenced by historical, political and structural factors. Bangladesh, Pakistan, India, Sri Lanka, Nepal, Bhutan, and the Maldives exhibit diverse pathways to achieving lower-middle-income status, driven by distinct economic policies and debt management strategies. Most countries in the region experienced significant initial economic challenges following independence, often relying on agriculture and primary industries. External debt became a critical factor for economic development, with increased borrowing for infrastructure, trade facilitation and addressing current account deficits. Worker remittances were pivotal in stabilising economies, especially in Bangladesh and Nepal, while external aid and concessional loans were essential for Bhutan and the Maldives. Political instability and governance issues were recurring challenges that affected economic growth and debt-servicing capabilities.

Each country's debt growth trajectory varied in response to internal and external pressures. Pakistan and Sri Lanka faced substantial challenges with high debt-servicing costs and reliance on commercial borrowing. In contrast, Bhutan and Nepal managed more sustainable debt levels through concessional funding and strategic investment in sectors like hydropower. India's diversified economy allowed it to moderate external debt growth despite significant borrowing for liberalisation and defence needs. Bangladesh showed a steady economic rise, maintaining manageable debt growth through effective long-term loan strategies.

The impact of external debt on economic stability differed significantly. Sri Lanka's reliance on imports and high debt led to a severe crisis in the 2020s, necessitating IMF assistance. The Maldives faced economic setbacks owing to over-reliance on tourism, particularly during global downturns like the COVID-19 pandemic. While stable, Bhutan's and Nepal's economic models remained vulnerable to external shocks and political disruptions. With its robust service and industrial sectors, India maintained resilience but faced challenges owing to fluctuations in oil prices and global economic conditions. The comparative examination underscores the importance of tailored debt management strategies, effective governance and economic diversification for long-term stability. While progress has been made across the region, future challenges include mitigating political risks, improving fiscal discipline and sustainable growth that reduces over-reliance on external debt and aid.

2.4 Summary of the Chapter

The external debt in South Asia has been growing at a rate that surpasses the region's GDP growth, creating significant risks for economic stability despite the fact that current savings are sufficient to cover existing debt obligations. Although the region continues to receive substantial external resources, it remains one of the poorest globally, with a large proportion of the population living below the poverty line.

India, as the largest economy in the region, accounts for the majority of South Asia's external debt, while countries such as Pakistan and Bangladesh maintain relatively moderate debt levels. Pakistan's external debt has largely been driven by persistent current account deficits, heavy import dependency and a consumption-driven investment model. In contrast, Bangladesh has experienced slower external debt growth, attributed to its focus on project loans and a stable reserve-to-debt ratio. Sri Lanka's external debt trajectory is shaped by shifts in government policy, economic challenges and structural reforms. Nepal, a landlocked nation, faces considerable economic challenges, including the impacts of natural disasters and an overwhelming reliance on foreign aid. While remittances contribute significantly to the economy, Nepal remains one of Asia's poorest countries, grappling with widespread poverty and high vulnerability to external shocks. Over the past two decades, Nepal's external debt has grown steadily, driven primarily by infrastructure projects and economic development initiatives, with an average annual growth rate of 4.5% and external debt accounting for 29% of its GDP. Bhutan, with its

economy heavily reliant on hydropower, faces structural challenges, including a large workforce engaged in low-productivity agriculture and a high proportion of vulnerable citizens. To address financing needs, particularly for infrastructure projects, Bhutan has seen a rise in external debt, leading to increased debt-service payments and a reborrowing cycle.

The countries of South Asia, including Bhutan, share common economic characteristics such as current account deficits, reliance on remittances and consumption-driven government spending. South Asian countries are confronted with a variety of economic challenges, and the impacts of external debt on stability vary considerably across the region. While India has demonstrated resilience, other countries, such as Sri Lanka, continue to struggle with severe crises owing to high levels of debt and dependence on imports. To ensure long-term economic stability, tailored debt management strategies, robust governance and economic diversification are critical for the region's sustained growth and resilience against external shocks.

Chapter 3: Review of Literature and Theoretical Foundations on External Debt in South Asia

3.1 Introduction

Chapter 2 examined the debt profiles of South Asian countries, emphasising the increasing significance of debt as a critical issue, particularly for nations in this region and, more generally, for developing countries around the world. The substantial share of external debt often constrains a country's ability to withstand external shocks, potentially stalling its development for extended periods (Central Bank of Sri Lanka, 2019). Consequently, external debt has become a subject of considerable attention. Many studies have explored various dimensions of external debt, including its impact on economic growth and the factors influencing its size and utilisation, often referred to as the determinants of external debt.

This chapter provides a comprehensive review of the existing literature on external debt, particularly emphasising its determinants, risk assessment and management strategies. The chapter is structured into five key sections. The first section presents a historical overview of external debt, outlining its classifications and the evolution of debt structures over time. The second section examines both the demand and supply dynamics of external debt, exploring the key drivers behind debt accumulation. Additionally, this section critically assesses the risks associated with external debt, including macro-economic vulnerabilities, financial instability and external shocks. It further evaluates the implications of the global debt crisis and the economic disruptions caused by the COVID-19 pandemic, highlighting their impact on debt sustainability in various economies. The third section focuses on the theoretical foundations of external debt, presenting relevant economic theories that explain debt accumulation and sustainability.

Following this, an extensive review of empirical studies is conducted, categorising the literature into three main research directions: (1) the determinants of external debt, (2) risk assessment frameworks for external debt and (3) external debt management strategies. This section also introduces the model specifications relevant to this study, establishing a methodological framework for subsequent analysis. The fourth section presents the conceptual framework, integrating key variables and theoretical constructs that underpin the study. This framework serves as a foundation for the empirical

investigation, ensuring coherence between the literature review and the research objectives. The final section synthesises the key findings from the reviewed literature, identifying critical research gaps that this study aims to address. This chapter lays the groundwork for the subsequent empirical study investigation by highlighting areas needing further inquiry.

3.2 The Evolution of Debt

Debt has long been recognised as one of the oldest forms of trade, predating both cash and barter systems. Graeber (2011) traces the origins of recorded debt systems to the Sumerian civilisation in Mesopotamia, around 3500 BC. In modern history, public borrowing underwent significant growth and structural transformation following World War II, driven by the need to finance post-war reconstruction in affected regions and support development in emerging economies.

Since 1970, global external debt has steadily increased, reaching approximately 58% of Gross National Income (GNI) in 2020 (International Debt Statistics, 2021). This sustained growth in debt occurred in four distinct waves (Kose et al., 2021). The First Wave (1970s–1980s) was characterised by extensive borrowing in Latin America, the Caribbean and Sub-Saharan Africa. Governments took advantage of low real interest rates and the growth of syndicated loan markets. However, this borrowing led to crises in the early 1980s, prompting initiatives such as the Brady Plan, the Multilateral Debt Relief Initiative (MDRI) and the Heavily Indebted Poor Countries (HIPC) initiative to mitigate these challenges. The Second Wave (1990s–2000s) was driven by the liberalisation of financial and capital markets, which enabled increased borrowing by corporations and governments in East Asia, the Pacific, Europe and Central Asia. This wave ended with financial crises in these regions between 1997 and 2001.

The Third Wave (2000s) was marked by a significant surge in private sector borrowing, particularly in Eastern Europe. However, the global financial crisis of 2008 and 2009 disrupted this trend and caused significant economic recessions. The Fourth Wave (2010–present) represents the most rapid increase in debt in emerging markets and developing economies (EMDEs) over the past five decades. Debt rose in 79% of these economies, with private sector borrowing, especially in China, driving much of the increase.

Additionally, debt levels in low-income countries have risen again following earlier declines owing to debt relief initiatives.

3.2.1 Debt: Definitions and Concepts

The evolution of debt underscores its importance in bridging gaps between a country's available resources and investment needs. Governments rely on borrowing to fund infrastructure projects, manage budget deficits and respond to natural disasters. This borrowing can be classified into two categories: domestic debt, owed to internal creditors and external debt, owed to international creditors (Ventura, 2021).

The World Bank (2022) defines debt as the total stock of fixed-term contractual obligations owed by a government at a specific time, typically the end of a fiscal year. Focusing specifically on external debt, The World Bank (2009) describes it as a 'debt owed to non-residents, repayable in foreign currency, goods or services.' Similarly, the IMF (2011) distinguishes between domestic debt obligations between residents of the same economy and external debt, which involves liabilities owed by residents to non-residents.

The external debt statistics (2013) publication by the BIS, Eurostat, IMF, OECD, Paris Club, United Nations Conference on Trade and Development (UNCTAD) and The World Bank offers a comprehensive definition of gross external debt. It refers to the total outstanding liabilities that require the debtor's payment of principal and/or interest to non-residents at some future date. This definition is notable for two key aspects:

1. It emphasises the transfer of resources between residents and non-residents.
2. It allows for evaluating international risk sharing, assessing income effects from debt variations, and understanding the political costs of defaulting on public debt.

This study adopts the definitions provided by the IMF and World Bank. Domestic debt is defined as liabilities owed by residents to residents within the same economy, typically in local currency. Conversely, external debt refers to liabilities owed by residents to non-residents, often denominated in foreign currency, which serves as a critical indicator of international financial obligations and encompasses both public and private borrowing, offering insights into a country's economic stability and risk exposure. This distinction is

vital for assessing the specific risks and implications of external debt, which is the focus of this research.

3.2.2 Classification of Debt

Debt can be classified in two ways: the first is based on the IMF, and the second is based on previous researchers.

First Classification

As shown in Table 3.1, the IMF has classified debt using various criteria to comprehensively understand its structure and implications. One way to categorise debt is by the type of financial instrument. Common instruments include monetary gold, special drawing rights (SDRs), currency and deposits, debt securities such as bonds, loans, insurance and pension obligations and other accounts payable or receivable. Another classification is based on the debt's original maturity, which differentiates between short-term debts with a repayment period of one year or less and long-term debts exceeding one year at issuance. Additionally, debt can be analysed by remaining maturity, distinguishing between short-term debts with less than a year until repayment and long-term debts with more than a year remaining.

Debt can also be classified by the currency in which it is denominated. This includes domestic currency-denominated debts issued in the borrower’s local currency and foreign currency-denominated debts issued in a currency different from the borrower’s domestic currency. Furthermore, the interest rate structure offers another perspective, with fixed-rate instruments maintaining a consistent interest rate throughout their term and variable-rate instruments having rates that fluctuate based on market conditions. Finally, debt can be categorised based on the creditor's residence, distinguishing between obligations to domestic creditors within the borrower’s country and external creditors outside the borrower’s economy. These classifications provide a structured framework for analysing debt and assessing its financial implications.

Table 3.1: International Monetary Fund debt classification

Classification	Description
By type of debt instrument	Monetary gold Special drawing rights (SDRs) Currency and deposits Debt securities Loans Insurance, pension, and standardised guarantee schemes Other accounts payable/receivable
By original maturity	Short-term, original maturity Long-term, original maturity
By remaining maturity	Short-term, remaining maturity Long-term, remaining maturity
By currency of denomination	Domestic currency denominated Foreign currency denominated
By interest rate	Fixed-rate instruments Variable-rate instruments
By residence of the creditor	Domestic creditors External creditors

Source: IMF (2013).

Second Classification

In addition to the IMF's debt classification, debt can be further categorised based on resources and voluntariness (see Table 3.2; Aybarç, 2018; Corina, 2013). Each classification provides insights into the nature and implications of debt.

Table 3.2: Second classification of debt

Debt according to voluntariness	Voluntary Debt Compulsory Debt
Debt according to resource	Internal debts (Resources of internal debts) Private Individuals and institutions Social security institutions and economic organisation Commercial banks and insurance companies Central bank External debts According to maturity Short-term external debt Medium-term external debt Long-term external debt According to usage Development credits Technical credit (assistance) Defence credit Donations According to creditors Intergovernmental borrowing Borrowing from international organisations Borrowing from private sources According to debtors Public sector external debt Private sector external debt According to repayment Foreign currency repayment Local currency repayment

Source: Aybarç, (2018); Corina, (2013).

As shown in Table 3.2, debt can be categorised as voluntary or compulsory. Voluntary debts are willingly incurred by individuals or institutions without any coercion from the government. In contrast, compulsory debts arise during periods of war, natural disasters or economic crises when the government enforces borrowing. Such debts can take the form of bonds obtained under duress or obligations imposed with moral or financial implications pressure.

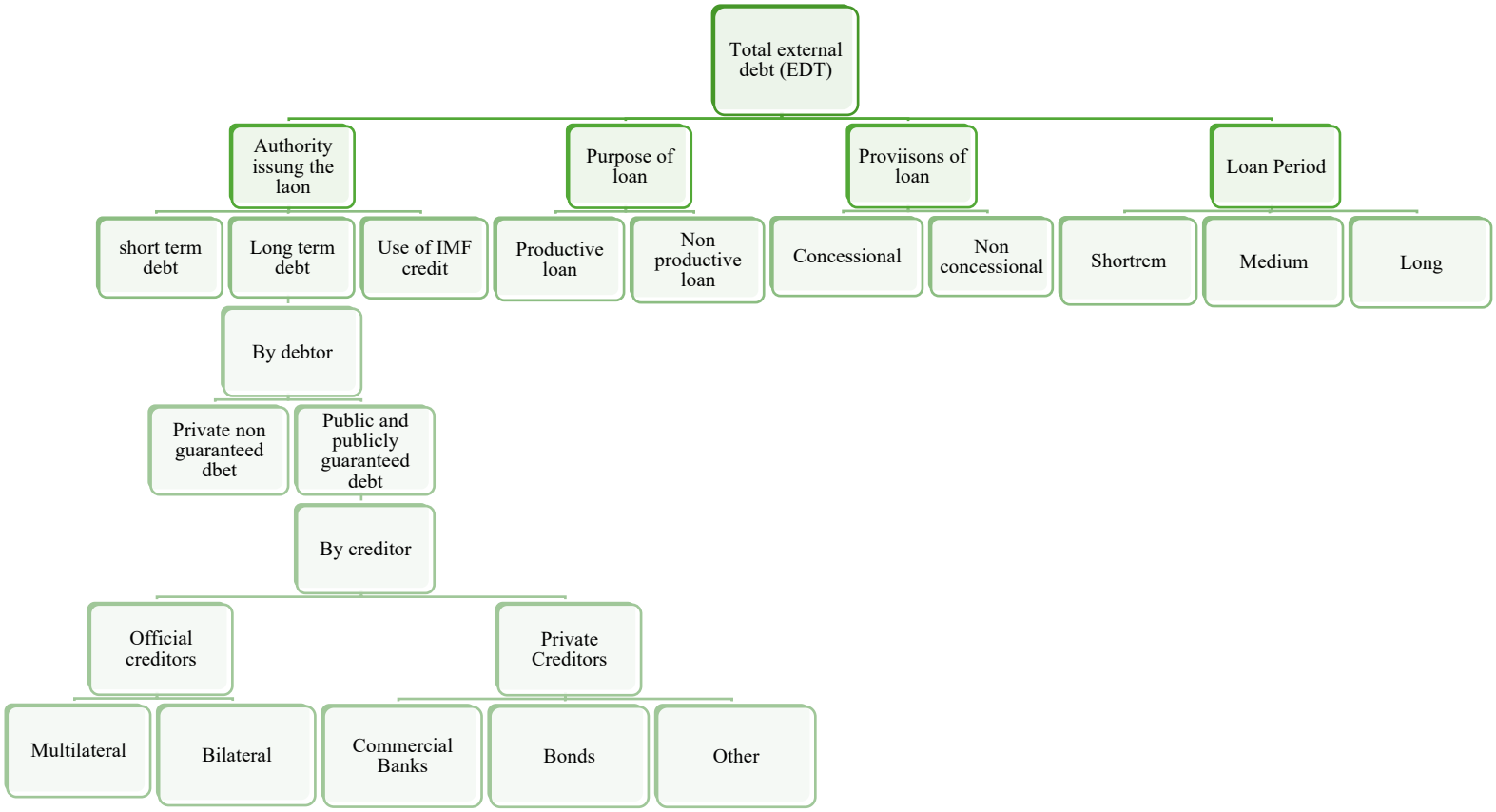
Debt can also be categorised by its source as internal or external debt. Internal debt is financed through domestic resources, involving funds transfers within the economy without directly impacting national income (Aybarç, 2018). In contrast, external debt consists of borrowing from foreign sources. It has a dual effect: it increases national income at the time of borrowing and reduces it during repayment owing to the outflow of funds for principal and interest payments (Aybarç, 2018; Corina, 2013).

External debt is considered riskier than domestic debt, as governments typically have greater control over domestic debt repayment through taxation. For instance, Japan's government debt in 2011 was 204% of its GDP, primarily financed domestically. This allowed it to maintain low credit default swap (CDS) rates and bond yields despite high debt levels (Das et al., 2010). As this study centres on external debt, it is essential to explore its types, components, underlying rationale and associated risks. The following sections will elaborate on these aspects, offering a comprehensive understanding of external debt.

3.2.3 Types and Components of External Debt

External debt can be classified based on several dimensions, including the authority issuing the loan, the authority receiving the loan, its purpose, its provisions, and its repayment period (Al-Mahdi, 2005; Shah et al., 2005). Figure 3.2 illustrates the various types of external debt, providing a framework for understanding its multifaceted nature.

Figure 3.1: Types of external debt



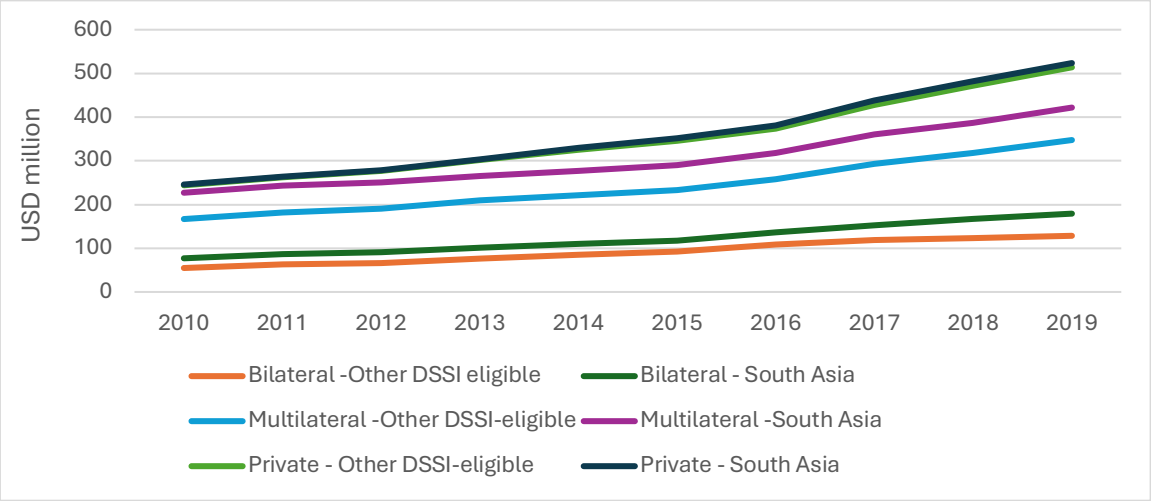
Source: International Debt Statistics (2016).

From the perspective of the authority issuing the loan, external debt is categorised into short-term, long-term and IMF credit. Short-term debt refers to loans repayable within one year, such as trade credits or bank overdrafts. Conversely, long-term debt applies to loans with repayment periods exceeding one year. It can be further segmented based on the borrower, including loans to private entities with or without government guarantees. This distinction underscores varying risk levels and creditor involvement, as seen in loans from institutions such as the IMF or private lenders, including commercial banks and bond markets (IMF, 2003).

South Asian nations, particularly Bangladesh, Pakistan, Nepal, Bhutan, Maldives and Afghanistan, are among the World Bank's International Development Association (IDA) borrowers. These countries are also eligible for the Debt-Service Suspension Initiative (DSSI), reflecting their financial challenges. Despite being the region's largest economy, India has become a notable source of South-South financing for low- and middle-income countries. As a G20 member, India participates in DSSI, offering debt-service moratoriums to requesting borrowers (World Bank, 2019).

According to the World Bank Debtor Reporting System (2019), as of the end of 2019, the six DSSI-eligible South Asian countries collectively held external public debt amounting to USD 135,000 million—over 25% of the total external public debt of all DSSI-eligible countries. Most of this debt was owed to official creditors, with private creditors accounting for only 7%, starkly contrasting the 25% private debt share in other DSSI-eligible countries.

Figure 3.2: External debt lenders to South Asia



Source: World Bank Debtor Reporting System (2019).

External debt stock in South Asia (see Figure 3.2) demonstrates varying distributions among creditors. At the end of 2019, USD 74,000 million (55%) was owed to multilateral creditors, USD 51,000 million (38%) to bilateral creditors and USD 10,000 million (7%) to private creditors. Multilateral creditors dominated in countries like Bangladesh (67%) and Nepal (87%), while bilateral creditors accounted for 74% of Bhutan's external public debt. Maldives and Pakistan, however, issued bonds in international capital markets, resulting in private creditors holding 35% and 11% of their respective external public debt. India, while being the World Bank's largest borrower, has also emerged as a significant bilateral creditor to low- and middle-income countries. By the end of 2019, India's bilateral public debt claims, primarily through India Exim Bank, reached USD 6,400 million, with South Asian neighbours accounting for 42% of these claims. Bhutan and Bangladesh were the primary borrowers, with Bhutan alone holding USD 1,900 million in outstanding obligations. The World Bank remains the largest multilateral creditor to South Asian countries, with claims of USD 35,000 million at the end of 2019, followed by the Asian Development Bank (USD 25,000 million). China was the largest among bilateral creditors, accounting for USD 24,900 million (49%) of South Asia's bilateral debt, followed by Japan, Russia and India. Notably, Maldives and Pakistan owed significant portions of their bilateral debt to China, reflecting the influence of Chinese financing in the region.

Accordingly, China has emerged as South Asia's most significant bilateral debt provider, especially following the global financial crisis (GFC). Post-GFC, Chinese authorities

shifted their policy focus towards diversifying investment locations and reducing dependence on US-based opportunities. This strategy involved investing substantial savings domestically and globally (The Economist, 2013). As part of this shift, President Xi Jinping launched the Belt and Road Initiative (BRI) in 2013, formerly known as the One Belt One Road (OBOR) initiative. The BRI seeks to transform global trade flows by recreating historical land and maritime trade routes, with Chinese funding playing a central role. The BRI spans six economic corridors across over 60 Asian, African and European countries. Proponents argue that this ambitious initiative could address the slow pace of cross-border transit times while supporting new market connections through investments in roads, ports and railways. For instance, Shah et al. (2018) highlighted the China–Pakistan Economic Corridor (CPEC) as a flagship BRI project, valued at USD 68,000 million. This corridor connects China to the Arabian Sea via Pakistan's Gwadar Port, representing the largest initiative under OBOR. Similarly, countries like Bangladesh, Sri Lanka and the Maldives have sought Chinese financial assistance for infrastructure projects under various corridors, gradually increasing their debt to China (Council on Foreign Relations, 2019).

Chinese state-owned enterprises, including China Exim Bank, China Investment Corporation, China Port Holdings Company and China Harbour Engineering Company, have been instrumental in financing BRI projects. To complement these efforts, the Chinese government established the Asian Infrastructure Investment Bank (AIIB) with USD 100,000 million in pledged capital. The AIIB aims to enhance the region's social and economic infrastructure. Unlike Western-dominated institutions, China's lending frameworks often exclude conditions related to democracy, human rights, governance or environmental factors, allowing developing countries to access substantial funding more readily. By April 2017, China's Ministry of Transport reported that over 130 countries had signed bilateral and regional transport agreements under OBOR. Morgan Stanley projects that China's total investment in OBOR could reach approximately USD 1.3 trillion by 2027 (Curran, 2018; Ponomarenko et al., 2017; Demiryol, 2019; Zou, 2018).

Despite its potential benefits, the BRI has faced growing scrutiny, particularly in South Asia. Policymakers in the region have raised concerns over high interest rates charged by Chinese institutions for large-scale infrastructure projects in Sri Lanka, Pakistan, Bangladesh and Nepal (The Economic Times, 2017). The lack of transparency

surrounding lending rates has further fuelled these concerns. For instance, Moody (2019) reported that nearly 40% of loans to OBOR participants carried annual interest rates exceeding 5%. In comparison, Sri Lanka received funding for port development at an interest rate of 6.3%, whereas soft loans from the World Bank and Asian Development Bank (ADB) offered rates between 0.25% and 3% (Moramudali & Panduwawala,2022)

The opaque nature of agreements and project execution has also raised public scepticism about the long-term benefits of BRI investments. This dissatisfaction has contributed to the electoral defeat of several OBOR-friendly leaders in South Asia. Successors who sought to renegotiate terms with China often found withdrawal prohibitively costly. Moreover, renegotiated agreements favour China, further reinforcing concerns about the initiative's impact. For instance, Sri Lanka's second phase of the Hambantota Port project highlighted these challenges. Unable to accelerate industrialisation, Sri Lanka eventually ceded control of the port to a Chinese state-owned enterprise under more favourable terms for China. Critics view this outcome as evidence of an exploitative strategy to acquire essential assets from vulnerable economies (Ramachandran, 2019). Another significant critique of the BRI is the perceived 'debt trap' it creates for smaller, fragile economies. Opponents argue that such debt traps enable China to exert control over strategic assets and resources. Conversely, Zhang (2019) contends that this narrative oversimplifies the broader changes facilitated by the BRI, dismissing its transformative potential.

According to the purpose, the following category of external debt is classified into productive and non-productive loans. Productive loans aim to enhance the economic productivity of the debtor country by funding infrastructure or industrial projects, thereby generating returns that contribute to debt servicing and national growth. Examples include investments in transportation systems or manufacturing facilities that create long-term economic benefits. In contrast, non-productive loans, often used for military spending or consumption, do not enhance productive capacity and, as such, impose a long-term burden on the economy, negatively impacting the balance of payments (Chand, 2000; Folornso et al., 2008).

External debt is divided into concessional and non-concessional loans based on loan provisions. Concessional loans, often called soft loans, have favourable terms such as low interest rates, long repayment periods and a grant element, making them akin to foreign aid (Shah et al., 2005). Non-concessional or hard loans have higher interest rates and

shorter repayment periods. They are typically used for industrial or commercial imports (Shah et al., 2005).

External debt can also be grouped by loan period into short-term, medium-term and long-term loans. Short-term loans are repayable within a year and often fund current operations. In contrast, medium-term loans have repayment periods ranging from one to ten years and are commonly used for development projects, such as the loans by The World Bank to finance projects (IMF,2003). Long-term loans, with repayment periods exceeding ten years, are primarily used for large-scale infrastructure or economic development projects, often with repayment terms extending to 50 years, such as those of international financing institutions (World Bank, 2004). This detailed classification of external debt highlights the varied nature of borrowing and the need for effective debt management to balance the economic benefits with potential risks.

3.2.4 Evaluating the Rationale and Risk Implications of External Debt

External borrowing offers debtor nations both opportunities and challenges. While it can provide essential financial resources, especially for developing countries, the associated risks and costs often outweigh the benefits of debt crises (Suma, 2007). A thorough understanding of the rationale for external debt and its associated risks is essential to evaluating its overall significance relative to domestic borrowing. The rationale for external debt can be examined from two perspectives: the motives of borrowing countries (deficit units) or the demand for external debt and the motives of lending countries (surplus units) or the supply of external debt.

3.2.4.1 The Demand for External Debt

Deficit units often resort to external debt owing to the need to bridge domestic savings and investment gaps. As countries expand their roles, deepen international financial integration and aim to achieve socio-economic targets, their demand for financial resources intensifies. This often leads to challenges such as inadequate revenue and savings, prompting governments to turn to external borrowing to meet these financial shortfalls (Çöğürcü & Çoban, 2011). Chenery & Strout (1966) highlight the insufficient domestic savings in developing countries, necessitating borrowing to maintain economic growth and stabilise consumption. Additionally, low government revenue, budget deficits

and economic challenges, such as unemployment and regional imbalances, compel countries to seek external financing (Gohar et al., 2012; Tinbergen, 1976).

The necessity of external debt to deficit units can be further explained using the macro-economic perspective of external debt. In an open economy, external debt is crucial in addressing macro-economic gaps. Unlike a closed economy reliant solely on domestic debt, open economies operate interdependently, substituting domestic debt with external borrowing owing to economic liberalisation (Kiptoo, 2012). The two-gap model illustrates how an open economy's saving-investment gap equals the trade gap, with insufficient domestic savings requiring external borrowing to meet investment needs (Chenery and Strout, 1966). For instance, a persistent current account deficit and depleted reserves often lead to rising external debt, as seen in the 1980s Latin American debt crisis (Long, 1981). Similarly, the three-gap model accounts for private and public sector imbalances (Bacha, 1990). Fiscal deficits occur when private consumption exceeds income and government expenditure surpasses revenue. Additionally, trade deficits, where import costs exceed export earnings, necessitate external borrowing to address these financial gaps (Waheed, 2017). Debt accumulation can be further explained through models considering savings, investments and interest on past debt. For instance, current debt increases when savings are insufficient to cover investments, highlighting the link between rising external debt and domestic economic imbalances.

Further, mismanagement in developing countries has become a significant problem, as can be seen by the aggravation of foreign debts (Afxentiou, 1993). A substantial portion of such debts, obtained during the seventies and at the beginning of the eighties, was wasted one way or another on several unproductive purposes such as bribes, smuggling or otherwise. In addition, the movement of capital abroad became widespread in most developing countries during the seventies and the beginning of the eighties, corresponding to the growth in the demand for the foreign debts of these countries. Capital flight is capital sheltered abroad and implies lost resources that could have been used to generate employment and produce goods and services (Kar & Cartwright-Smith, 2006). As a result, capital flight represents lost potential government revenue that could have underpinned social services that support economic growth (Epstein, 2005). Interestingly, developing countries that experience capital flight are often highly indebted (Epstein,

2005). Naturally, this phenomenon negatively affected the economic conditions of the developing countries (Rojas-Suarez, 1990).

3.2.4.2 The Supply of External Debt

The supply of external debt is influenced by a variety of political, economic, historical and moral factors that shape the lending decisions of creditor nations. Politically, lending countries often provide external debt to align developing nations with their strategic interests, thereby supporting diplomatic ties and enhancing geopolitical influence (Şeker, 2006). Economically, external lending serves multiple purposes, including expanding markets for industrial products, boosting export volumes and securing access to essential raw materials necessary for sustaining industrial growth. Moreover, lending promotes the growth of international trade, benefiting both creditor and debtor nations by integrating developing economies into the global trade network (Ozer, 2014). Historical and cultural connections also influence lending patterns, as developed nations may extend loans to maintain economic and political influence in regions with historical ties, such as former colonies, thereby reinforcing their dominance in global affairs (Ozer, 2014). Furthermore, moral considerations, including poverty alleviation and disaster relief, motivate external lending as a way of promoting global economic stability and humanitarian support. Together, these factors illustrate the complex motivations behind the supply of external debt, reflecting a mix of economic self-interest, strategic diplomacy, historical connections and ethical considerations and commitments.

3.2.4.3 Risk of External Debt

As discussed in the demand and supply of external debt, external debt is significant in bridging financing gaps for countries with budgetary shortfalls. However, while external borrowing can provide essential funds, it carries substantial risks that must be carefully managed. The study identified five primary risks associated with external borrowing: exchange rate risk, refinancing risk, export earnings fluctuation risk, risk on government revenue and expenditure and the debt crisis. One of the primary risks associated with external borrowing is exposure to foreign exchange rate fluctuations. Governments have little control over the currency used to repay foreign debt, which creates vulnerability to exchange rate risk. This is particularly true for countries with floating exchange rates, where currency depreciation increases the cost of debt repayment (Bordo & Meissner,

2006). In response, many emerging market economies peg their currencies to those of larger, more stable economies, such as the US dollar, to reduce the risks associated with exchange rate fluctuations (Reinhart & Calvo,1999). However, this approach still makes repaying external debt more difficult and increases the likelihood of default. When a country pegs its currency, it must maintain sufficient foreign exchange reserves to defend the fixed rate. If the country faces a trade imbalance, capital outflows, or external shocks (e.g., rising US interest rates), it may struggle to maintain the peg, especially if its exports are not earning enough foreign currency. The consequences can be severe, leading to a reduction in external funding and potentially causing economic instability. Since most external debt is denominated in foreign currencies (commonly US dollars), any depletion in reserves or loss of investor confidence can sharply raise default risk. Moreover, under a peg, the country cannot use monetary policy freely to stimulate growth or depreciate its currency to improve competitiveness. This inflexibility can worsen the fiscal burden and debt servicing capacity during crises, increasing the likelihood of default. Eichengreen and Hausmann (1999) described this issue as 'original sin,' explaining that countries with higher levels of original sin face greater volatility in exchange rates and overall macroeconomic conditions.

Another risk tied to external borrowing is the tendency for countries to accumulate more debt by refinancing old debt with new lending. Developing countries, in particular, often struggle with inadequate revenue, low domestic savings and poor returns on investment projects, which force them to take on new loans to meet old debt obligations (Yanik, 2019). Combining new loans and high interest rates creates a vicious cycle of increasing debt. As Krugman (1989) observed, when debt repayments exceed a country's repayment capacity, these obligations function like a marginal tax, leaving the government with fewer resources to invest in economic growth. Cohen (1989) further argued that the potential benefits for the borrower are minimal, as the new loans merely pay off previous debts rather than contributing to the country's long-term economic development.

Another critical factor in managing external debt is maintaining high export earnings. If a country's export earnings grow more slowly than the cost of servicing its debt, it risks facing an ongoing debt crisis. Sri Lanka's experience demonstrates this problem, as negative export growth in some years has made it increasingly difficult for the country to

meet its debt obligations, contributing to its ongoing debt crisis (Pathberiya & Wijeweera, 2005).

A significant risk of external borrowing is the impact on government revenue and public spending. High external debt payments absorb a substantial portion of government revenue, leaving less available for essential public services such as healthcare, education and infrastructure development. Kar and Cartwright-Smith (2006) argued that significant debt-service obligations deplete foreign exchange reserves and savings that could otherwise be invested domestically. Similarly, Abuzaid (2011) highlighted that often, servicing external debt requires increased taxes or reduced government spending, creating a negative relationship between economic growth and external borrowing.

Studies by Oxfam (1999) and Savvides (1992) showed that often, servicing external debt crowds out public spending on key areas like social infrastructure and human capital development. Stephens (2001) found that for every additional USD 1 spent on debt service, education spending decreased by USD 0.33, and government wage expenditure fell by USD 0.14 to USD 0.23. Pattilo et al. (2003), using data from 61 developing countries, confirmed that high debt service increases government interest payments and raises budget deficits, reducing public savings. Similar findings have been reported in studies of Pakistan (Akram, 2011; Rais & Anwar, 2012), Nigeria (Ezeabasili, 2010), and other developing countries, showing that external debt negatively affects social and economic conditions. The subsequent significant risk of external borrowing is the possibility of debt crises, which can destabilise economies, particularly in developing nations.

3.2.4.4 The Debt Crises in Developing Countries

For many developing and even some developed countries, debt has become a persistent challenge, often escalating into what commentators describe as a 'debt crisis.' The origins of debt crises in developing nations can be traced back to the oil price shock of 1973–1974. During this period, the Organization of the Petroleum Exporting Countries (OPEC) restricted oil supply, causing a sharp rise in global oil prices. This surge severely affected oil-importing nations, including many newly independent African countries, increasing their financial vulnerabilities.

The excess profits earned by OPEC nations were funnelled into Western commercial banks, which subsequently sought new borrowers to lend these funds. Developing countries, needing financial assistance to offset the increased cost of oil, became attractive borrowers. Consequently, during the latter half of the 1970s, a significant portion of capital flows to developing countries originated from commercial banks in a process known as 'petrodollar recycling.'

The second oil price shock in 1979 exacerbated economic difficulties globally, triggering a severe recession that disproportionately affected oil-importing developing nations. South Asian countries, heavily reliant on energy imports, faced escalating trade deficits and inflationary pressures, further straining their balance of payments. Commercial banks extended additional loans in response, worsening their debt burden and leading to financial instability. This culminated in the second major debt crisis, with its severity becoming evident in August 1982 when Mexico declared its inability to meet external debt repayments. Many of the world's poorest nations were forced to cut essential public spending on healthcare, education and infrastructure to meet rising debt obligations. Debt crises continued to afflict developing nations over the following decades, with the 1997–1998 Asian financial crisis being a critical turning point.

While the crisis originated in Thailand with the collapse of the baht, its ripple effects severely affected South Korea, Indonesia, Laos, Hong Kong and Malaysia, and South Asian economies such as India and Sri Lanka also faced capital outflows and currency depreciation. A decade later, the 2007–2009 GFC, triggered by the US mortgage market collapse, further destabilised economies worldwide. South Asian countries, particularly those with high external debt, suffered from declining exports, reduced FDI and capital flight, and worsening fiscal deficits. Even after these crises, developing nations, including those in South Asia, remain highly vulnerable to external shocks, as demonstrated by the COVID-19 pandemic, which led to severe economic contractions, increased borrowing and further exacerbated debt distress in the region.

The COVID-19 pandemic has emerged as the worst global humanitarian crisis since the Second World War and the most severe economic crisis since the Great Depression of the 1930s (Gopinath, 2020). Many countries with pre-existing fiscal vulnerabilities characterised by heavy reliance on external grants, tourism revenues, remittances and low tax bases struggled to implement countercyclical policies to mitigate the economic impact

of the pandemic. Additionally, COVID-19 placed immense pressure on currency reserves, worsening liquidity risks (UNDP, 2021). For example, nations such as Bhutan, India, Maldives, Pakistan and Sri Lanka, which already had gross debt levels exceeding 60% of GDP pre-pandemic, experienced more severe economic setbacks than other regions (Tandon et al., 2020). These crises underscore the critical need for cautious external borrowing, especially for developing and transitioning economies. While foreign aid may be necessary to bolster healthcare systems and economic recovery, it must be managed prudently to avoid exacerbating debt vulnerabilities.

3.2.4.5 Impact of the Debt Crisis

The consequences of debt crises are far-reaching, with substantial economic and social repercussions, as highlighted by extensive empirical literature. Furceri and Zdzienicka (2012) estimate that debt crises can lead to a 10% decline in output over an eight-year period, while De Paoli et al. (2009) calculate a 5% reduction in economic production over ten years. The impact is particularly severe in developing regions such as South Asia, where economies are highly dependent on external borrowing for development. Rising borrowing costs further compound the issue; Borensztein and Panizza (2009) estimate a 400-basis-point increase during crises, and Bahaj (2014) notes that each 100-basis-point rise in sovereign borrowing costs leads to a 2% decline in industrial production growth and a 0.9% rise in unemployment.

In South Asian economies, these financial shocks manifest through currency depreciation, capital flight and declining investment, as seen during Sri Lanka's ongoing debt crisis and Pakistan's periodic struggles with external financing. Trade and economic growth also suffer significantly. Rose (2005) uses the gravity model to predict that sovereign defaults result in an 8% annual decline in bilateral trade, a particularly concerning statistic for export-driven economies in South Asia. Historical evidence further demonstrates the adverse effects of debt crises. Kaminsky and Pereira (1996) document a sharp drop in Latin American growth rates during the 1980s debt crisis, falling from 6% in the 1970s to an average of 1.8% in the 1980s. Similarly, during the Asian financial crisis of 1997–1998, South Asian countries such as India and Bangladesh faced capital outflows, depreciating currencies and slowed economic growth despite being less directly involved in the crisis.

The IMF (2012) highlights that countries affected by global debt crises often experience rising debt levels, misallocated investments, prolonged periods of income stagnation, and high unemployment trends that continue to affect South Asian economies dealing with debt distress. The severe consequences of debt crises underscore the need for South Asian nations to adopt prudent fiscal policies, diversify their economies and implement structural reforms to reduce dependence on external borrowing. Based on the classifications, rationale and risks of external debt and its role in debt crises, the literature has developed many theories about foreign borrowing, which have influenced economic policies in both developed and developing regions. Therefore, this chapter now transitions to critically examining the theoretical perspectives underpinning the complexities and implications of external borrowing.

3.3 Theoretical Perspectives on External Debt

Numerous economic theories have explored the dynamics of external borrowing, providing valuable insights into its rationale, risks and broader economic implications. This study integrates key theoretical frameworks and models that explain the necessity and consequences of external debt, including gap theories, the classical view, the Keynesian perspective, the neoclassical approach, debt cycle theory, the debt Laffer curve, crowding-out effects and debt overhang. Additionally, in formulating hypotheses, the study draws upon theories such as dependency theory, public choice theory and the efficient market hypothesis, which offer perspectives on corruption, political stability and stock market performance. The following section discusses these theoretical perspectives in greater detail to establish a solid conceptual foundation for the empirical investigation.

3.3.1 Gap Theories

Historically, as discussed in Section 3.2.4, external borrowing has been regarded as a crucial mechanism to bridge the savings-investment gap and stimulate economic growth. Foundational theories supporting this premise are collectively referred to as the ‘gap theories,’ which emphasise the role of external financing in addressing domestic resource constraints and facilitating long-term development. The gap theories present three key mechanisms governments can use to finance their expenditures and development initiatives: borrowing, taxation and printing money. Among these, the two-gap theory proposed by Chenery and Strout (1966) and the three-gap theory advanced by Bacha

(1990) emphasise the necessity of external borrowing when certain constraints arise. These constraints include a growing disparity between national savings and domestic investment, foreign exchange limitations, and fiscal deficits (Beyene & Kotosz, 2020). When a country experiences a trade imbalance specifically a trade deficit it faces a growing foreign exchange gap, as it must spend more on imports than it earns from exports. This deficit can deplete government reserves, which are crucial for stabilising the economy and financing imports. If these reserves dwindle, governments may have to rely more heavily on external borrowing to finance the gap, as indicated in the gap theories. In this way, borrowing becomes a necessary tool to manage the trade balance gap. One of the main criticisms of gap theories, particularly the two-gap theory, is the significant reliance on external borrowing to bridge the gaps.

However, the two-gap and three-gap theories also emphasise that excessive borrowing, without careful management of trade balance and reserves, can lead to unsustainable debt levels and threaten economic stability. Borrowing to cover both fiscal deficits and foreign exchange shortages can escalate external debt, which may eventually undermine the country's ability to meet its debt obligations, particularly if its trade balance does not improve. As the gap theories suggest, while borrowing is essential in certain circumstances, it must be used cautiously to prevent the erosion of government reserves and ensure long-term economic stability. Consequently, the theoretical discourse on external debt and economic growth is broadly divided into two contrasting perspectives.

The first perspective supports a positive relationship between external debt and economic growth, drawing on the Keynesian framework. Proponents of this view argue that external borrowing can stimulate more intensive economic growth when borrowed funds are allocated productively. This argument is substantiated by empirical studies, including those by Warner (1992), Easterly (2003), and Cline (1984). Warner (1992) demonstrated a positive correlation between external debt and investment, while Easterly (2003) provided additional empirical evidence that reinforces this connection. Cline (1984) asserted that external debt contributes positively to growth, provided that the marginal productivity of borrowed funds is equal to or greater than the associated principal and interest payments. Under such circumstances, external debt promotes economic advancement in lending nations.

Conversely, the second perspective argues that external borrowing negatively affects economic performance and should be approached cautiously. This argument is based on classical economic theory, the neoclassical paradigm and the debt cycle theory. Together, these schools of thought highlight the possible harmful effects of external borrowing on a nation's economy and question its effectiveness as a feasible financing strategy for governments.

3.3.2 Keynesian View on External Debt

From the Keynesian perspective, external debt is perceived not as a burden but as a strategic tool to stimulate government expenditures, essential for mitigating unemployment and economic downturns caused by insufficient demand. Keynesians argue that the prolonged unemployment of private resources can impede national income growth, necessitating government intervention through debt-financed spending to support economic recovery. They further assert that external borrowing does not inherently impose a long-term burden on future generations, as the debt may catalyse investment, ultimately enhancing the living standards of the current generation (Şeker, 2006,).

Moreover, Keynesian economics highlights that many developing countries possess untapped or underutilised physical, natural and human resources. These nations can stimulate economic growth and development by borrowing and investing these resources. However, the risk arises when debt-financed investments fail to generate returns sufficient to cover debt obligations, potentially burdening future generations if the returns do not surpass debt-servicing costs (Nelasco, 2012). Additionally, the emphasis on borrowing may create a disincentive for fiscal responsibility, causing governments to depend too much on external debt instead of pursuing sustainable fiscal policies.

3.3.3 Classical View on External Debt

In stark contrast to the Keynesian approach, the classical economics school, pioneered by Adam Smith, posits that governments should avoid borrowing. Smith contended that borrowing was a form of deferred taxation, meaning governments could finance expenditures through debt instead of immediate taxation, which would eventually need to be repaid. Classical economists argued that government borrowing could lead to wasteful spending and inefficient use of capital, ultimately stunting national economic growth. They also emphasised that, effectively, borrowing today burdens future

generations, as the accumulated debt must be serviced from future resources (Ozkan, 2006). Thus, the classical view advocates for borrowing only in exceptional and emergencies, cautioning against its regular use for funding routine government expenditures (Çöğürcü, 2011; Gurdal & Yavuz, 2015).

Despite its scepticism toward borrowing, the classical view acknowledges the importance of debt in the development process, as noted in Section 3.2.4. However, borrowing has consequences, as this study notes in the 'risk of external debt'. By investigating the applicability of the classical view, the study will examine whether external debt has a detrimental effect on the economies of South Asian nations.

3.3.4 Neoclassical View on External Debt

Neoclassical growth theory, introduced by Robert Solow and Trevor Swan in the 1950s, presents another perspective on external debt. According to the neoclassical theory, individuals and governments are presumed to act rationally and with foresight (Şeker, 2006). From this viewpoint, external debt generates future tax liabilities, which, in turn, reduce both consumption and savings in the present. This reduction in consumption and savings ultimately limits the capital available to future generations (Ulusoy, 2017). Neoclassical economists argue that financing public expenditures through debt implies that future taxes will be raised to repay the debt, necessitating higher savings in the current period to accommodate the anticipated tax increases (Gurdal & Yavuz, 2015). This shift in fiscal burden can have negative socio-economic repercussions, exacerbating the challenges of sustainable economic growth.

3.3.5 Debt Cycle Theory

The debt cycle theory, as described by Avramovic et al. (1964), explains how countries move through different stages in their use of external debt during development. In the first stage, countries borrow from abroad to cover the gap left by low domestic savings. In the second stage, domestic savings begin to play a greater role in financing investment, but external borrowing is still needed to support growth. In the final stage, domestic savings become sufficient to meet investment needs, reducing reliance on external debt. However, the theory also warns that relying too heavily on short-term loans can trap countries in a cycle of borrowing and repayment difficulties, as short-term debts often

need to be refinanced quickly and can lead to future repayment problems if not managed carefully.

While this theory provides valuable insights, it faces certain limitations. Many developing countries, particularly those in emerging markets, remain trapped in the first phase, unable to transition to the later stages of the debt cycle owing to insufficient domestic savings and inadequate economic growth. Additionally, the theory assumes that debt ratios alone are adequate to assess the sustainability of external debt. This assumption is insufficient, as the long-term sustainability of debt depends on factors beyond mere ratios, necessitating a more nuanced examination of the external debt burden. This study also incorporates the concepts of the debt Laffer curve, debt crowding out and debt overhang to analyse the impact of external debt on economic growth.

3.3.6 Debt Laffer Curve, Debt Crowding Out and Debt Overhang

As described by Dogruel and Dogruel (2007), the Laffer debt curve indicates that increasing debt levels correlate with a lower likelihood of successful repayment. Sachs, and Williamson (1986) posits that there is a significant threshold for external debt, past which additional foreign borrowing is no longer feasible. Soldatova (2006) discovered that external debt increases growth only up to a specific level, after which its effect turns negative. In their study of 93 developing nations, Pattillo et al. (2002) observed that external debt adversely influences per capita GDP growth once it surpasses 160–170% of exports or 35–40% of GDP, a finding that is consistent across various methodologies. Cohen (1993) also describes a Laffer curve connection, asserting that foreign borrowing stimulates growth until it reaches a point where it becomes detrimental. Similarly, research by Greene and Villanueva (1991) and Elbadawi (1997) corroborates this by showing a negative correlation between debt and investment when debt-to-GDP ratios exceed certain limits. Debt crowding out occurs when a significant portion of a country's export revenues is diverted to debt servicing, leaving fewer resources available for investment in growth-promoting activities. Prebisch's (1950) terms of trade theory support his notion by explaining how deteriorating trade terms can further hinder debt repayment, trapping countries in a cycle of debt.

The debt overhang hypothesis suggests that additional borrowing leads to diminishing returns once a country’s debt surpasses a critical threshold. Krugman (1988) characterises

debt overhang as a situation in which the value of debt exceeds the expected repayments, resulting in negative consequences for investment. As external debt rises, investors anticipate lower returns, and governments may increase taxes to service debt, which further deters investment. This effect is exacerbated when fiscal reforms necessary to manage debt are seen as too costly or ineffective, diminishing the motivation to pursue them. While Keynesian theory regards debt as an asset, prolonged deficit spending can strain long-term economic prosperity.

Krugman (1987) elaborates that significant debt-service obligations require high tax rates, which hinder capital formation and worsen capital flight. Dornbusch (1988) further emphasises that government-managed debt servicing in developing countries with substantial debt leads to limited improvements in trade balance from currency devaluation. As a result, any increase in output or exports is partially allocated towards debt repayment. Borensztein (1990) defines debt overhang as a situation in which a debtor country receives minimal benefits from additional investment owing to its debt-servicing obligations.

When foreign obligations surpass the country's resources, debt payments are negotiated between the debtor and creditors, often linking payments to economic performance. This connection discourages investment, as a portion of the returns from increased production is directed towards debt servicing, thereby undermining national economic interests. Sachs (1990) and Kenen (1990) highlight external debt overhang as a key factor hindering economic growth in heavily indebted countries. High debt-service payments, uncertainty and negative incentives discourage private investment and impede the implementation of structural adjustment programs. Claessens and Diwan (1990) categorise debt crises into weak and strong debt overhang categories. They observe that debt overhang can instigate a crisis when debt levels exceed a country's repayment capacity. They also explain how a commitment mechanism can mitigate some adverse effects by boosting productive investment. In countries with excessive debt, the government may find itself in a liquidity trap, where substantial debt burdens impede investment, further worsening the debt crisis. Agenor and Montiel (1999) argue that expectations of inflationary measures or fiscal adjustments to meet debt obligations heighten economic uncertainty, stifling investment and growth. Karagol (2002) argues that when a country's debt exceeds its repayment

capacity, future debt-servicing obligations depend on output levels. This dynamic discourages domestic and foreign investments by lowering returns on investment.

The negative impacts of debt overhang are also evident in Pattillo's (2004) empirical research, which indicates that high debt levels diminish total factor productivity growth. This happens because significant debt-service obligations lessen the motivation for the government and the private sector to invest in reforms that boost productivity. Furthermore, debt overhang results in a misallocation of resources, with investments often directed towards short-term projects at the expense of those that could yield long-term benefits. Cordella et al. (2005) present evidence of a nonlinear relationship between debt and growth in HIPCs. They show that debt negatively affects growth at intermediate levels but does not influence it at very high or low levels.

Reinhart and Rogoff (2010) and others have shown that the marginal cost of debt can surpass its marginal benefit, leading to negative growth impacts. Murshed (2019) argues that a heavily indebted nation may struggle to borrow more owing to the significant debt-servicing burden, which diverts economic gains towards debt repayment instead of increasing growth. Debt overhang is also described as a ‘foreign tax’ on domestic production (Wijeweera et al., 2005) since debt-service obligations effectively ‘tax away’ returns on domestic investments, thus discouraging future investment (Krugman, 1988; Calvo, 1998; Clements et al., 2003). Apart from the primary theories discussed above, which consider the rationale and consequences of external debt, the study has also considered the following theories in formulating the hypotheses to investigate external debt.

3.3.7 Dependency Theory

The theory of dependency addresses various concerns, with its primary focus being developing countries' reliance on foreign capital, a key element of this theory. According to this concept, developed nations utilise foreign capital to enforce a progressive arrangement that does not align with the domestic needs of developing nations (Ijirshar, et al., 2016). The theory posits that external borrowing functions as modern-day slavery, wherein developed nations demand more than what they have provided, further ensnaring developing nations once their colonies and robbing them of their claimed independence (Omodero & Alpheaus, 2019). Developed nations exploit the inflow of funds from debt-

servicing arrangements to undermine developing nations, obstruct their desired economic development, and expand their empires to maintain strength and dominance.

The outcome of relying on external debt accumulation is that it becomes a mechanism through which industrialised countries exert control over unindustrialised nations, determining the type of projects, level of expertise, equipment to be supplied, number of expatriates and local workers, and all pricing decisions. Additionally, the theory asserts that dependence on external funds leads to excessive fund outflow, known as debt servicing, which drains the already limited resources of HIPC and impedes their economic growth. However, this theory is overly deterministic, assuming that developing countries cannot overcome dependency owing to their historical exploitation. However, countries like Japan, South Korea provide counterexamples, as both managed to break free from dependency through strategic state intervention**,** industrialisation**,** and technological innovation (Friedmann & Wayne, 1977)**.**

3.3.8 Public Choice Theory

All decisions regarding external debt are ultimately shaped by government actions to reap benefits or face risks and avoid becoming overly dependent on developed countries. These decisions play a critical role in determining political stability and controlling corruption. Consequently, this study draws upon public choice theory, which elucidates how political decisions, driven by the self-interest of various political actors, can significantly affect a country's economic outcomes, including its external debt policies. By integrating public choice theory, the study explores how government choices influence the country's external debt dynamics, political stability and corruption control.

Public choice theory is an essential field of economics that arose from examining taxation and government expenditure. This theoretical framework originated in the 1950s and achieved international acclaim in 1986 when James Buchanan, one of its key proponents (alongside Gordon Tullock), was awarded the Nobel Memorial Prize in Economic Sciences. Public choice theory broadens economic reasoning to include political behaviour, suggesting that political agents such as government officials, policymakers and citizens primarily operate out of self-interest, influenced by incentives and constraints instead of a deeper commitment to collective welfare. This perspective is crucial for

examining the effects of governance structures and institutional frameworks on political stability, corruption and external debt management (Buchanan & Tullock 2003).

The information regarding a country's performance and political stability aids investors and creditors in making decisions about whether to invest in or lend to that country. Malkiel (2005) illustrates that equity prices are influenced by factors such as current earnings, performance prospects, and a nation's economic health. Therefore, stock prices, which reflect market information, should also be analysed to determine the factors influencing external debt, as external debt signifies an investment decision by other countries. Thus, the study seeks to incorporate the efficient market hypothesis when assessing the impact of stock market performance on external debt.

3.3.9 Efficient Market Hypothesis

The efficient market hypothesis, proposed by Fama (1970), is grounded in the idea that an 'efficient' capital market accurately reflects all available information, allowing firms and investors to make sound investment decisions. The theory suggests that security prices follow a random walk and that investors cannot achieve abnormal returns owing to the widespread accessibility of information. The efficient market hypothesis is categorised into three forms: the weak form, where security prices account for all historical information; the semi-strong form, where prices react to publicly available information; and the strong form, where prices reflect past, present, and future information (Fama, 1970).

Accordingly, the theoretical perspective on external debt includes various economic and political views that explain the causes, uses, and effects of debt in developing economies. These theories assess when external debt can promote economic development and when it risks financial vulnerability. The gap theories, particularly the two-gap and three-gap models, identify borrowing to address issues like savings-investment gaps, foreign exchange shortages, and fiscal deficits. They recognise the need for external borrowing in specific situations but warn against over-reliance that leads to unsustainable debt. The Keynesian view supports borrowing to stimulate growth and employment, especially when resources are underutilised. Conversely, classical and neoclassical theories argue that external debt creates future tax burdens, reduces savings, and may impair economic efficiency. The debt cycle theory outlines the stages of debt dependency, with many

developing countries trapped in the initial phase due to low domestic savings. Additionally, concepts like the debt laffer curve, debt overhang, and debt crowding out illustrate the nonlinear and adverse effects of high debt on growth, investment, and productivity. Dependency theory critiques external borrowing as a tool for control by developed nations, while public choice theory emphasises how political motives and governance quality influence debt decisions and economic results. The Efficient Market Hypothesis (EMH) suggests that all available information about a country' s debt and economic state is reflected in asset prices. If markets are efficient, rational investors will lend to countries only when expected returns outweigh risks, thus affecting interest rates, capital flows, and debt sustainability. Collectively, these theories form a framework to understand external debt dynamics in developing economies, stressing the significance of effective fiscal management, institutional quality, and long- term sustainability.

After thoroughly examining theoretical perspectives on external debt, it is crucial to critically assess their practical implications and evaluate how well these frameworks align with observed real-world dynamics. Analysing empirical findings provides a deeper understanding of these theoretical constructs' applicability, relevance and limitations in addressing the multifaceted nature of external debt. Consequently, the following section systematically reviews previous empirical studies, offering nuanced insights into the determinants, consequences and patterns of external debt, thus bridging this complex subject’s theoretical and empirical dimensions.

3.4 Previous Research Findings

As far as external debt is concerned, the following four areas of prior research can be identified:

1. The relationship between external debt and economic growth or development
2. The factors influencing the size and utilisation of a country's debt, often referred to as the determinants of external debt or indicators of indebtedness
3. The measurement of risks associated with external debt
4. The strategies for debt management.

3.4.1 The Relationship Between Debt and Economic Growth/Development

Empirical research on the relationship between external debt and economic growth reveals diverse and often conflicting findings. Some studies indicate that external debt positively affects economic growth up to a certain threshold, beyond which it has a detrimental effect. Others suggest a nonlinear relationship, highlighting the complex interactions between these variables.

For instance, Reinhart and Rogoff (2010) and Woo and Kumar (2015) identified a nonlinear relationship between government debt and economic growth, noting a critical debt ratio threshold of about 90%. Ighodalo Ehikioya et al. (2020), utilising panel data from 43 African countries from 2001 to 2018, revealed a nonlinear association between public external debt and African economic growth. Ale et al. (2022) examined five South Asian nations and identified a significant negative relationship between external debt and economic growth in the short and long term. Their findings suggest South Asian countries should reduce their reliance on external debt by promoting domestic savings and investments.

Similarly, Pattillo and Ricci (2001) pointed out that external debt harms economic growth when debt-to-export ratios exceed 160–170% or when debt-to-output ratios surpass 35–40%. In analysing Pakistan's macro-economic policies, Ramzan and Ahmad (2014) reported that external debt negatively affects growth, which could be alleviated through sound macro-economic strategies. They also found that bilateral external debt is more detrimental than multilateral debt. Siddique et al. (2016), examining 40 HIPCs from 1970 to 2007, demonstrated that external debt negatively influences short- and long-term growth, supporting the debt overhang hypothesis.

Conversely, some studies, such as Adegbite et al. (2008) and Dauda et al. (2013), highlight that external debt promotes growth up to a certain threshold, beyond which it becomes harmful. Jayaraman and Lau (2009), analysing six Pacific Island economies, concluded that higher debt levels positively affect growth in the short term, emphasising the existence of a causal relationship. Additional evidence from Cecchetti et al. (2011), Checherita-Westphal and Rother (2012), and others indicates that in developing economies, adverse effects on economic growth arise when debt reaches 60% of GDP, while for developed nations, the threshold is about 80%. For example, Checherita-

Westphal and Rother (2012), examining Eurozone countries over 40 years, found that debt ratios exceeding 90–100% of GDP adversely affect long-term growth. However, Kasidi and Sai (2013) identified a positive short-term relationship but no long-term association between external debt and development in Tanzania. Several studies argue that there is no causal relationship between external debt and economic growth. For instance, Ogunmuyiwa (2011) found a weak and statistically insignificant correlation relationship using data from Nigeria spanning 1970 to 2007.

3.4.1.1 Gap Identification

The literature on the relationship between external debt and economic growth has demonstrated a lack of consistency in its findings. Some studies identify a positive relationship between external debt and economic growth, while others observe a negative impact beyond a certain debt threshold. Additionally, there are indications of a nonlinear relationship. Moreover, some scholars argue that external debt affects economic growth only in the short term, whereas others contend that the impact is long-term. Given that the debt-to-GDP thresholds vary among developed and developing countries, the findings cannot be generalised across all regions. Furthermore, owing to the diverse debt management practices, economic growth and financial structures, the generalizability of the findings has proven challenging. Thus, these inconsistencies in findings underscore the necessity for further investigations into region-specific relationships between external debt and economic growth.

3.4.2 The Determinants of External Debt/Indicators of Indebtedness

The research examining the determinants of external debt varies significantly in terms of the types and numbers of factors analysed. Barro (1979) argued that inflation positively affects debt levels, while income negatively influences debt in the context of the United States. Eichengreen and Portes (1986) identified openness and export instability as critical contributors to foreign indebtedness in developing countries during the 1930s. Similarly, Ojo (1989) employed an econometric approach to demonstrate that the ratio of foreign debt stock to GDP for approximately 80 African countries between 1976 and 1984 was negatively correlated with exports and GDP growth rates but positively associated with imports and population growth.

Tiruneh (2004) employed a panel data methodology to investigate foreign indebtedness in developing countries during the 1980s and 1990s. This study identified poverty, debt servicing, foreign exchange gaps, capital flight and income instability as the primary causes of external debt. Tiruneh noted that sluggish economic growth, unstable income levels, reliance on external loans to cover import bills, and the burden of prior debt-service payments significantly contributed to high debt levels. Furthermore, the study highlighted the diversity among developing countries, stemming from differences in colonial heritage, creditworthiness and geopolitical factors, as significant reasons for elevated debt levels.

3.4.2.1 From 2008 to 2019

Colombo and Longoni (2009) examined the determinants of long-term external debt in 61 developing countries from 1970 to 2000. Their analysis included standard economic variables along with sociopolitical factors. The findings showed that external debt positively correlates with economic development, openness, education levels, financial depth, political stability and inflation. Furthermore, the study discovered that countries with more flexible exchange rate systems displayed higher levels of external debt. Additionally, this research suggested that higher institutional quality allows developing countries to accumulate more external debt. The research has focused exclusively on long-term external debt rather than overall or short-term debt affected by cyclical effects and used five-year averages for their analysis. Financial development was included as an explanatory variable, with domestic credit provided by the banking sector as a share of GDP (referred to as financial depth) as the proxy measure. However, this approach considered only one aspect of financial development, which aligns with the depth measurement indicators outlined by The World Bank (2022). It is important to note that the study limited its data to 2000 and exclusively examined long-term external debt, neglecting a broader assessment of overall debt patterns. It only covered India, Pakistan, Nepal and Sri Lanka among South Asian countries.

The study by Awan et al. (2011) highlighted that the depreciation of the domestic currency and a decline in terms of trade, where the prices of a country's exports fall relative to the prices of its imports, are significant factors contributing to foreign indebtedness in Pakistan. The Johansen and Juselius co-integration test was employed to examine the long-run relationship among foreign debt, exchange rate, fiscal deficit and

terms of trade. A vector error correction model (VECM) was used to investigate both the short-run and long-run relationships, while the Toda–Yamamoto causality test assessed causal connections between the variables. The study identified a positive relationship between foreign debt and fiscal deficit; however, in the short run, none of the variables established a significant connection with foreign debt. Despite finding a positive relationship between foreign debt and fiscal deficit, the insignificant coefficient suggested that no valid conclusion could be drawn regarding the relationship between foreign debt and budgetary deficit within the context of Pakistan's economy.

Nelasco (2012) conducted an empirical analysis of the relationship between external debt and economic growth in South Asian countries, specifically focusing on Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, with an emphasis on the period following 2000. The study employed a variety of analytical tools, including line charts and regression models, to assess trends in external borrowing and its effects on economic growth. Additionally, the research evaluated key debt indicators and identified eight economic and non-economic factors that influence external borrowing, with a detailed analysis of their significance and impact. The findings suggest that factors such as population growth, GNI per capita and exports exert a negative effect on external borrowing, while international reserves, exchange rates and imports positively influence borrowing levels. This study primarily utilised line charts and regression analysis to conduct the research.

Batool and Zulifqar (2012) examined the determinants of external debt in Pakistan. They noted that external debt is an indicator of a struggling economy, and the burdens of external debt compromise a nation's economic freedom. They revealed that Pakistan is one of the nation’s heavily encumbered by external debt. By employing ordinary least squares (OLS) regression techniques on time series data from 1973 to 2010, the study focused on key determinants such as consumption, private investment, public investment, remittances, lending rates and a dummy variable for democracy. The findings indicated that consumption and private investment positively and significantly affect external debt, while public investment and remittances show a negative yet significant relationship with external debt. Lending rates and democracy exert positive but insignificant effects on external debt. They concluded that external debt harms an economy and should be minimised or avoided.

Emmanuel's (2013) study highlighted the negative effects of external debt on bank performance in Nigeria. The findings revealed that foreign or external debt adversely affects bank performance. While the survey effectively identified this relationship, it did not explore how bank performance could, in turn, affect external debt levels. This oversight presents a crucial area for future research, emphasising the need to investigate the reciprocal effects between these variables. Similarly, Blackmon (2014) examined the reasons behind the significant debt accumulated by developing countries towards government export credit agencies. His analysis revealed that debts owed to these creditor institutions are an important factor in nations' long-term debt challenges. Furthermore, the study suggested that Paris Club debt rescheduling, and debt relief do not substantially alleviate these issues. Instead, these measures often increase export credit loans and guarantees from creditor institutions, exacerbating the debt burden over time.

In South Asia, Perera and Waidyarathna (2018) examined the relationship between external debt and economic growth in lower-middle-income countries. Their research employed variables such as the labour force, trade openness, GDP growth rate, external debt and capital formation. However, these variables were not analysed as independent determinants of external debt but as factors influencing economic growth. The findings demonstrated that external debt and the labour force significantly contribute to GDP growth in lower-middle-income countries within South Asia. Conversely, gross capital formation and trade openness were found to be insignificant in determining GDP growth, underscoring the unique economic dynamics of this region.

Ting and Menggang (2019), in a study based on 831 monthly data samples from China from 2004 to 2017, provided evidence that increases in the real exchange rate intensify the burden of foreign debt. Furthermore, the study revealed that economic development and openness significantly negatively affect the foreign debt-to-GDP ratio. This suggests that a more significant accumulation of foreign exchange reserves may not always yield positive outcomes. These insights highlight the complex interplay between exchange rates, economic policies and debt levels in the Chinese context. Maitra (2019) examined how public debt and foreign aid influence income, price levels and interest rates during the post-reform period in Sri Lanka. The findings showed that public and foreign debt negatively affect income levels while undermining price stability. This research

highlights the broader economic challenges tied to debt accumulation within the context of a developing country.

3.4.2.2 From 2020 to 2024

Abbas et al. (2020) aimed to explore the social and economic determinants of external debt distress in five South Asian countries: Bangladesh, India, Nepal, Pakistan and Sri Lanka, covering the period from 1980 to 2018. The study employed a contemporary panel fixed-effects model using the system generalised method of moments (GMM). The results revealed that the main factors contributing to external debt distress in these nations include significant and rising current account deficits, inadequate gross capital formation, low FDI and high military spending. Among the socio-economic variables studied, the research found that increased life expectancy was linked to higher external debt distress, while urbanisation had a notable mitigating effect. However, it is essential to note that the study was limited to only five South Asian countries, which may restrict the generalizability of the findings. While the dataset included five cross-sectional units and spanned a substantial period of 39 years, it also consisted of stationary and non-stationary data. The study utilised the Arellano–Bover/Blundell–Bond GMM estimator, a method well-suited for panel data where the number of cross-sectional units (*N*) exceeds the number of periods (*T*). This approach produces more robust and effective results when analysing such datasets.

Zhang et al. (2020) examined the causal relationship between public and private external debt and economic growth in developing countries. Their findings revealed two significant results: first, both short- and long-run causality between external debt and economic development, and second, a bidirectional causality flowing from external debt to economic growth and vice versa. The dynamic models and robust estimators validated these relationships in Asian developing and transition economies. The study underscored the importance of effective debt management, investing in productive sectors, increasing domestic savings, reducing external dependency and prioritising international trade to tackle external debt concerns. Data for the study were sourced from the Economic Intelligence Unit (EIU), with annual real GDP per capita in USD as a proxy for economic growth. The primary independent variables included total external debt, public external debt, and private external debt. Total external debt per capita in USD (log-transformed) was employed as a proxy for total external debt. In contrast, public and private external

debt as a percentage of GDP represented public and private external debt, respectively. Despite its comprehensive scope, the study concentrated solely on GDP and external debt, which limited its exploration of other factors that could affect external debt dynamics.

Irfan et al. (2020) investigated the impact of external debt on stock market performance and economic growth in SAARC countries, specifically Pakistan, Sri Lanka, Bangladesh, and India, from 1992 to 2017. The research also examines the role of capital formation as a moderating factor. The study finds a negative and significant relationship between external debt and economic growth using panel least squares regression analysis. However, when capital formation is included as an interaction term, it shows a positive moderating effect on the relationship between external debt and economic growth. The study suggests that external debt is detrimental to the economic growth of SAARC countries, highlighting the need for greater emphasis on capital formation. It also recommends policies aimed at strengthening national treasuries, boosting exports and creating a conducive environment for FDI. Furthermore, the study advocates for alternatives to external debt to finance fiscal deficits in these countries. However, they did not make substantial efforts to examine the effect of stock performance on external debt.

Fatukasai et al. (2020) investigated the determinants of Nigeria's external debt, utilising time series data from 1981 to 2018. The data were sourced from the Central Bank of Nigeria Statistical Bulletin and the World Bank Development Indicators. After addressing unit root issues through the augmented Dickey–Fuller and Phillips–Perron tests, the study applied the FMOLS method and employed Johansen co-integration for analysis. The findings revealed a positive relationship between levels of insecurity, the real exchange rate, and external debt, indicating that insecurity and exchange rate fluctuations are significant determinants of external debt in Nigeria. In contrast, debt service and trade openness showed an inverse relationship with external debt. These results suggest that effective management and productive use of external debt could help reduce import-to-export ratios and facilitate debt servicing. The study concluded that insecurity and exchange rates are crucial in determining Nigeria's external debt levels.

Mahar and Dhakal (2020) examined the main macroeconomic determinants of external debt in Nepal, focusing on budget deficits, per capita GDP, terms of trade, trade openness, foreign aid and real effective exchange rates as explanatory variables. Using the

autoregressive distributed lag (ARDL) co-integration approach, the study found that fiscal deficits, trade openness and foreign aid are significant macro-economic determinants of external debt in Nepal. The findings indicated that foreign aid reduces external debt, while trade openness and budget deficits increase external debt in the short and long term. The error correction term was significant and negative, demonstrating a strong relationship between the variables and suggesting that short-term disequilibrium is corrected at an annual rate of 37%. The study concluded that policies to manage foreign trade, demand, and taxation could help mitigate external debt accumulation and avoid a debt trap.

Dawood et al. (2021) examined the factors influencing external debt in 32 Asian developing and transitioning economies from 1995 to 2019, utilising the GMM for estimation. The study found that, in both the short and long run, economic growth and investment tend to reduce external debt, while exchange rates, trade and government spending tend to increase it. Nevertheless, the findings are generalised across a diverse range of countries with different geographical, political and economic contexts, raising concerns about the applicability of the results to individual nations with distinct economic structures.

Mijiyawa and Oloufade (2022) investigated the impact of remittance inflows on external debt across 50 low-income, lower-middle, upper-middle-income, and Sub-Saharan African countries, including Bangladesh, India, Pakistan and Sri Lanka, utilising panel data from 1970 to 2017. The study aimed to explore the indirect effect of remittances on external debt through their influence on international reserves. The findings highlighted a positive and significant association between these nations' remittance inflows and the external debt-to-GDP ratio. However, excluding the larger remittance-receiving countries revealed a negative, yet non-significant, effect of remittances on external debt. Furthermore, the study found a significant negative correlation between international reserves and external debt. Even after controlling for international reserves, the positive effect of remittances on external debt remained, suggesting that remittances do not contribute to reducing external debt. Notably, the study's findings did not account for the impact of the COVID-19 pandemic or recent shifts in migration patterns and remittance flows, which could have influenced the results.

Edo and Oigiangbe (2024) investigated the impact of external debt vulnerability (EDV) on economic growth in 43 developing economies across Sub-Saharan Africa from 1990 to 2022. By utilising dynamic ordinary least squares (DOLS) and FMOLS for estimation, the study demonstrated that EDV impeded economic growth, reinforcing concerns regarding the harmful effects of excessive debt in the region. The research also highlighted that domestic credit, and economic openness had an insignificant impact, thus failing to mitigate the negative consequences of debt vulnerability. However, capital stock was recognised as the only significant variable positively influencing economic growth.

Upon reviewing the existing literature, it is clear that most studies have primarily focused on macroeconomic indicators and often excluded South Asia. Few studies have examined other economic factors, particularly sector- and country-specific determinants of external debt. Furthermore, the findings of these studies are not always consistent, indicating that a more nuanced approach is needed. Therefore, this study aims to address this gap by investigating economic and country-specific factors affecting external debt in South Asian countries, with a particular emphasis on sector-specific determinants. This marks the first attempt to identify and analyse the sector-specific and other economic factors that influence external debt in the region.

3.4.2.3 Gap Identification

According to the literature concerning the investigation of the determinants of external debt, there is a gap in examining the influence of country-specific and regional-specific macro-economic and non-macro-economic factors on external debt. Previous studies on external debt have been limited, primarily focusing on broad macro-economic factors such as gross domestic product (GDP), inflation rates, exports, overall output, population statistics, exchange rates, and price levels (Allayannis et al., 2012; Chaudhary et al., 2000; Ting & Menggang, 2019; Maitra, 2019; Wanniarachchi, 2020). Few investigations have explored the specific determinants of external debt within individual countries (Al-Fawwaz, 2016; Awan et al., 2015; Omrane Belguith & Omrane, 2017; Brafu-Insaidoo et al., 2019; Özata, 2017; Wahyuni et al., 2019). Although some studies have examined external debt within specific countries or regions, the applicability of their generalised findings to nations with differing geographical and economic contexts remains questionable. This primarily arises from the fact that factors influencing external debt,

such as institutional quality, fiscal policies, political stability, access to international capital markets, and levels of economic development, can vary considerably across different nations. Consequently, conclusions derived from a specific context may not sufficiently account for the complexities or realities of other settings, thereby restricting the wider applicability and significance of such studies. Furthermore, while certain studies emphasise non-economic factors such as banking performance, governance, institutional quality and political stability, these dimensions remain underexplored despite their potential significance in shaping debt outcomes. The studies of the financial sector and the stock market as determinants affecting external debt remain relatively novel concepts globally. Arestis et al. (2001) underscored the necessity of an efficient stock market and a robust banking sector in enhancing investments while effectively managing external debt.

Similarly, Ratha (2006) and The World Bank (2006) highlighted the importance of foreign remittances in bolstering a country's creditworthiness. Hussain and Chani (2018) found positive effects of foreign debt and remittances on economic growth. Moreover, Koczan et al. (2021) emphasised how overseas migrant labour affects their host countries' labour markets, productivity, innovation and fiscal balances while generating remittance flows and facilitating trade, FDI and technology transfers. Consequently, further research is required to incorporate a broader range of critical determinants beyond traditional macro-economic variables. Additionally, it is crucial to ascertain whether the impact of these determinants on external debt is a short-term or long-term effect, employing a measure of external debt in its entirety rather than exclusively focusing on long-term external debt. The literature primarily emphasises long-term external debt, often neglecting the implications of short-term debt, total external debt and cyclical factors, which are essential for comprehending debt dynamics across varying temporal frameworks. In addition, numerous studies fail to account for recent global shifts, such as the COVID-19 pandemic and evolving migration patterns, which could significantly influence trends in external debt. By addressing these identified gaps, this study aspires to offer a comprehensive analysis of the economic, sector-specific and country-specific determinants of external debt within South Asia, thereby providing a better understanding of debt dynamics in the region.

3.4.2.4 Overview of Methods Adopted by Previous Research

Based on the reviewed literature, which includes studies by Abdullahi et al. (2015), Brafu-Insaidoo et al. (2019), Ting and Menggang (2019), Beyene and Kotosz (2020) and Dawood et al. (2021), regression analysis stands out as the primary statistical technique employed to estimate the parameters of models that investigate external debt. Regression analysis, first introduced by Francis Galton in 1886, serves as a statistical method to identify the line of best fit within a given dataset. It estimates the intercept and slope parameters most accurately describe the relationship between the dependent and independent variables (Willson et al., 2010).

There are three primary types of regression analysis: simple linear regression, multiple linear regression and multivariate linear regression. Each type serves a specific purpose, depending on the nature of the data being analysed. In practice, the choice of regression analysis is often influenced by the data type involved, categorised as time series, cross-sectional or pooled data. Time series data consists of observations recorded at distinct intervals over time and often presents issues related to stationarity. In contrast, cross-sectional data captures information at a specific time across various units, frequently raising concerns about heterogeneity. Pooled or combined data integrates both time series and cross-sectional data. Data collected from the same units over time is called panel, longitudinal or macro panel data, a specific form of pooled data (Gujarati, 2009). If the number of observations remains consistent, these data are termed balanced panel data, whereas variations in the number of observations across time yield unbalanced panel data.

As highlighted in Table 3.3, the literature indicates that regression analysis is widely used in studies investigating the determinants of external debt. There are three main regression techniques: time series regression, cross-sectional regression and panel data regression. However, as shown in Table 3.3, most investigations into external debt have relied on time series and panel data analysis methods. This reveals a strong dependence on these techniques for exploring the complex relationships underlying external debt in various contexts.

Table 3.3: Methods adopted by previous research

Time Series Data Analysis			Panel Data Analysis		
Researcher	**Method Used**	**Results with Variables**	**Researcher**	**Method Used**	**Results with Variables**
Wijeweera, A., Dollery, B., and Pathberiya, P. (2005). **Sri Lanka from 1952–2002**	Co-integration analysis	External debt service has negative effect on GNP though it is insignificant in the long run and no relationship in short run.	**Tiruneh, 2004** **Sixty countries of which twenty-one were heavily indebted poor countries and 39 were non-heavily indebted less developed countries from 1982–1998**	Fixed and random-effect model	Income per capita, capital flight, the imports to GDP ratio, debt-service payments and the growth rate of GDP are the main determinants of external debt.
Awan, Anjum, and Rahim, 2015 **Pakistan from 1976–2010,**	The error correction model and dataset spanning	There is a positive relationship between fiscal deficit, exchange rate, trade openness, and external debt and the relationship between terms of trade and external debt is negative.	**Swamy, V. (2015). *this study concerns on government debt** **252 sovereign countries for the period 1980–2009.**	Generalised Method of Moments (GMM)	Real GDP growth, government expenditure, inflation, and population growth, Gross fixed capital formation, final consumption expenditure and trade openness were increasing the debt.
Al-Fawwaz ,2015 **Jordan from 1990–2014**	Autoregressive distributed lag model	Trade openness, terms of trade, and exchange rate have a significant positive effect on external debt and gross	**Bittencourt ,2015** **Young democracies in South America from 1970–2007**	Pooled ordinary least squares, fixed-effect and fixed-effect-instrumental	Economic growth reduces external debt.

Time Series Data Analysis			Panel Data Analysis		
Researcher	**Method Used**	**Results with Variables**	**Researcher**	**Method Used**	**Results with Variables**
		domestic product per capita reduces external debt.		variable estimation techniques	
Abdullahi, Bakar, and Hassan ,2015 **Nigeria from 1980–2013**	Autoregressive distributed lag model	Interest rate, exchange rate, savings and budget deficits have a significant negative relationship with external debt.	**Chiminya, Dunne and Nikolaidou ,2018** **36 sub-Saharan African countries over the period 1975–2012**	Generalised Method of Moments (GMM)	Trade and economic growth reduce external debt, investment increase it.
Yeasmin, Chowdhury and Hossain, 2015 **Bangladesh from 1972–2012**	Autoregressive distributed lag model	A significant adverse effect of debt on growth (gross domestic product).	**Abbas and Wizarat ,2018** **South Asia from 1990–2015**	Fixed-effect model	Military expenditure increases external debt, domestic investment and trade reduce it.
Udoh and Rafik, 2017 **Malaysia from 1970–2013**	Vector error correction model	Capital expenditure increases external debt, economic growth reduces it.	**Rahman, Ismail and Ridzuan, 2021** **36 upper-middle-income economies from 2000 to 2017**	Generalised Method of Moments (GMM)	The aging population could increase The level of external debt, but results are insignificant to the old age dependency ratio Interest payments on the external debt showed a positive relationship with interest payments on external debt.

Time Series Data Analysis			Panel Data Analysis		
Researcher	**Method Used**	**Results with Variables**	**Researcher**	**Method Used**	**Results with Variables**
Adamu, 2019 **Nigeria from 1970–2017**	The general-to-specific approach and Johansen co-integration	Oil price, domestic savings, exchange rate, debt relief and fiscal deficits increase external debt.	**Azolibe, 2020** **39 heavily indebted poor countries (HIPCs) over the period 1996–2018**	Panel fully modify ordinary least squares	Corruption, government expenditure, population growth increases external debt, economic growth reduces it.
Ting and Menggang, 2019 **China from 2004–2017**	Vector auto regressive model	Rise in real exchange rate increase foreign debt burden, there is a negative relationship between openness and foreign debt.	**Abbas, Wizarat and Mansoor, 2020** **Bangladesh, India, Nepal, Pakistan and Sri Lanka, from 1980 to 2018**	Panel fixed-effect model and system generalised methods of moments	Current account deficit, lower gross capital formation, FDI and large military expenditure, increase in life expectancy increase the debt distress where urbanisation reduces it.
Beyene and Kotosz,2020 **Ethiopia from 1981–2016**	Autoregressive distributed lag model	The saving-investment gap, trade deficit, fiscal deficit, and debt servicing increase external debt, growth rate of GDP, trade openness, and inflation were revealed to decrease external debt.	**Dawood, Baidoo and Shah, 2021** **32 Asian developing and transitioning economies from1995–2019.**	Generalised Method of Moments (GMM)	Economic growth and investment reduce external debt, whereas exchange rate, trade and government expenditure increase external debt.

Time Series Data Analysis			Panel Data Analysis		
Researcher	**Method Used**	**Results with Variables**	**Researcher**	**Method Used**	**Results with Variables**
			Waheed et al.,2021 **Ten oil and gas exporting and nine oil and gas importing countries from 2004–2016**	Panel least square	For oil and gas exporting Islamic countries, economic growth, central government revenue, FDI and population have a negative effect on external debt, while central government expenditure, trade openness, inflation, and current account balance have a positive effect on external debt. For oil and gas importing Islamic countries, economic growth, central government revenue, current account balance, domestic investment and labour force have a negative effect on external debt; whereas FDI and foreign exchange reserve have a positive effect on external debt.

3.4.3 Specification of the Statistical Model of the Theory

It is crucial to analyse the economic factors driving the need for external borrowing to identify the determinants of external debt accurately. One effective practical approach is to use gap models, which provide a framework for understanding the economic conditions leading to the accumulation of external debt. Several studies, including those by Abdullahi et al. (2016), Waheed (2017), and Dawood et al. (2021), have utilised gap models to explore these factors in greater depth.

The gap models, notably the one-gap, two-gap, and three-gap models, provide diverse insights into the economic factors contributing to external debt. The one-gap model explicitly addresses the savings-investment gap, drawing attention to the disparity between domestic savings and domestic investment as a key factor in the accumulation of external debt. This model underscores the necessity of either promoting increased domestic savings or curbing excessive domestic investment to lessen dependence on external borrowing.

In contrast, the two-gap model, introduced by Chenery and Strout in 1966, broadens the analysis by adding a second gap: the foreign exchange gap. This model recognises that external borrowing is frequently essential when foreign exchange reserves are insufficient to adequately import or meet existing debt obligations. Therefore, effectively managing external debt requires addressing both the savings-investment and foreign exchange gaps.

The three-gap models, including those proposed by Bacha (1989) and Harrod-Domar (1939, 1946), introduce a third fiscal constraint gap. These models acknowledge the fiscal challenges governments encounter, especially those in developing economies, and how these constraints affect their capacity to generate adequate revenue to meet expenditures, including debt servicing.

The World Bank estimates autonomous savings using the one-gap, the revised minimum standard model. This model considers various factors, including a country's export-import balance, foreign transfers, investments and national income, to evaluate the necessary level of external borrowing (Cornia, 2020). The one-gap model employs five equations to express the need for external debt, incorporating variables such as national income, exports, imports and savings.

The first equation of the one-gap model examines the balance of payments (BP), the difference between exports and imports adjusted for national income and transfer resources. The second and third equations deal with production and investment functions, while the final equations address domestic savings and their composition. The one-gap model shows several factors influencing external debt requirements, including economic growth, capital-output ratios, imports and exports and domestic savings.

$$BP = X^* - m\,(Y_{t-1} - \Delta Y) + F \tag{3.1}$$

$$I = v\Delta Y \tag{3.2}$$

$$I = (Y - C) + (mY - X^*) \tag{3.3}$$

$$S = Y - C \tag{3.4}$$

$$S = Sa + sY \tag{3.5}$$

Where *BP* is the total balance of payments, *X** is the exogenously given exports (as their level is set by the international market), *Y* is the national income (or GDP), m is the import coefficient, *F* is the net transfer of resources from abroad, $I = v\Delta Y$ is the production function, *v* is the incremental capital-output ratio, $I = (Y - C) + (mY - X^*)$ is investment-saving equilibriums, $S = Y - C$ is the domestic savings, *S* is the aggregate savings, *Sa* is the autonomous saving, and *s* is the average propensity to save.

The two-gap model, developed by Chenery & Bruno (1962) and later refined by Chenery et al. (Bacha, 1990; Chenery & Bruno, 1962; Chenery & Strout, 1966; McKinnon, 1964; Weisskopf, 1972), focuses on two primary gaps: the savings-investment gap and the foreign exchange gap. It incorporates the relationship among domestic savings, foreign savings and investment, offering a more comprehensive understanding of external debt needs. The foreign exchange gap specifically examines how deficits in foreign reserves, necessary to finance imports, can increase reliance on external borrowing.

While the two-gap model offers valuable insights, it has been criticised for its high level of aggregation. It fails to consider sector-specific variations in savings and foreign exchange gaps, and its emphasis on foreign resources neglects internal development issues that could help address these gaps. Moreover, as Taylor (1994) noted, in many

emerging countries today, FDI and portfolio investments have increasingly supplanted aid and official loans, rendering the two-gap model less applicable in specific contexts.

The three-gap model highlights a fiscal dimension by focusing on the government's budgetary constraints, particularly in the absence of a domestic bond market. This model demonstrates how fiscal deficits, indicated by discrepancies between government revenue and expenditure, necessitate external debt. Furthermore, it shows that when both the savings-investment and foreign exchange gaps are addressed, the fiscal gap can also be mitigated through foreign capital inflows.

The theoretical literature consistently acknowledges key macroeconomic factors influencing external debt, including government revenue and expenditure, exports and imports, foreign and domestic investments, exchange rates, and reserves (Waheed, 2017). Furthermore, empirical studies highlight additional factors such as inflation, education levels, literacy rates, the labour force, and poverty that affect external debt levels (Barro, 1979; Bittencourt, 2015; Hajivassiliou, 1987; Tiruneh, 2004; Waheed, 2017). Dawood et al. (2021) observe that these macroeconomic factors often vary among countries owing to differing geographical and economic conditions, suggesting that the impacts of these factors on external debt may differ across regions. Notably, the factors identified in this study, which have not been previously examined in the literature, indicate that external debt models may need to be tailored for specific contexts, particularly for South Asian countries.

In this study, gap models serve as the foundation, alongside those adopted by Waheed (2017), Abd Rahman et al. (2020), and Waheed and Abbas (2021), to examine the determinants of external debt in South Asia. Given the specific regional conditions and the type of data utilised, an econometric model is proposed to explore these determinants.

The proposed mathematical model is as follows:

$$\Upsilon_{it} = \beta_1 + \beta_2 \mathcal{X}_{it1} + \beta_3 \mathcal{X}_{it2} + \beta_k \mathcal{X}_{itk} + \epsilon_{it} \quad (3.6)$$

Where Υ_{it} is the dependent variable for a particular cross-sectional unit *i* at time *t*, $\mathcal{X}_{it1 \ldots k}$ is the explanatory variable for the same unit *i* at time *t*, $\boldsymbol{\beta}$ is the intercept of the regression equation, which represents the dependent variable when there are no other explanatory variables, and ϵ_{it} is the error term for the same unit *i* at time *t*.

3.4.3.1 Specification of the Statistical or Econometric Model

In building on the mathematical model identified earlier, this study adapts the econometric model better to fit the context of the countries under investigation. The adjusted model is as follows:

$$EXD_{it} = \beta_{1i} + \beta_2 \mathcal{X}_{it1} + \beta_k \mathcal{X}_{itk} + \mathcal{E}_{it} \quad (3.7)$$

Where EXD is the external debt or the dependent variable of the country *i* at time *t*, and $\mathcal{X}_{it}$ is a vector of explanatory variables included in the model of country *i* at time *t*.

This study's selection of explanatory variables is based on a comprehensive review of the literature and an analysis of each country's external debt situation. Eleven macro-economic and country-specific variables have been identified for inclusion in the model. This study introduces new variables, including bank and stock market performance, to explore their potential impact on external debt. Additionally, the study incorporates foreign remittances, oil imports, corruption and political stability as key explanatory variables in understanding external debt in South Asia. Some variables not explicitly addressed in this analysis are incorporated into the stochastic disturbance term (μ_{it}), which accounts for unobserved factors that may influence external debt. Consequently, the econometric model is adjusted to reflect this inclusion as follows:

$$EXD_{it} = \beta_{1i} + \beta_2 \mathcal{X}_{it1} + \beta_k \mathcal{X}_{itk} + \mu_{it} \quad (3.8)$$

When conducting the analysis, it is assumed that the regression coefficients remain constant across all countries, making the model a pooled OLS regression or constant coefficient model. However, since the study examines data from six countries with distinctive characteristics—such as political regimes, religion and history—it is crucial to consider the possibility of heterogeneity effects (Baltagi, 2005; Gujarati, 2009; Hajivassiliou, 1987). These differences could result in variations in the intercepts for each country. Therefore, the econometric model is further adjusted to accommodate country-specific intercepts (β_i), indicating that the intercepts for the six countries may differ.

3.4.4 Risk Measurement of External Debt

In studying the risk associated with external debt, prior research has mainly concentrated on identifying its determinants, while limited attention has been paid to exploring and measuring the related risks. Most studies assessing external debt risk are confined to analyses of individual countries. For example, Waheed (2003) performed a risk analysis of external indebtedness in Pakistan using an indicator-based approach, whereas Karagol (2006) examined the relationship between external debt, defence expenditures and GNP in Turkey through impulse response functions. Other studies have primarily focused on specific elements of external debt risk, such as exchange rates and interest rate risks (see Table 3.4).

Over the past decade, developed countries, including Canada, Denmark, France, New Zealand, Sweden and the United Kingdom, have made notable strides in measuring and managing exchange rate risk in their public debt portfolios. They have embraced integrated approaches to address exchange rate, interest rate, credit, and liquidity risks in public debt management (Bergstrom et al., 2002; Denmark National Bank, 2007; Blommestein, 2005; Pick and Anthony, 2006; Treasury, 2006). Similarly, emerging markets and middle-income countries such as Brazil, the Czech Republic, Latvia, Mexico, Poland and Turkey have begun efforts to enhance public debt management systems aimed at reducing the foreign exchange risk associated with their public debt (Balibek, 2006; Brazilian National Treasury, 2007; Czech Republic Ministry of Finance, 2007; Latvia-The Treasury, 2008; Mexico-Public Credit Unit, 2005; Silva, 2005).

Although there has been no direct analysis of external debt risk, some studies have included it in broader country risk assessments, particularly concerning debt rescheduling and sovereign ratings. Accurate models for assessing country risk or sovereign ratings can effectively predict debt crises and assist stakeholders. Research on country risk generally falls into two categories: descriptive studies and analytical studies. Analytical studies, conversely, utilise statistical methods to understand decisions regarding debt rescheduling. For instance, Gur (2012) examined the determinants of debt rescheduling for 34 developing countries between 1986 and 1998 using a two-limit tobit model. His findings indicate that not all difficulties in making debt payments can be resolved through rescheduling agreements.

Basu (2016) examined the Eurozone sovereign debt crisis, emphasising the need for enhanced risk sharing and joint liability among nations. Similarly, Chen et al. (2016, 2021) developed a local government debt risk index system in China, encompassing nine indices across three categories: debt scale, solvency and debt potential. Through factor analysis, they categorised overall debt risk into low, medium and high-risk intervals and created a micro cash flow model based on a genetic algorithm. This model estimates an appropriate scale of future borrowing while adhering to cash flow and risk index constraints, offering strategies for bond issuance at various times and maturities.

In another study, Llorca (2017) used the present-value methodology to evaluate external debt sustainability across 24 emerging and developing Asian countries between 1993 and 2014. Using co-integration tests, they assessed whether these countries satisfied their intertemporal external debt constraints. The study highlighted regional vulnerabilities, factors, and risks related to external debt criteria, including debt currency composition, the share of short-term external debt, reserves, and debt service, under different economic slowdown scenarios in China.

Internationally, some countries have established financial risk warning systems based on debt risk indices. Notable examples include the 'local fiscal monitoring plan and financial crisis method' in the United States, the 'local government borrowing limitation' in Brazil, and the 'traffic lights system' in Colombia (Gray & Jobst, 2010; Kaminsky et al., 1998; Kumar et al., 2003). These systems offer valuable insights for debt risk warning. Moreover, models such as the Developing Country Studies Division (DCSD) model introduced by Berg and Pattillo (1999), the artificial neural network model by Nag and Mitra (1999), and the Markov switching model with variable transition probabilities by Abiad (2003) primarily focused on monetary crisis warning. Nonetheless, these models require further refinement to meet the specific needs of debt assessment. The reviewed literature indicates that the risk assessment of external debt remains largely confined to individual countries, concentrating on evaluating exchange rate risk, interest rate risk and methods for managing debt rescheduling. Previous research also highlights two critical aspects of risk assessment: default risk and information risk (Ashbaugh-Skaife et al., 2006; Francis et al., 2004).

External debt is frequently regarded as part of broader country risk rather than the sole focus of risk assessment efforts. This highlights the necessity for a more thorough analysis

of the risk linked to external debt and establishing a robust debt management framework. Such a framework should go beyond the conventional emphasis on exchange rates, interest rates and country risk to embrace a more comprehensive approach to effectively managing risks associated with external debt.

3.4.4.1 Gap Identification

Based on the literature on risk assessment of external debt, it is necessary to assess the risk of external debt determinants in different external debt levels. Previous studies in this domain have predominantly focused on economic factors that influence a country's external debt situation, ultimately leading to debt rescheduling. These prior studies have primarily assessed the risk of external debt based solely on exchange rates and interest rates, neglecting the utilisation of other determinants (Chen & Lv, 2021; Gur, 2012), or the risk assessment was only limited to one or two countries of the region lacking a broader regional perspective (Karagol, 2006; Waheed, 2003). Although both developed and emerging economies have embraced integrated risk management frameworks, such frameworks are not extensively implemented in South Asian economies. Moreover, the risks associated with external debt are frequently assessed within broader country risk evaluations, encompassing sovereign ratings and the probabilities of debt rescheduling rather than being treated as a distinct analysis area. This methodology complicates the formulation of focused risk mitigation strategies for external debt specifically. Consequently, there needs to be more evidence regarding incorporating alternative factors in assessing external debt risk. By addressing this research gap, this study intends to offer a comprehensive understanding of the risk associated with external debt and contribute to developing effective risk management strategies, enhancing debt sustainability.

3.4.4.2 Overview of Existing Methods

Risk assessment can be conducted using several alternative methods, as summarised in Table 3.4. These methods include value at risk (VAR), stress testing, cost at risk (CAR), performance indicators, sensitivity analysis, simulation estimation, machine learning algorithms, extreme bound analysis, discriminant analysis (including principal component and logit analyses), and quantile regression. Each method has unique strengths and limitations, and their suitability depends on the research objectives and the

nature of the study. This section provides a detailed overview of these methods, emphasising their application, advantages and constraints.

Table 3.4: Overview of existing methods

Method	Author and Country	Measured Risk
Value at risk	Reboredo and Ugolini (2015)–Austria, Belgium, Finland, France, Germany, Netherlands, Italy, Greece, Portugal and Spain.	Systematic risk
	Ajili (2008)–Tunisia 1999–2006	Exchange rate risk
	Akbar and Chauveau (2009) 2001–2006	Exchange rate risk
	Papaioannou, 2009–Croatia, Greece and Turkey	Exchange rate risk
Monte Carlo simulation	Akbar and Chauveau (2009) 2001–2006	Exchange rate risk
	Kluza (2016)–Poland	Interest rate risk
Cost at risk	Papaioannou, 2009–Croatia, Greece and Turkey	Exchange rate risk
Sensitivity analysis	Bakeret al. (1999)–United Kingdom	Debt sustainability
	Ianchovichina et al. (2007)–Tamildu, India	
Machine learning algorithm	Chen (2021)	Government debt risk
Simulation estimation analysis	Hajivassiliou (1994) 1970–1988	External debt repayment
Extreme bound analysis	Leamer (1983), Levine and Renelt (1992), Baxter and Kouparitsas (2005), Chakrabarti and Zeaiter (2014), Chowdhury (2001),(Brafu-Insaidoo et al., 2019)	Examine the determinants of external debt are robust to small changes in the conditioning information set
Discriminant analysis, principal component analysis, logit analysis	Frank and Cline, 1971; Sargen, 1977; Dhonte, 1975; Feder and Just, 1977; Federet al., 1979; Mayo and Barrett, 1978	To identify indicators of foreign debt rescheduling
Impulse response analysis and variance decomposition	Karagol, 2006 Anfofum et al., 2014 Akdugan & Yiliz, 2020	The relationship between external debt, defence expenditures and GNP revisited: The case of Turkey Military spending and external debt burden in Nigeria The relationship between external debt and

Method	Author and Country	Measured Risk
		economic growth: The case of fragile five countries
Quantile regression analysis	Mohsin et al., 2021 San, 2023	How external debt led to economic growth in South Asia: A policy perspective analysis from quantile regression Impact of public debt on economic growth: A quantile regression approach

VAR is widely used to assess market risk exposure. It gained prominence in the late 1980s when financial institutions began using it to evaluate risks in trading portfolios. The introduction of JP Morgan's Risk Metrics™ system in 1994 further facilitated its adoption as a standard for market risk measurement. VAR provides a statistical estimate of potential portfolio losses at a given confidence level over a specified time frame. Researchers such as Reboredo and Ugolini (2015) utilised the conditional value-at-risk method to assess systemic risk in European financial systems during the Greek debt crisis. Similarly, Ajili (2008) employed the delta-normal VAR approach to analyse exchange rate risk in Tunisia. Akbar and Chauveau (2009) evaluated exchange rate risks in Pakistan using various VAR techniques, including Monte Carlo and historical simulation methods.

Blejer and Schumacher (1998) provide a comprehensive overview of the VAR method used to assess a central bank's risk exposure and solvency, which has since become widely adopted as an early warning indicator for financial crises. Nocetti (2006) applies the methodology from Blejer and Schumacher (1998) to examine early warning indicators of the 2001 Argentine Crisis using a Monte Carlo simulation VAR with a 99.9% confidence level over three months, demonstrating that vulnerability measures accurately indicated the impending crisis. Similarly, Ireland and Italy utilise VAR techniques to manage risk exposure in their debt portfolios. Despite its widespread use, VAR has significant limitations. It depends on historical data, assumes a normal distribution and estimates potential losses without addressing their actual scale. Dowd (1998) proposed integrating VAR with stress testing for a more thorough risk assessment. Additionally, the method is mainly suited for portfolio risk analysis, making it less relevant to studies focusing on broader economic factors, such as external debt determinants.

Alternative measures to VAR, such as expected shortfall and spectral risk measures, are more complex in their formulation. Consequently, these methods have not been widely adopted for developing debt strategies in prior research (Papaioannou, 2009). Additionally, checklist systems remain the primary computational approach for international banks ' risk assessment. These systems are preferred by bank economists and are supported by several linear additive models that rely on judgmentally determined, intuitively weighted variables (Nagy, 1979; Robinson, 1981; Thompson, 1981). For instance, Blask (1977) evaluated five checklist systems from the Goodman survey and two additional systems to assess their ability to predict multilateral debt rescheduling. His findings revealed that six of the seven systems performed poorly. Further criticisms of checklist systems include difficulty selecting component variables, determining weights, interpreting measurements, and ensuring logical relationships with the predicted outcomes (Taffler & Abassi, 1984). Another method for evaluating debt strategies is the CAR approach. This relatively new approach assesses debt issuance strategies and liability management operations under varying risk factors with a specific probability (Denmark's National Bank, 1998). Notably, the CAR method incorporates market risk and focuses on risks associated with debt portfolios (Bolder, 2003).

Another approach is sensitivity analysis, which assesses risk models to highlight critical risk factors and prioritise mitigation strategies. Baker et al. (1999) identified sensitivity analysis as a key quantitative technique for risk management in the UK. Additionally, sensitivity analysis supports the planning of adaptation measures for climate change risks (Jones, 2000) and helps to identify uncertainties that can direct further research or data collection (Cullen & Frey, 1999). It also plays a crucial role in verifying and refining models during development (Kleiner, 1995; Kleiner & Sargent, 2000). Sensitivity analysis has varied applications, including engineering, economics, medical decision-making, and social sciences (Baniotopoulos, 1991; Helton & Breeding, 1993; Ryu et al., 2000).

Simulation estimation is a commonly used method. Hajivassiliou (1993) utilised simulation techniques to analyse external debt crises in developing countries, employing models such as probit, Tobit and switching regressions to evaluate arrears and repayment issues. From 1989 to 1995, simulation methods were widely implemented in countries like Belgium, Denmark and New Zealand for risk assessment. Two key techniques,

smoothly simulated maximum likelihood and simulated scores (MSS), are efficient and broadly applicable for models with limited dependent variables.

Other techniques, including discriminant analysis, principal component analysis and logit analysis, have been employed to identify significant indicators of debt rescheduling. Mayo and Barrett (1978) used logit analysis on 48 countries, pinpointing six key variables influencing debt rescheduling. Their study also emphasised the limitations of the Debt-Service Ratio (DSR) in predicting rescheduling. However, rescheduling events only reflect risks associated with loans already disbursed and may overlook countries considered too high risk to receive loans in the first place (Eaton & Taylor, 1985).

While each method presents unique advantages and limitations, most focus on the exchange rate and interest rate risks. Techniques like VAR and CAR are particularly suited for portfolio risk analysis, while discriminant, principal component and logit analyses are employed to examine debt rescheduling. Since this study does not concentrate on portfolio analysis, debt rescheduling or threshold debt levels, these methods were not utilised.

Instead, this study employed quantile regression to assess the risk factors associated with external debt. Quantile regression, introduced by Koenker and Bassett (1978), offers insights into the entire conditional distribution of a response variable by modelling specific percentiles, such as the 90th percentile. Unlike mean regression, which evaluates average effects, quantile regression examines the impact of predictors across various quantiles, providing a more comprehensive understanding of risk distribution. This method is particularly valuable for analysing non-normal distributions and identifying risks in extreme scenarios (Somers & Whittaker, 2006). Recent studies have demonstrated its utility, such as Mohsin et al. (2021), who explored the relationship between external debt and economic growth in South Asia, and San and Chin (2023), who investigated the effects of public debt on economic growth. The flexibility and robustness of quantile regression make it a powerful tool for building explanatory and predictive models in research and business analytics (Rodriguez & Yao, 2017).

3.4.5 Debt Management

Debt management is a crucial element of economic policy, impacting the stability and sustainability of public finances. Smith (1960) defines debt management as 'all operations that affect the composition of publicly held debt, conducted with a view to their effects on the economy.' Similarly, Rolph (1957) highlights that national debt management entails official actions by central banks and treasuries to modify the quantity and types of government debt held by private domestic entities.

Tysoe (1966) emphasises the importance of maintaining a debt structure that enhances economic stability rather than concentrating solely on short-term adjustments to the maturity or composition of debt. Within the larger framework of monetary policy, Tysoe highlights three key objectives of debt management: (a) preventing inflation by curbing excessive money supply and demand expansion, (b) tackling unemployment and the underutilisation of resources caused by inadequate aggregate spending, and (c) ensuring the government has access to loanable funds beyond what taxation provides.

While debt management is acknowledged as a vital tool for economic stability, it has challenges. Smith (1960) points out that debt management is a cumbersome instrument for stabilisation policies owing to timing difficulties and the treasury's concerns about its ability to raise adequate funds. Moreover, many emerging markets lack the structural capacity to benefit fully from effective risk-sharing mechanisms. Blommestein (2005) suggests incorporating debt and risk management into broader policy reforms to tackle these structural challenges.

Bangura et al. (2000) identify external debt management as a cornerstone of macro-economic policy. It encompasses the planned acquisition, deployment, servicing and retirement of external loans to promote economic growth, reduce poverty and ensure sustainable development. They emphasise the importance of forward-looking analyses of a country's debt-servicing capacity in shaping effective debt management strategies. Similarly, Awan et al. (2014) argue that excessive reliance on foreign loans can hinder economic growth, necessitating the adoption of appropriate debt management practices.

Global initiatives, such as the Monterrey Consensus, the Millennium Declaration and the Millennium Development Goals, have highlighted the need for effective debt management, as Kukreja and Upadhyay (2019) noted. These initiatives underscore

governments' diverse challenges, which vary depending on their development levels. Bhattacharya and Ashraf (2018) warn that inadequate fiscal and monetary policies can lead to debt stress, which may ripple throughout a nation's economy.

Public debt management, viewed from a portfolio perspective, seeks to meet a government's financing needs and payment obligations at the lowest possible cost over the medium to long term while maintaining prudent risk (Lewis & Viñals, 2014). This process includes formulating strategies to secure necessary funding, balancing cost-risk objectives and promoting a stable and liquid market for government securities. As IMF and World Bank (2000) note, sustainable public debt management ensures that debt levels and growth rates remain manageable under various economic scenarios.

Ogwuma (1997) described that external debt management involves assessing foreign exchange earnings, sources of external financing and projected returns from investments funded by loans. It also necessitates evaluating repayment schedules, debt-service burdens and borrowing terms. Ajayi (2006) defines external debt management as the institutional and technical arrangements for organising a country's external liabilities to ensure debt sustainability. Emilia and Emilian (2008) further clarify that debt is sustainable when a country can meet its obligations without seeking debt relief or undermining economic growth.

Edet-Nkpubre (2013) highlights the dual nature of external debt management, which includes technical aspects such as determining sustainable debt levels and favourable borrowing terms, along with institutional components like administrative, legislative and monitoring frameworks. Before committing to new external borrowings, policymakers must assess repayment plans and the economic constraints that debt imposes. Using borrowed funds effectively should address domestic needs and boost the country's export capacity to generate resources for debt servicing.

Accordingly, debt management is a crucial macroeconomic policy requiring coordinated efforts across loan contracting, utilisation and servicing. Bangura et al. (2000) and the IMF and World Bank (2000) asserted that effective debt management strategies can promote economic growth, alleviate poverty and support sustainable development without leading to external payment difficulties. Recognising its significance, this study

aims to develop a comprehensive debt management framework for South Asia, addressing the determinants and risks linked to external debt.

3.4.5.1 Gap Identification

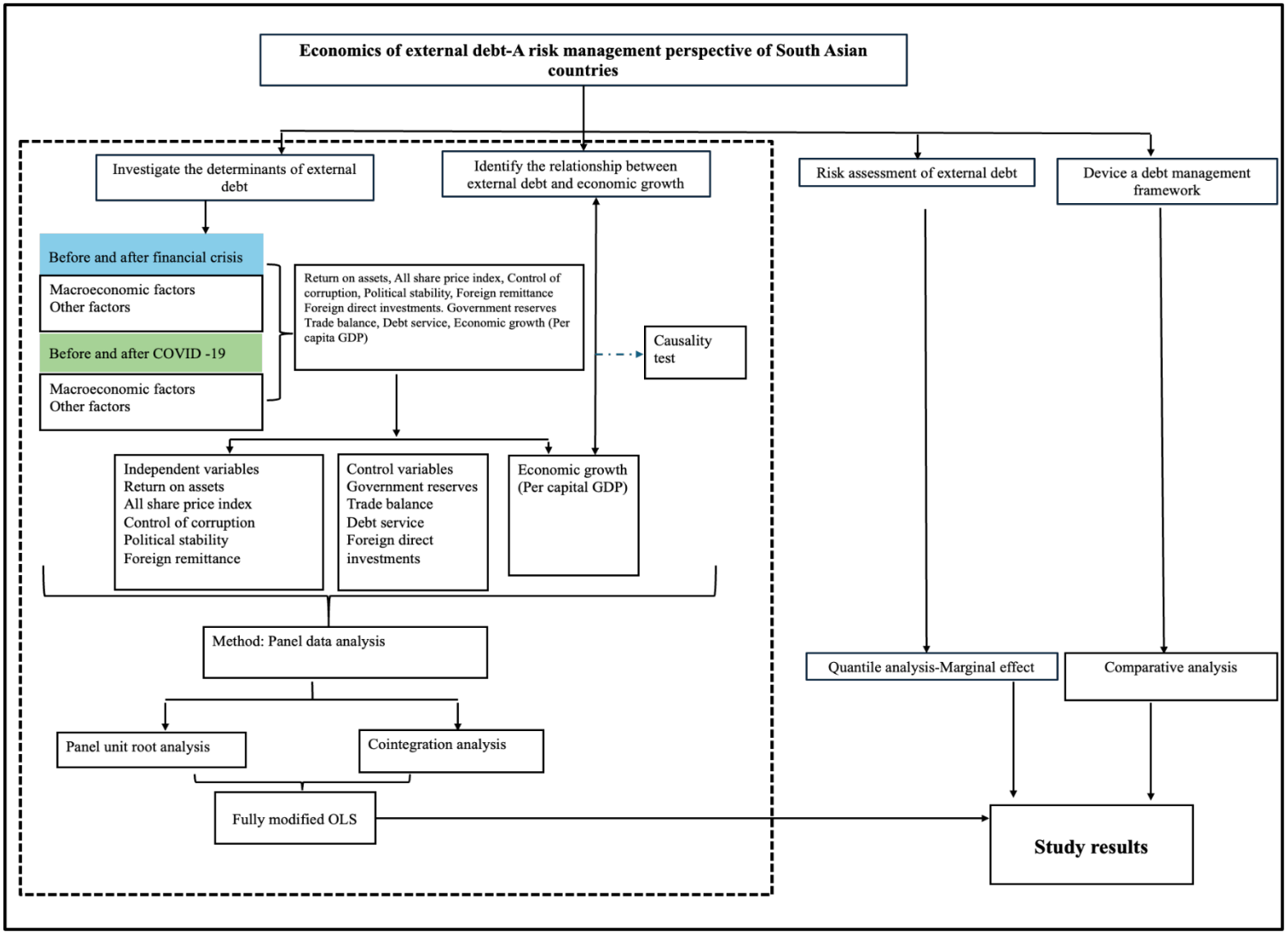
There is a significant gap in developing a comprehensive debt management framework that includes all South Asian countries. While existing research on debt management frameworks in developed and emerging economies predominantly adopts a theoretical or global perspective, there is limited attention to the structural and institutional constraints unique to South Asia. Effective debt management is essential for ensuring long-term economic stability and resilience; however, country-specific frameworks tailored to each nation's economic conditions and external debt risk factors remain underexplored. The studies primarily emphasise cost-risk trade-offs, borrowing strategies and sustainability assessments. However, they inadequately address the influence of fiscal discipline, political stability and governance on external debt management in South Asia. While external debt is broadly acknowledged as a significant economic challenge, the research frequently lacks a region-specific framework that corresponds with the economic realities of South Asian countries.

Furthermore, although global initiatives such as the Millennium Development Goals and the Monterrey Consensus underscore the importance of sustainable debt strategies, insufficient attention has been afforded to their practical implementation within the South Asian context. A comprehensive debt management framework tailored explicitly for South Asia is needed to bridge this gap. This framework should encompass institutional, financial and economic factors that significantly influence the region's capacity to sustain external debt. Furthermore, it must address the efficacy of existing risk management tools, policy misalignments and external shocks. By effectively closing these gaps, the development of more effective debt management policies will be facilitated, thereby enhancing economic growth, financial stability and long-term debt sustainability within South Asian economies.

3.5 Conceptual Framework

This study aims to build on theoretical and empirical evidence to address a critical research gap by investigating the determinants of external debt, conducting risk assessments and developing a debt management framework specifically for South Asian countries. The conceptual framework outlined (see figure 3.3) provides a structured and comprehensive approach to analysing the economics of external debt and its risk management in this context. It focuses on identifying the factors influencing external debt, exploring its relationship with economic growth, assessing associated risks and proposing strategies for effective management. By integrating macro-economic and other variables, the framework emphasises the pre- and post-financial crisis periods and the impacts of COVID-19. Key variables, such as return on assets, political stability, corruption control, FDIs, trade balance and debt service, are rigorously analysed using advanced panel data techniques, including unit root analysis, co-integration and fully modified OLS. The analysis incorporates causality testing, quantile analysis and comparative assessments, ultimately offering valuable insights to promote economic resilience and sustainable regional debt management.

Figure 3.3: Conceptual Framework



3.6 Conclusions of the Empirical Evidence and Issues for the Current Study

This chapter explores the empirical literature and theoretical perspectives on external debt, focusing on South Asian countries. The review emphasises the critical role of external debt as a financing tool for developing nations. Developing countries often rely on external borrowing to fuel economic growth, establishing a significant relationship between external debt and financial performance. The theoretical underpinnings, such as gap theories and Keynesian views, underscore the importance of external debt in addressing development gaps. Despite its benefits for economic development, external debt also introduces substantial risks and challenges, often leading to debt crises. Theories such as the classical view, debt overhang, the debt Laffer curve and crowding-out effects highlight the potential adverse consequences of excessive borrowing. This underscores the importance of identifying and managing these risks while developing robust risk assessment methods and debt management frameworks.

While the significance of external debt is well established, this review identifies notable gaps in the existing literature that this study aims to address. First, research specifically focused on external debt in South Asia remains limited. Although prior studies have examined the impact of public debt on economic growth and macroeconomic indicators globally, few have investigated external debt in the South Asian context (e.g., Awan et al., 2011; Maitra, 2019; Wanniarachchi, 2020). This study seeks to bridge this gap by comprehensively analysing the determinants and impacts of external debt in South Asia.

Second, the literature shows inconsistencies in findings regarding the relationship between external debt and economic growth and in determining the optimal level of external debt. These inconsistencies underscore the need for further empirical research to better understand these dynamics and their implications. Third, most studies on external debt determinants emphasise macro-economic factors such as GDP, inflation, exports, and exchange rates (e.g., Chaudhary et al., 2000; Gur, 2012; Ting & Menggang, 2019). However, limited attention has been given to country-specific, sector-specific and non-economic determinants. Additionally, the performance of specific sectors and their impact on external debt remains under-researched. This study addresses these gaps by

investigating various determinants, incorporating economic, country-specific, sector-specific and non-economic factors.

Furthermore, the existing literature on external debt risks mainly addresses exchange rate and interest rate risks, as well as debt rescheduling, utilising limited analytical tools such as VAR, CAR, Monte Carlo simulations, and discriminant analysis (e.g., Papaioannou, 2006b; Waheed, 2003). While some studies have aimed to predict debt crises or identify factors contributing to repayment difficulties, they have not thoroughly explored the risks associated with the determinants of external debt nor developed tailored risk management frameworks for South Asia. Additionally, existing frameworks do not consider the significant economic disruptions caused by the COVID-19 pandemic. This study addresses these gaps by examining the risks related to external debt and proposing a debt management framework that considers the unique challenges faced by South Asian countries, including disruptions related to the pandemic. In conclusion, this study aims to enrich the existing body of knowledge by addressing critical gaps. It thoroughly analyses external debt determinants, explores their relationship with economic growth, assesses associated risks and develops a practical debt management framework for South Asia. By providing actionable insights, this study intends to guide policymakers in promoting sustainable debt management and ensuring regional economic stability.

3.7 Summary of the Chapter

This chapter provides a critical review of the existing literature on external debt, with particular attention to its determinants, risk factors, and management strategies. It traces the historical development of global external debt, identifying four major waves of debt accumulation since 1970. The chapter adopts definitions from the International Monetary Fund (IMF), The World Bank and the previous researchers' classifications to distinguish between domestic and external debt. Theoretical perspectives such as gap models, debt overhang hypothesis, dependency theory, public choice theory, and the efficient market hypothesis are examined to explain the dynamics of external debt accumulation. While Keynesian theory supports external borrowing as a tool for stimulating growth, classical and neoclassical theories highlight the long-term costs of excessive debt, including reduced investment, diminished growth, and intergenerational burdens. Empirical literature reviewed in the chapter presents mixed findings on the relationship between external debt and economic growth, with several studies suggesting a threshold effect,

where borrowing enhances growth up to a certain level, beyond which it becomes detrimental. Additionally, the chapter highlights that most of the previous findings are focused on investigating the generalised macroeconomic factors and the external debt. Recent studies, including those using quantile regression and Value-at-Risk (VaR) approaches, highlight the need for more comprehensive risk assessment frameworks that go beyond traditional interest rate, exchange rate risks and debt rescheduling. This chapter concludes by identifying a critical gap in the literature: the absence of a robust, region-specific debt management framework tailored to the unique structural and economic characteristics of South Asian economies. Addressing this gap, the chapter lays the groundwork for developing a comprehensive debt management strategy that supports sustainable economic growth and resilience.

Chapter 4: Methodology

4.1 Introduction

Chapter 3 provides a comprehensive review of the existing literature on external debt in South Asia. It seeks to identify the most suitable modelling tools and methods for the examination of external debt within this region. This inquiry raises a critical question: which among the available modelling tools and methods are appropriate for measuring and evaluating the determinants of external debt, assessing the associated risks and developing a practical debt management framework? Consequently, this chapter aims to identify specific modelling tools and methods to analyse the determinants of external debt, assess the associated risks at varying levels of debt, and explore the relationship between external debt and economic growth. The chapter is structured into six key sections. The first section discusses the scope of the study, referencing the data utilised, the sources of this data, and the period under consideration. The second section elaborates on the selection of variables through stepwise regression analysis. In the third section, the study identifies suitable modelling tools and methods for investigating the determinants of external debt while also adopting methods to examine the relationship between external debt and economic growth, identifying appropriate tools for assessing the risks of external debt and developing a debt management framework (as outlined in Table 4.1)

Table 4.1: Research questions and methods adopted to conduct the analysis

Research Question	Methods Used
RQ1-How do the determinants of external debt vary in South Asian countries from 2002–2021	Fully modified OLS method
RQ1.1-How do the determinants of external debt vary in South Asian countries before the financial Crisis (2002–2008)	Panel EGLS (cross-section weights)
RQ1.2-How do the determinants of external debt vary in South Asian countries after the financial crisis (2009–2021)	Fully modified OLS
RQ1.3-How do the determinants of external debt vary in South Asian countries before COVID-19 (2002–2018)	Fully modified OLS
RQ1.4-How do the determinants of external debt vary in South Asian countries after COVID-19 (2019–2021)	Fixed effect
RQ2- Do debt determinants have a short-term or long-term impact on South Asian countries?	Fully modified OLS
RQ3: How does external debt affect the economic growth of South Asian countries from 2002–2021?	Random effect Pairwise Dumitrescu–Hurlin Panel Causality Test results
RQ4: What are the risk determinants of external debt in South Asia from 2002–2021?	Quantile regression analysis

Finally, the fourth section wraps up the chapter by summarising the research methods used throughout the study. Chapter 5 presents the findings of this research.

4.2 Scope of the Study and Data Collection

The South Asian region comprises Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka. While some definitions include Afghanistan, others may exclude Pakistan; external debt-related data for Afghanistan have only been available since 2017 (Trading Economics, 2021). This study excludes Bhutan from the analysis owing to the inability to gather sufficient data. Consequently, the research focuses on six South Asian countries: Sri Lanka, India, Pakistan, Bangladesh, the Maldives and Nepal. The data for Sri Lanka, India, Pakistan and Bangladesh were collected using all explanatory variables without missing data. However, for the Maldives, two data points needed to be included for 2000. Therefore, back casting and forecasting techniques used by previous researchers such as Ebert et al. (2009), MacIsaac et al. (2004), and Contreras-Reyes and Idrovo-Aguirre (2020) were used to identify the missing data. In addition, liner interpolation and

extrapolation, as suggested by Gujarati (2009) and research by Bodman and Le (2013), Chen and Ravallion (2004), Ferreira et al. (2015), Jolliffe et al. (2015), Kummu et al. (2018) and The World Bank (2018, 2019) considered in identifying the missing data. Therefore, after identifying the missing data using these suggested methods, such as back casting and forecasting, the study received the same number of observations for each country, which indicates that the data are balanced panel data.

The study spans 20 years, from 2002 to 2021, to comprehensively analyse external debt and excluded data for 2000 and 2001 owing to the unavailability of data for All share price indexes of Maldives as Maldives established their stock exchanges in 2002. The selected timeframe covers significant economic events, including the GFC and the COVID-19 pandemic. The choice of this period allows for examining external debt trends before and after substantial crises, thereby facilitating an understanding of the determinants and risks that could contribute to future debt crises. The data collected for this study includes macro-economic and country-specific variables, ensuring a robust evaluation of external debt in South Asia.

4.2.1 Data Sources

As shown in Table 4.2, secondary data were collected from The World Bank's World Development Indicators, each country's reserve bank's annual reports, and official stock market publications. Data availability guided the selection of both the study period and the countries. The study period from 2002 to 2021 is significant as it encompasses the GFC and the COVID-19 pandemic, which had substantial economic impacts on the region.

To assess the implications of these crises, the study analyses data for the entire period and in segmented timeframes. The study period is partitioned into four sub-periods: before and after the GFC (2002–2008 and 2009–2021) and before and after the COVID-19 pandemic (2002–2018 and 2019–2021). This segmentation aligns with recommendations by Gujarati (2009) and findings from previous studies such as Islam (1995), Sakyi and Egyir (2017), Banerjee et al. (2018), Lin et al. (2021) and Egyir et al. (2020). These works highlight that using an extended period for panel analysis can introduce outliers and disturbances that may affect result accuracy. Transforming the data into these sub-periods

thus supports a more nuanced analysis of structural changes and long-term relationships, a practice further validated by Sala and Trivín (2014) for effective policy development.

Accordingly, the study employs four regression models to capture these segmented analyses as follows:

Time period 2002–2008: $Y_t = \lambda_1 + \lambda_2 X_t + \lambda_k X_t + u_{1t}$. $n_1 = 7$

Time period 2009–2021: $Y_t = \lambda_1 + \lambda_2 X_t + \lambda_k X_t + u_{2t}$ $n_2 = 13$

Time period 2002–2018: $Y_t = \lambda_1 + \lambda_2 X_t + \lambda_k X_t + u_{3t}$ $n_3 = 17$

Time period 2019–2021: $Y_t = \lambda_1 + \lambda_2 X_t + \lambda_k X_t + u_{4t}$ $n_4 = 3$

Time period 2002–2021: $Y_t = \alpha_1 + \alpha_2 X_t + \alpha_k X_t + u_t$ n = 20

These models facilitate a detailed exploration of external debt determinants across varying economic conditions, offering insights into how unexpected events, such as financial crises and pandemics, affect external debt structures in South Asia.

Table 4.2: Data sources

Variable	Definition/Proxy	Notation	Source of Data
Dependent variable			
Total external debt	Total external debt to gross domestic product	EXDGDP	World Bank data
Explanatory variables			
Trade balance	Difference between export and import % of GDP	TB	World Bank data
Foreign remittance	Foreign remittance as % of GRS	FR	World Bank data
Foreign Direct investments	Foreign direct investment as a % of GDP	FDI	World Bank data
Government reserves	Government reserves as a % of GDP	GR	World Bank data
Debt service	Debt service as a % of GDP	DS	World Bank data
oil imports	Oil imports% of total imports	OI	World Bank data
Return on assets	Return on asset ratio Financial stability	ROA	Country annual reports

Variable	Definition/Proxy	Notation	Source of Data
Control of corruption: Estimate-score	Control of corruption index Country's transparency	CC	World Bank data
Political stability estimate	Political stability index Political stability	PS	World Bank data
Unemployment	Unemployment % of total population	UN	World Bank data
All share price index	All share price index in USD Stock market performance	ASPI	Country annual reports and Stock market publications
Real Interest rate	lending interest rate adjusted for inflation as measured by the GDP deflator	RI	World Bank data
Inflation	Consumer price index (annual)	INF	World Bank data
Exchange rate	National currency per USD	ER	World Bank data
Short-term external debt/Total external debt	Maturity of external debt	STE	World Bank data
Tax revenue	Tax revenue as a share of government revenue	TR	World Bank data
Aging population as % of total population–65 old and above	Need for subsidiaries	AP	World Bank data
Government expenditure	Government expenditure as a share of GDP	GE	World Bank data
Government revenue	Government revenue as share of GDP	GR	World Bank data
Capital formation	Gross fixed capital formation as a share of GDP	INV	World Bank data

4.3 Variable Selection

The study initially identified 20 potential independent variables, as shown in Table 4.2. These variables included empirically tested factors and new variables identified as significant based on country-specific economic conditions and empirical findings relevant to investigating the determinants of external debt. When constructing a statistical model, it is crucial to determine which variables should be included. This decision

involves evaluating whether to use a comprehensive model incorporating all available variables or a subset model with selected variables.

When the number of observations (n) exceeds the number of variables (p), as in our study with 120 observations and 20 variables, least squares estimates tend to have low variance and perform well on test observations. However, when $p > n$, there can be variability in the least squares fit, leading to overfitting and poor predictions on future observations (Desboulets, 2018). Even though the current study has more observations (120) than variables (20), determining the most suitable model for analysing dependencies becomes challenging when confronted with a substantial number of variables. Specifically, owing to issues such as overfitting and increasing the levels of noise in the model, leading to confounding estimates, it is complex to identify the optimal set of variables in terms of goodness-of-fit measures (Blazejowski et al., 2001).

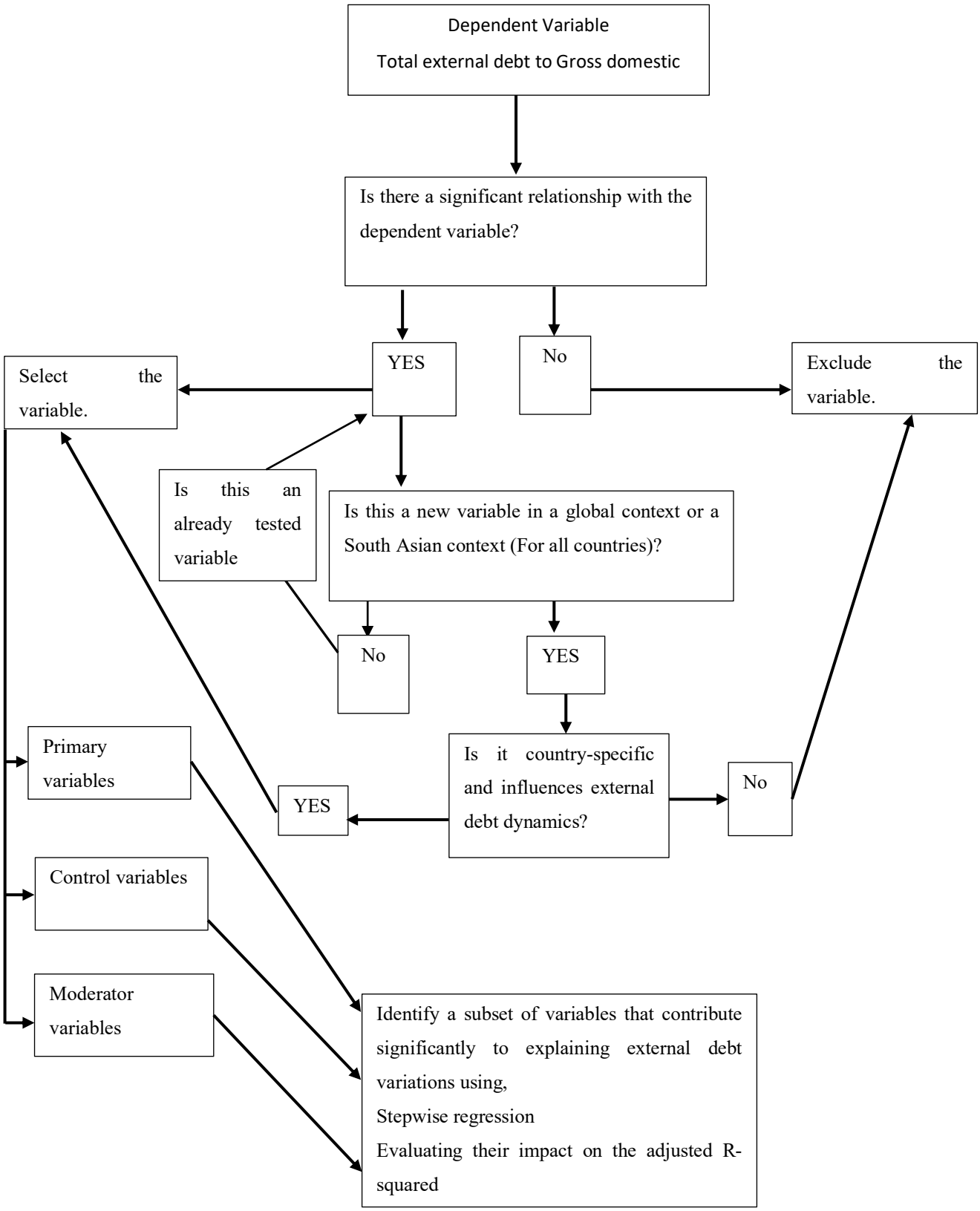
Mitchell and Beauchamp (1988) have explained that variable selection is essential as it simplifies the relationship between the response and predictors, helps identify significant and insignificant predictors, reduces future prediction costs and improves the accuracy of statistical estimates and predictions. Therefore, the subset selection is necessary to create an interpretable and concise model. Thus, researchers employ various techniques to select the variables, such as stepwise regression (Breaux, 1968), auto metrics (Hendry & Richard, 1987), non-negative garrotte (Breiman, 1995), ridge regression, least angle and shrinkage selection operator (LASSO) (Tibshirani, 1996), and sure independence screening (Fan & Zhang, 2008).

Stepwise regression and auto metrics are test-based methods, while LASSO, non-negative garrotte, and ridge regression are penalty-based approaches, and sure independence screening is a screening-based technique. Among the methods, stepwise regression is the most straightforward approach, allowing for easy identification and exclusion of statistically insignificant variables. This method's primary objective is to retrieve variables that do not significantly contribute to the model, thereby enhancing model simplicity and interpretability (Desboulets, 2018). In contrast, auto metrics present a more comprehensive modelling philosophy. While it offers a holistic approach to modelling, considering a wide range of factors and intricacies, it comes at the expense of complexity.

Auto metrics entail the use of intricate algorithms and necessitate a thorough understanding of numerous tuning parameters, rendering its application more challenging, especially for those without extensive expertise in the field (Wang, 2009). Alternatively, penalty-based methods introduce another dimension to variable selection. These methods incorporate a penalty term into the estimation process, thereby influencing the coefficients of variables. The penalty-based techniques encounter the issue of bias in estimation because they apply shrinkage to the coefficients (Weisberg, 2005). Another technique in variable selection is screening techniques. These methods predominantly rely on ranking procedures that gauge the association between the dependent variable and the set of potential regressors. Frequently, this evaluation takes the form of bivariate analysis, wherein the pairwise relationships between variables are scrutinised to identify those most pertinent to the modelling endeavour.

The current study employs stepwise regression to address the outlined challenges and to identify the most appropriate model for analysing interdependencies among variables, owing to its simplicity and practical applicability (see Figure 4.1). The initial step involves assessing whether each explanatory variable exhibits a significant relationship with the dependent variable, drawing on both existing literature and the specific economic context of each country. Subsequently, it is essential to determine whether the variable represents a novel contribution in the global or South Asian context. If it does not, the literature should guide whether the variable functions as a control or a moderating variable. If it is a novel variable, the next step is to assess whether it is country-specific and whether it significantly influences external debt dynamics. If the variable is found to affect external debt, it should be selected for inclusion in the model, after which stepwise regression is applied to identify the optimal subset of explanatory variables.

Figure 4.1: Variable selection process



Stepwise regression was Breaux's first model selection procedure in 1967 when the statisticians started considering the model uncertainty. This awareness stems from the realisation that, in a context with p predictor variables, a potential ensemble of 2p distinct models exists, each representing a unique combination of predictors. However, considering all subsets is impossible with large p (Desboulets, 2018; Kuo & Mallick, 1998). Therefore, stepwise regression was introduced to reduce the search, which only investigated a subset of all possible regressions to identify the actual model. Stepwise regression involves two approaches: backward and forward.

In the backward approach, the variable selection starts with a full model, completing all predictors and iterative. It removes insignificant variables, and in the forward approach, the variable is selected by adding significant variables based on specific statistical criteria (Mitchell & Beauchamp, 1988). This simplicity makes it an easily implementable technique for model selection, making it accessible for empirical applications (Desboulets, 2018). Typically, a specific criterion is used for variable selection at each step in the process. This involves considering all possible one-variable changes from the current model and selecting the best modification based on the chosen criterion. This criterion can take various forms, such as seeking the lowest *p*-value, the highest adjusted R^2, the lowest Mallow's Cp (Mallows, 1973), the lowest Akaike Information Criterion (AIC; Akaike, 1973), AICc (Hurvich & Tsai, 1989), BIC (Schwarz, 1978) or HQIC (Hannan & Quinn, 1979), minimising prediction error or utilising leave-one-out cross-validation, among other options. The current study employs explicitly backward stepwise regression, as presented in Appendix B, which is suitable when the number of samples (*n*) exceeds the number of variables (*p*). This approach systematically eliminates less significant variables, aiming to end with the most appropriate subset model. According to the backward stepwise regression, the current study conducted the variable selection, and as cross-validation criteria, the study used adjusted R^2 [3].

Bryant and Yarnold, 1995, Costello and Osborne, 2005 and Hair et al., 2010 stated that the minimum observations for one variable as a general rule are five (5:1). In other words,

[3] The adjusted R-squared (R^2) is a statistical measure that balances the trade-off between model complexity and goodness of fit. When adding irrelevant variables to a model, the error only increases marginally, as these variables only contribute to noise. However, they also increase the model's complexity. The adjusted R-squared aims to identify the model that maximises goodness of fit while penalising models with excessive complexity owing to irrelevant variables. The goal is to achieve high goodness of fit while including only meaningful variables and avoiding noise variables (James et al.,2013).

the minimum observations should be five times the number of variables to be analysed. In addition, they mentioned that the more acceptable sample size would be a 10:1 ratio. Therefore, the study uses one dependent variable and consists of 120 observations; the independent variables should equal or less than 12 (De Vaus, 2002). Based on all these criteria, the study has selected 11 variables, including the all-share price index (ASPI), trade balance (TB), control of corruption (CC), foreign remittance (FR), debt service (DS), FDI, return on asset (ROA), political stability (PS), government reserves (GR), oil imports (OI) and unemployment (UNP).

The study then categorised these selected variables into primary and control variables based on the discussion of the determinants of external debt in section 3.4. Out of the 11 variables, DS, government reserve (GRS), FDI and TB have already been examined to investigate the determinants of external debt in South Asia. Therefore, they are categorised as control variables; the other seven are classified as primary variables.

Accordingly, the following subset model is specified for conducting the study after conducting the stepwise regression.

$$EXDGDP_{it} = \alpha_{0i} + \beta_1 X_{it1} + \beta_k X\text{itk} + e_{it} \quad (4.1)$$

Where $EXDGDP_{it}$ is the external debts to GDP ratio of country *i* at period *t*, X_{it} is a vector of explanatory variables included in the model of country *i* at period *t*, α_{0i} is the country-specific fixed effect, e_{it} is the error term, and $\beta 1 \ldots \beta 11$ are regression coefficients of the respective independent variables.

$$\beta 1TBit + \beta 2FRit + \beta 3FDIit + \beta 4GRSit + \beta 5DSit +$$
$$\beta 6ROAit + \beta 7CCit + \beta 8PSit + \beta 9ASPIit + \beta 10OIit + \beta 11UNit$$

Independent variables

TB-trade balance, FR-foreign remittance, FDI-foreign direct investment, GRS-government reserves, DS-debt-service-to-export, ROA-return on assets, CC-control of corruption, PS-political stability estimate, ASPI-all share price index, OI-oil imports and UN-unemployment, and *i* and *t* represent country and time, respectively.

4.4 Description of Variables and the Formulation of the Hypothesis

All variables used in this study are expressed in real terms and span from 2002 to 2021. The study focuses on six South Asian countries: Sri Lanka, Bangladesh, India, Nepal, Pakistan and the Maldives. As outlined in Table 4.3, the explanatory variables were identified, and the hypotheses were developed based on a comprehensive literature review and theoretical perspectives.

Table 4.3: Determinants' identification based on literature and external debt theories

Variable	Previous Literature	Theory
TB	Dawood et al., 2021; Abbas et al., 2020; Awan et al., 2011, 2014,	Based on the national income accounting theory savings-investment gap, foreign investment gap, two-gap theory or dual gap theory and financing gap theory, the two-gap model and three-gap models proposed by Chenery and Strout (1966) and Bacha (1990) Classical and Keynesian
FR	Mijiyawa and Oloufade, 2022	Debt overhang theory
FDI	Imimole et al. (2014), Ostadi and Ashja (2014), Abbas et al., 2020	Debt overhang theory
GRS	Waheed and Abbas, 2021–positive effect	Based on the national income accounting theory savings-investment gap, foreign investment gap, two-gap theory or dual gap theory and financing gap theory two-gap model and three-gap models proposed by Chenery and Strout (1966) and Bacha (1990)
DS	by Beyene and Kotosz (2020a), Beyene and Kotosz (2020b) and Tiruneh (2004)	Classical view, Debt cycle, debt Laffer curve and debt dependency theory, debt overhang, crowding out
OI	Waheed, 2017 Adamu, 2019	Balance of payment theory
ROA	New variable	Debt-cum-growth theory, debt overhang, Dual gap theory and financing gap theory
CC	Azolibe, 2020 and Awan et al. (2014)	The public choice theory and agency cost theory
PS	Colombo and Longoni, 2019	The public choice theory and agency cost theory
UNP	New variable	Keynesian view
ASPI	New variable	Debt-cum-growth theory, debt overhang, efficient market hypothesis

4.4.1 Gross External Debt as a Percentage of Gross Domestic Product

External debt, defined as debt owed to non-residents, includes public, publicly guaranteed, private non-guaranteed long-term debt, short-term debt and IMF credit. The study measures external debt using the external debt-to-GDP ratio, a widely recognised indicator of a country's capacity to service debt obligations. GDP is a more accurate measure of a government's ability to generate domestic resources to repay debt (World Bank, 2023). The external debt-to-GDP ratio provides insights into a country's repayment capacity, with higher ratios indicating potential challenges in managing debt. Researchers like Ojo (1989), Waheed (2017) and Ting and Menggang (2019) have used the external debt-to-GDP ratio as a dependent variable in their empirical analyses to explore the factors that influence debt sustainability and fiscal vulnerability. Their findings demonstrate the usefulness of this metric in measuring the magnitude and impact of a nation's external debt compared with its economic output, thereby solidifying its importance in debt dynamics research.

4.4.2 Trade Balance

The TB is the difference between a country's exports and imports. In the context of globalisation, nations have increasingly implemented policies to promote economic integration, leveraging foreign trade to achieve growth and development benefits such as technology transfer and FDI (Dawood et al., 2021). While trade openness can enhance foreign exchange reserves and create employment opportunities, it may also lead to higher external debt if imports consistently exceed exports. Therefore, this study refers to TB in terms of trade deficits, as most South Asian countries exhibit negative TBs.

Theoretically, the expected relationship between TB and external debt is mixed. A surplus in TB (exports exceeding imports) is expected to correlate negatively with external debt. In contrast, a trade deficit (imports exceeding exports) is expected to correlate positively, reflecting unfavourable terms of trade that lead to increased indebtedness (Awan et al., 2011, 2014; Gargouri & Ksantini, 2016; Ojo, 1989).

The gap theory proposed by Chenery and Strout (1966) and Bacha (1990) identifies the foreign exchange gap as a significant driver of external debt. Classical economic theory critiques external debt used to finance trade deficits as boosting inefficiencies. At the same time, Keynesian perspectives argue that strategic short-term borrowing can improve

domestic production and enhance trade balance in the long run. Thus, based on theoretical and empirical insights (as summarised in Table 4.2), the study predicts a positive correlation between trade deficits and external debt levels in South Asia.

4.4.3 Foreign Remittance Received

The role of foreign remittances in external debt dynamics is explored based on insights from the IMF and World Bank (2008). From a debt sustainability perspective, remittances are equivalent to other repayment capacity measures, such as GDP and exports. These inflows enhance foreign exchange reserves and alleviate domestic resource constraints by supplementing household income and facilitating consumption and investment. Remittances have become a crucial source of non-debt-creating external financing, with many countries observing significant growth in inflows since the early 2000s. In some economies, remittances surpass export earnings and contribute more than 10% of GDP. Chami et al. (2008) emphasise that remittances are countercyclical, helping absorb economic shocks and reducing debt vulnerabilities.

In South Asia, countries like Bangladesh and Sri Lanka rely on remittances to manage current account deficits, reflecting their role as a sustainable foreign exchange inflow. However, the relationship between remittances and external debt varies across countries depending on how remittances are utilised. While Batool and Zulfiqar (2012) found a negative relationship between remittances and external debt, Mijiyawa and Oloufade (2022) identified a positive and significant effect. The latter study argues that the effect becomes more pronounced when remittances are used to build international reserves, indirectly influencing external debt dynamics.

The relationship between remittances and debt overhang is particularly significant in developing economies. High debt levels can deter investment and economic growth, while remittance inflows can mitigate these effects by providing foreign exchange, supporting debt servicing and macroeconomic stability. Thus, this study seeks to bridge the gap in understanding remittances' role in South Asia's external debt management. It hypothesises that the relationship between remittances and external debt can vary depending on their use. A negative correlation is expected if remittances are employed as a debt sustainability measure. Conversely, a positive correlation is anticipated if they serve as a buffer for further borrowing.

4.4.4 Economic Growth—GDP

The GDP growth rate is a fundamental measure of economic growth. Previous studies on external debt have predominantly analysed its correlation with economic growth, often including the growth rate as an explanatory variable. These studies consistently suggest that sluggish economic growth contributes to an escalation in external debt levels (Bittencourt, 2015; Dawood et al., 2021; Globan & Matošec, 2016; Murwirapachena & Kapingura, 2015; Swamy, 2015). In line with these findings, the current study expects a negative coefficient for economic growth, as higher growth rates are likely to enhance tax revenues, reduce public expenditures, lower fiscal deficits and ultimately curb debt accumulation.

Theoretical underpinnings, such as the crowding-out effect and the debt overhang theory, support this anticipated relationship. These are also consistent with classical and neoclassical economic views, which assert that external debt hampers economic growth by deterring investment.

4.4.5 Foreign Direct Investment

FDI often serves as an alternative source of external financing. According to Waheed (2017), the relationship between FDI and external debt varies depending on a country's economic structure: oil-importing nations exhibit a positive association, while most oil-exporting nations display a negative correlation. Moreover, well-developed infrastructure is associated with reduced dependence on external borrowing. Conversely, Ostadi and Ashja (2014) demonstrate that rising external debt negatively affects FDI, undermining investor confidence and reducing capital inflows.

This aligns with the debt overhang hypothesis, which posits that when a country's debt level surpasses a certain threshold, the expected future debt service obligations deter private investment, including FDI. Investors may perceive high debt levels as a signal of economic instability and potential policy uncertainty, reducing the incentive to commit long-term capital. Deshpande (1997) and subsequent studies (Benedict et al., 2014; Ostadi and Ashja, 2014; Abbas et al., 2020) confirm this negative relationship, especially in heavily indebted countries. Tanna et al. (2018) further highlight that excessive debt can diminish the growth benefits of FDI, although improvements in financial sector development can help moderate this effect.

In the South Asian context, this study anticipates a negative relationship between FDI and external debt, suggesting that as FDI inflows increase, reliance on external borrowing may decline. This supports the notion that attracting sustainable foreign investment can help meet development goals without exacerbating debt vulnerabilities.

4.4.6 Government Reserves

GRSs, measured as reserves-to-GDP, are crucial in mitigating external shocks and maintaining liquidity. These reserves include holdings of SDRs, foreign exchange, IMF reserve positions and gold. A higher reserves-to-debt ratio indicates a more robust debt-servicing capacity, reducing debt rescheduling likelihood.

The relationship between reserves and external debt can be understood through the two-gap theory (Chenery & Strout, 1966) and the three-gap theory (Bacha, 1990). The former highlights the savings-investment and foreign exchange gaps, while the latter incorporates fiscal constraints. Low reserves exacerbate these gaps, increasing the need for external borrowing, whereas high debt levels deplete reserves via debt servicing, creating a vicious cycle. Empirical evidence from Ting and Menggang (2019), and Waheed et al. (2021) suggests a negative relationship between reserves and external debt. This study aligns with these findings, expecting that higher GRSs will lead to reduced external debt.

4.4.7 Debt-Service-to-GDP

Debt service, which includes principal and interest payments, is a critical indicator of a country's repayment capacity. It is often expressed as a DSR to export earnings, a measure that reflects the country's vulnerability to foreign exchange crises and the potential for import reductions (Frank & Cline, 1971; IMF, 2003). However, this study employs the Debt Service to GDP ratio because the inclusion of several export-related variables caused the Debt Service to Exports ratio to exhibit high multicollinearity. The DSR is widely regarded as a benchmark for assessing a nation’s ability to manage its debt obligations effectively. A higher ratio indicates more significant exposure to external shocks, as a shortfall in foreign exchange earnings necessitates reduced imports to meet debt obligations.

Debt service also measures the crowding-out effect (Akram, 2014), referring to how high debt-servicing obligations limit resources available for other essential expenditures. Defined as the amount of interest and sinking fund payments due annually on long-term debt (Merriam-Webster, 2019), it includes both actual debt service—payments made to satisfy debt obligations, including principal, interest and late fees—and scheduled debt service, which comprises payments required over the debt's life (IMF, 2003). Properly managed debt service can improve a borrowing country's creditworthiness, promoting economic growth by attracting additional funds for productive investments (Omodero & Alpheaus, 2019). Conversely, mismanagement can exacerbate financial vulnerabilities and undermine growth prospects.

Empirical studies have extensively used the DSR as a solvency and liquidity measure. For example, Elkhishin and Mohieldin (2020) analysed EDV in emerging markets during the COVID-19 pandemic using the debt-to-export ratio to assess solvency and the debt-service-to-export ratio for liquidity. Similarly, The World Bank's debt sustainability framework utilises this ratio to assess debt distress among low-income countries, capturing short-term liquidity concerns.

Empirical studies offer mixed findings on the relationship between debt service and external debt. Reddy (1999) and Beyene and Kotosz (2020) suggest that debt service increases external debt, while Fatukasi et al. (2020) find that it reduces external debt in Nigeria. These varying results underscore the complex dynamics between debt servicing and external debt accumulation.

From a theoretical perspective, several frameworks illustrate the relationship between debt servicing and economic outcomes. Classical growth theory suggests that debt can promote growth if the borrowed funds are used productively, but excessive servicing diverts resources from essential investments, hindering development (Çöğürcü, 2011; Gurdal & Yavuz, 2015; Leonida et al., 2006). The debt cycle theory posits that rising external debt leads to an escalating servicing burden, trapping countries in a cycle of borrowing to meet existing obligations (Avramovic et al., 1964). According to the debt laffer curve, excessive external debt reduces creditor returns and productivity, making the debt unsustainable (Dogruel & Dogruel, 2007). The debt dependency theory argues that high reliance on debt perpetuates underdevelopment, as servicing obligations limit investment in growth-enhancing activities (Ijirshar et al., 2016; Omodero & Alpheaus,

2019). The debt overhang concept highlights that large external debt deters investment by signalling that future earnings will be directed toward repayment, discouraging both domestic and foreign investors (Agenor & Montiel, 1999; Calvo, 1998; Clements et al., 2003). Finally, the crowding-out effect asserts that substantial debt servicing reduces public sector spending on critical social and economic programs, impairing growth (Krugman, 1987).

Based on these theoretical and empirical perspectives, this study hypothesises a positive relationship between debt service and external debt. Higher debt-servicing obligations are likely to necessitate additional borrowing, creating a reinforcing cycle of debt accumulation. This analysis will provide further insights into how debt servicing affects external debt and broader economic sustainability.

4.4.8 Oil Imports as a Percentage of Mechanise Imports

This study introduces a novel variableoil imports to investigate its relationship with external debt in South Asia. This variable builds on Adamu's (2019) research, which incorporated oil prices as a determinant of external debt and identified a positive relationship. The inclusion of oil imports in this study is grounded in the economic context presented in Chapter 2, which highlights that many South Asian countries' imports consist of oil.

The rationale for including this variable also stems from historical evidence. The global debt crisis of the early 1980s, as analysed by Stambuli (1998), resulted from the rising external debt in developing countries, driven by the BP pressures following the oil crisis of 1973/74. These pressures escalated during the late 1970s and culminated in a debt buildup by 1980 as Third World borrowers resorted to rolling over their obligations. Considering the historical significance of the oil crisis and the ongoing dependency of South Asian countries on oil imports, this study hypothesises a generally positive relationship between oil imports and external debt across the region, which aligns with the balance of payment theory.

However, this relationship is expected to vary across countries owing to differing economic dynamics. As discussed in Chapter 2, most South Asian nations are net oil importers. Exceptions include India, where no significant relationship is anticipated owing to its diversified import structure, and the Maldives, which engages in oil re-

exports rather than relying heavily on imports. A negative relationship between oil imports and external debt is expected for the Maldives, reflecting its unique trade practices. By incorporating this variable, the study aims to capture the nuanced influence of oil imports on external debt, considering both historical patterns and contemporary economic conditions in South Asia.

4.4.9 Return on Assets

Previous research has not adequately explored the impact of financial sector performance on external debt, making it a novel variable in existing models of external debt determinants. For instance, Emmanuel's (2013) study pointed out the negative impact of external debt on bank performance in Nigeria, indicating that foreign or external debt detrimentally affects such performance. Although the survey successfully established this relationship, it overlooked how bank performance might influence external debt levels in return. Additionally, Colombo and Longani (2009) explored the determinants of long-term external debt, using domestic credit from the banking sector as a percentage of GDP (known as financial depth) as a proxy for financial development. However, this only represents a fraction of financial development as defined by The World Bank indicators.

The present study introduces financial sector performance, measured explicitly by ROA, as an innovative explanatory variable in examining the determinants of external debt to address this gap. A sound and well-developed financial sector is known to reduce the need for foreign borrowing. It is well established in the literature that financial market development is a critical driver of economic growth (Bittencourt, 2012; De Gregorio & Guidotti, 1995; Demetriades & Hussein, 1996; Hassan et al., 2011; Levine, 1997; Mundaca, 2009; Ram, 1999; Zhang et al., 2012). Countries with a robust financial sector generally outperform their peers in terms of economic growth. Financial markets and institutions are pivotal in providing information on risk diversification and profitable ventures, which can further facilitate resource mobilisation (Kim et al., 2010). Furthermore, a well-developed financial market contributes to the efficient allocation of resources and capital formation, thereby supporting long-term economic growth (Levine, 2005, 1997). Consequently, establishing a well-functioning financial sector is a significant concern for governments aiming to increase savings and direct them towards productive investments (Muye & Muye, 2016).

In building on this foundation, the study anticipates a negative relationship between ROA and external debt, suggesting that well-performing financial institutions reduce the need for external borrowing, which aligns with the debt-cum-growth theory. The financial sector's performance can be assessed through various indicators, such as size, profitability, capitalisation, loan-to-asset ratio, equity-to-asset ratio and interest margin. Among these, bank profitability is a crucial predictor of financial crises and is typically measured using ROA and return on equity. Analysts and regulators commonly use these measures to evaluate industry performance, predict market trends and assess profitability.

This study introduces the financial sector's performance, primarily through ROA, as a novel explanatory variable for external debt. By efficiently mobilising and allocating resources, a strong financial sector can reduce reliance on external borrowing (De Gregorio & Guidotti, 1995; Levine, 2005), aligning with debt overhang and dual gap theory. Accordingly, the study hypothesises a negative relationship between ROA and external debt, suggesting that more robust financial institutions can help minimise the need for external borrowing.

4.4.10 Control of Corruption—Estimate

Corruption has become a pressing global issue, drawing significant attention in developed and developing countries. Defined by Kautilya over 2,000 years ago as the misuse of public office for personal gain, corruption has historically led to the downfall of governments and prominent politicians (Samimi & Abedini, 2012). The detrimental effects of corruption on the economy are well-documented across various studies. It leads to the misallocation of resources, undermines property rights, stifles innovation and technological transfer, and hampers foreign investment (Hall & Jones, 1999; World Bank, 2002). Additionally, corruption is associated with inefficient public expenditure allocation, which impedes human development (Blackburn & Sarmah, 2008; Gupta et al., 2001; Reinikka & Svensson, 2005).

Numerous studies have shown that corruption undermines external debt sustainability and economic growth. Countries with low levels of corruption are generally less vulnerable to the negative impacts of debt on growth. Poor governance, inefficient resource allocation and political instability have been identified as significant drivers of corruption, particularly in less developed countries (Nurudeen et al., 2015). The relationship between

corruption and economic development has been extensively studied, with findings indicating that corruption reduces productivity and limits annual capital inflows. Awan et al. (2014) highlighted the positive relationship between corruption and external debt, noting that corrupt governments often allocate foreign borrowing for personal needs rather than productive investments, leading to a higher external debt burden.

In corrupt governments, the incentive to borrow is often more robust; governments discount future borrowing costs and tend to misuse the loans. They are more likely to invest in projects with no future returns than those that generate long-term revenue. In contrast, the decision-making process in non-democratic governments may need to be more transparent, complicating the determination of when to borrow or service debt. Therefore, the quality of governance can increase a country's default risk (Ciocchini et al., 2003).

Amoh et al. (2024) found that corruption negatively affects external debt, meaning higher corruption is associated with lower external debt levels in 30 Sub-Saharan African (SSA) countries from 2000 to 2021, using a panel quantile regression approach. This research is among the first to apply quantile regression to explore the corruption-debt nexus across different debt levels in SSA.

These dynamics can be further explained by public choice and agency cost theories. Buchanan and Tullock introduced the public choice theory in 1962. It suggests that policymakers motivated by self-interest or political incentives often prioritise short-term objectives, such as increasing public expenditures or securing electoral support, even at the expense of accumulating unsustainable external debt. This behaviour may conflict with the country's long-term economic goals, as policymakers focus more on political gains than fiscal responsibility.

The agency cost theory, proposed by Jensen and Meckling in 1976, emphasises the conflict between the principals (citizens) and agents (government officials). Agents may act in their own interest rather than the public's best interest. In the context of external debt, this misalignment can manifest in the inefficient or corrupt use of borrowed funds, poor debt management or a lack of accountability in maintaining debt sustainability. These theories show how political and institutional factors can contribute to excessive external debt, undermining economic growth and stability. As a result, corruption is

expected to increase external debt, while efforts to control it will likely reduce it. This study draws on existing literature and theoretical frameworks and introduces corruption control as an explanatory variable for external debt in South Asia. It expects a positive relationship between CC and external debt. This area has yet to be explored. Although the corruption control indicator is widely utilised, it possesses certain limitations. Firstly, it relies on perception-based surveys and expert evaluations, which may introduce subjectivity and measurement bias. Perceptions can be affected by recent events or media coverage, potentially resulting in an overestimation or underestimation of corruption levels. Lastly, cross-country comparability can be challenging, as different nations may interpret corruption differently due to cultural, institutional, or political factors.

4.4.11 Political Stability and Absence of Violence Estimate

There are few studies on PS as an explanatory variable of external debt. The most recent studies are by Harold (2019) and Nurudeen et al. (2015). Nurudeen et al. (2015) examined the causal relationship between corruption, political instability and economic development. They found that years of political instability have contributed to the high rate of corruption and underdevelopment, which has led to external debt. Colombo and Longoni (2009) examined the role of political stability (PS) in influencing external debt across 61 countries, including India, Pakistan, Sri Lanka, and Nepal. They used the government Herfindahl index (Herfgov) as a proxy for political stability, which measures the concentration of political power within a government. A higher Herfgov value reflects a more concentrated political environment, where fewer groups hold significant power. Their findings suggest that external debt tends to be higher in countries with more open and competitive electoral systems and lower levels of political instability. In such environments, stable political conditions and power concentration may encourage borrowing, possibly due to increased government capacity to implement long-term fiscal policies.

However, according to The World Bank definitions, political stability and the absence of violence and extremism (PSVE)is a measure used to evaluate the overall political stability and presence of violence within a country. It assesses factors such as the likelihood of political instability, social unrest, terrorism and other forms of violence that may affect governance and stability. Analysts, policymakers, and researchers often use PSVE to gauge the risk of political instability and violence in a given country. A higher PSVE

score indicates greater perceived political instability and a higher risk of violence. Therefore, considering World Bank definitions, the current study has used PS index data to measure PS.

In the related literature on the macro-economic aspect, many studies have been conducted to figure out the effect of PS from an economic perspective, i.e., FDI (Anyanwu & Yaméogo, 2015; Dupasquier & Osakwe, 2006; Hoque et al., 2018; Kim, 2010; Kurecic & Kokotovic, 2017) and economic growth (Goldsmith, 1987; Roe & Siegel, 2011; Tiwari, 2013; Ahmed & Pulok, 2013; Abdullah et al., 2017b). FDI is a significant source of capital for local firms. However, Lucas (1990) argued that political instability hinders the flow of foreign investment. Focusing on the empirical research on Bangladesh, Chowdhury (2017) showed that, in Bangladesh, the regulatory quality and PS increase FDI inflow. Additionally, Das et al. (2021a) showed that institutional quality reduces capital flight in Bangladesh. Conversely, few studies on African nations found political instability as a substantial obstacle to foreign capital entry (Anyanwu & Yaméogo, 2015; Dupasquier & Osakwe, 2006).

To explain PS in a way similar to corruption, public choice theory and agency cost theory can be used. From the perspective of public choice theory, policymakers, driven by self-interest and political incentives, may accumulate external debt to finance public projects or policies that secure short-term political gains, such as increasing public spending to satisfy voters. In politically unstable environments, these behaviours are amplified, as governments facing uncertainty may prioritise immediate political survival over long-term fiscal responsibility. For instance, leaders may overborrow externally during political instability to appease interest groups or fund populist programs, even when such borrowing risks future economic instability.

Agency cost theory highlights the principal-agent conflict between citizens (principals) and government officials (agents). In politically unstable settings, weak institutions and governance structures increase agency costs, as agents (policymakers) are less accountable to the public. This lack of accountability can lead to inefficient or corrupt use of external debt, with borrowed funds diverted for private gain or unproductive purposes rather than development. Furthermore, political instability discourages robust monitoring and enforcement mechanisms, allowing policymakers to make borrowing decisions that burden future generations without adequate scrutiny. Based on these studies, the current

study introduces PS as a novel variable to investigate South Asia's external debt. The study expects a positive coefficient between PS and external debt. However, the political stability index encounters various challenges in measurement and interpretation. It is predominantly perception-based, relying on expert opinions and survey responses, which can be influenced by temporary events such as protests, elections, or isolated incidents of violence, rather than reflecting inherent structural stability. Additionally, the index may oversimplify complex political environments by condensing them into a single numerical score, thereby potentially concealing significant nuances, such as regional variations in stability within a nation. Moreover, cross-country comparisons may be biased due to differences in political systems, media freedom, and reporting standards, while annual fluctuations might indicate short-term volatility rather than long-term institutional stability.

4.4.12 Unemployment

While a body of literature examines the interplay between population, Labour force and external debt, the findings remain mixed (Awan et al., 2015; Azolibe, 2020). However, limited attention has been paid to the direct impact of unemployment on external debt, particularly in the South Asian context. This study posits that lower unemployment rates could reduce the dependency on external debt, as increased domestic productivity minimises the need for external borrowing. Consequently, a positive relationship between unemployment and external debt is expected.

This hypothesis aligns with the Keynesian perspective, which advocates using debt to increase government expenditures to address unemployment and economic stagnation caused by insufficient demand. Keynesians argue that prolonged underutilisation of private resources (ex.labour)) can hinder national income growth. Furthermore, when directed toward productive investments, external borrowing is not viewed as a burden but rather as a strategic tool for economic revitalisation (Wanniarachchi, 2020). However, the unemployment rate as an economic indicator has inherent limitations in accurately reflecting labour market conditions. Firstly, official unemployment statistics frequently omit discouraged workers who have ceased actively seeking employment, as well as underemployed individuals involved in part-time or informal work, which can be particularly significant in South Asian economies. This omission may lead to an underestimation of the true extent of labour underutilisation. Secondly, cross-country

comparability may be compromised by variations in definitions, survey methodologies, and data collection quality. Thirdly, unemployment data might fail to capture regional disparities within countries, thereby concealing areas of high unemployment. Lastly, in economies characterised by large informal sectors, unemployment rates may exhibit reduced sensitivity to economic cycles, potentially weakening the observed relationships with external factors debt.

4.4.13 All Share Price Index

Irfan et al. (2020), in their study 'Impact of External Debt on Stock Market Performance and Economic Growth: Moderating Role of Capital Formation', identified a negative and significant relationship between economic growth and external debt. However, the impact of stock market performance on external debt has largely remained unexplored. This study addresses this gap by investigating the role of stock performance, hypothesising a negative relationship between stock market performance (represented by the ASPI) and external debt levels. This expectation is grounded in three theoretical frameworks: Debt-Cum-Growth, Debt overhang theory and efficient market hypothesis. According to the debt-cum-growth theory, external debt can stimulate economic growth if the borrowed funds are productively utilised, such as in infrastructure, industrial development or technological advancements. This growth enhances corporate profitability, boosting stock market performance. Conversely, mismanagement or unproductive use of borrowed funds can stagnate growth and erode investor confidence, ultimately suppressing stock market outcomes.

Debt overhang theory suggests that excessive external debt can lead to a situation where future national earnings are insufficient to service the debt, dampening investor confidence in the economy. This diminishes stock market investments and increases company borrowing costs owing to heightened risk perceptions. Such dynamics limit corporate growth, reduce stock valuations and create a negative feedback loop between high debt levels and poor stock market performance. According to the efficient market hypothesis, stock prices incorporate all publicly available information, including external debt levels and economic prospects. If external debt is perceived as well-managed and growth-enhancing, stock prices respond positively, reflecting improved market performance. Conversely, debt mismanagement, leading to economic instability or

increased default risk, prompts stock prices to decline. Thus, the market's response to external debt is contingent upon perceptions of its sustainability and strategic use.

This study examines these dynamics to illuminate the importance of robust stock market performance in alleviating the external debt burden. While the ASPI is a useful measure of overall stock market performance, it has limitations. Firstly, it primarily reflects listed companies, which may not represent the broader economy, especially in developing markets where capital markets are relatively shallow. This could bias results towards sectors or firms better integrated into formal financial markets. Secondly, stock indices can be highly volatile and influenced by short-term investor sentiment, global market trends, or speculative trading, rather than underlying economic fundamentals. Thirdly, in emerging economies, stock market performance can be disproportionately affected by a few large companies, making the index sensitive to firm-specific shocks. Finally, in contexts with low market liquidity, price movements may not accurately reflect changes in economic performance or debt sustainability, limiting the ASPI's reliability as a proxy for macroeconomic health. Based on the discussion on determinants of external debt considering literature, the economics of the economics, and theoretical perspectives, the study has identified 25 hypotheses under four research questions (see Table 4.4).

Table 4.4: Determinants and the Hypothesis

Variable	Hypothesis
Investigation of determinants of external debt in South Asian countries **RQ1: How do the determinants of external debt vary in South Asian countries before and after COVID-19 and the global financial crisis?**	
Trade balance (TB)	H1: Trade balance is negatively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis
Foreign remittance (FR)	H2: Foreign remittance is negatively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis
Foreign Direct investments (FDI)	H3: Foreign direct investment is negatively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis
Government reserves (GR)	H4: Government reserve is negatively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis
Debt service (DS)	H5: Debt service is positively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis
Return on assets (ROA)	H6: Return on Assets is negatively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis

Control of corruption: Estimate-score (CC)	H7: Control of corruption is positively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis
Political stability estimate (PS)	H8: Political stability is positively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis
All share price index (ASPI)	H9: All share price index is negatively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis
Oil imports % of mechanise imports	H10: Oil import is positively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis
Unemployment (UN)	H11: Unemployment is positively associated with the external debt in South Asia before and after COVID-19 and the global financial crisis
RQ2: Do debt determinants have a short-term or long-term impact on South Asian countries?	
H12: The debt determinants' short-term impact on South Asian countries is significant	
H13: The debt determinants' long-term impact on South Asian countries is significant	
Risk assessment of external debt in South Asian countries **RQ3: What are the risk determinants of external debt in South Asia from 2002–2021**	
Trade balance (TB)	H14: Trade balance is a risk determinant of external debt in South Asia
Foreign remittance (FR)	H15: Foreign remittance is a risk determinant of external debt in South Asia
Foreign Direct investments (FDI)	H16: Foreign direct investment is a risk determinant of external debt in South Asia
Government reserves (GR)	H17: Government reserve is a risk determinant of external debt in South Asia
Debt service (DS)	H18: Debt service is a risk determinant of external debt in South Asia
Variable	Hypothesis
Return on assets (ROA)	H19: Return on Assets is a risk determinant of external debt in South Asia
Control of corruption: Estimate-score (CC)	H20: Control of corruption is a risk determinant of external debt in South Asia
Political stability estimate (PS)	H21: Political stability is a risk determinant of external debt in South Asia
All share price index (ASPI)	H22: All share price index is a risk determinant of external debt in South Asia
Oil imports % of mechanise imports	H23: Oil import is a risk determinant of external debt in South Asia
Unemployment (UN)	H24: Unemployment is a risk determinant of external debt in South Asia
Evaluate the relationship between external debt and economic growth in South Asian countries before and after COVID-19 and the financial crisis. **RQ4: How does external debt affect the economic growth of South Asian countries before and after COVID-19 and the financial crisis?**	
H25: External debt is negatively associated with economic growth in South Asian **countries** before and after COVID-19 and the financial crisis.	

4.5 Panel Data Analysis for Investigating the Determinants of External Debt

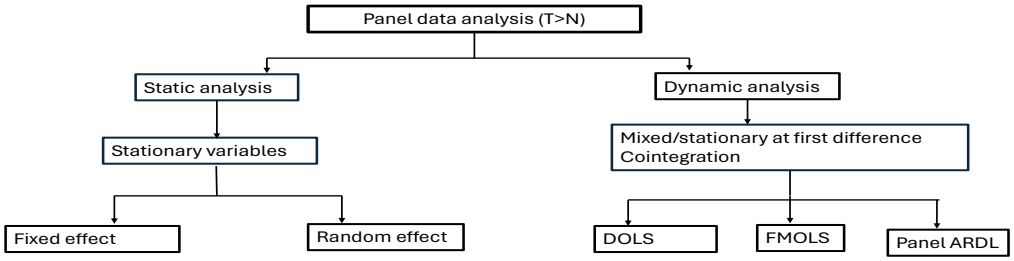
In comparison to time series and cross-sectional analysis, panel data analysis offers several advantages (Baltagi & Levin,1986; Hsiao, 2022; Klevmarken, 1989). First, panel data considers individual heterogeneity, often ignored in time series or cross-sectional data. Consider this heterogeneity to avoid biased results. For example, Hajivassiliou's (1987) study of external debt repayments among 79 developing nations observed between 1970 and 1982 showed that countries possess unique characteristics, such as varying colonial histories, financial institutions, religious affiliations and political regimes, that influence their borrowing and defaulting behaviours, as well as how lenders respond to them. Ignoring this heterogeneity across countries leads to a significant specification error.

Second, panel data provides more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency. Third, panel data can be used to study the dynamics of adjustments and develop economic policies. Fourth, panel data can identify and measure effects that are not detectable in pure time series or cross-sectional data and allow the construction and testing of more complicated behavioural models. Fifth, unlike in time series data, there is no problem with non-standard distributions typical of unit root tests in macro panel data analysis. As Baltagi (2005) mentioned, panel data analysis helps avoid multicollinearity issues and provides more degrees of freedom. It allows for better measurement of the effects of variables compared with time series or cross-section data analysis.

Panel regression analysis encompasses various approaches based on several time series and cross-sectional data available in the panel dataset. According to Baltagi (2005) and Gujarati (2009), if the number of cross-sections is more significant than the number of time periods, the panel dataset is defined as a short panel dataset ($N > T$) and if the number of periods more significant than the number of cross-sections it is defined as a long panel dataset ($T > N$). Since the study consists of 20 years and six countries, the panel dataset can be identified as long. Then, the study should adopt either static analysis, which consists of fixed and random-effects pooled OLS, or dynamic analysis, based on the characteristics of the dataset (see Figure 4.2). Under the static analysis, the random-effects approach may introduce bias when a correlation exists between the covariate of interest

and the unit effects. Conversely, the fixed-effect approach does not account for unobserved time-varying heterogeneity (Vaisey & Miles, 2017). However, it cannot estimate the coefficients of time-constant covariates at the same observation level as the fixed effects. The study should select dynamic analysis if the dataset is mixed/stationary at the first difference and the co-integration.

Figure 4.2: Panel data analysis



4.5.1 Identifying the Characteristics of the Study Panel Dataset

The Gaussian, standard, or classical linear regression model (CLRM), introduced by Gauss in 1821, has been widely used to determine whether a study can be conducted using the least squares regression model. For the model to be valid, several assumptions must be satisfied.

- Linearity in parameters: The regression model must be linear in the parameters, although it does not need to be linear in the variables. Additionally, the X variable (s) and the error assumed to be term are independent, that is, $cov\ (X_i, u_i) = 0$. This means that in CLRM, the X variable is treated as fixed or non-random.

- Zero mean of the disturbance term**:** Given the value of X_i, the mean or expected the value of the random disturbance term u_i is zero $(E\ (u_i|X_i) = 0)$. This indicates no specification bias or specification error in the model used in the analysis.

- Homoscedasticity: The variance of the disturbance term should be constant regardless of the value of X or should have homoscedasticity (var $(u_I) = E[u_i - (E\ (u_i|X_i)\ ^2)$.

- No autocorrelation: The disturbance terms must not be correlated with each other, meaning the observations should be sampled independently $(cov\ (u_i, u_j|X_i, X_j) = 0)$.

- A sufficient number of observations: The number of observations must exceed the number of parameters or explanatory variables in the model.

- The nature of the X variables: All the X variables should not be the same, and that the X variables should be free from outliers.

- No multicollinearity: the X variables should be free from multicollinearity or there should be no exact linear relationship between the X variables.

- Correct model specification: The model must be correctly specified, reflecting the true data-generating process.

- Normality of the disturbance term**:** The stochastic disturbance term should be normally distributed.

Although the assumption of normally distributed errors is considered less critical (Gelman & Hill, 2007; Lumley et al., 2002), the study tests the data for normality before employing regression models. As shown in Appendices C and D, the residuals deviate from the normal distribution owing to skewness in the variables. A variable with a normal distribution should have a skewness of zero and a kurtosis of three. This deviation indicates the need for further transformation or advanced techniques to address skewness before proceeding with regression analysis.

The dependent variable, external debt-to-GDP, is skewed to the right, with the mean more significant than the median owing to the wide range of variation of external debt-to-GDP in South Asia, recording 92% as the highest recorded in Maldives and the lowest of 15% recorded by India. As shown in Appendix D except for controlling corruption, TB and FDI, all other explanatory variables have shown positive skewness. However, deviations from normality tend not to introduce bias in regression coefficients (Ramsey & Schafer,

2012; Williams et al., 2013) or hinder hypothesis testing therefore, there is no notable increase in the type I error rate even when dealing with relatively small sample sizes (Bishara & Hittner, 2012; Ives, 2015 Ramsey et al., 2015; Puth et al., 2014; Warton et al., 2016). DeVaus (2002) suggests that it is reasonable to assume a normal distribution if the sample size is 100 or more. Knief and Forstmeier (2021) argued that deviating from the normality assumption presents relatively limited and manageable risks.

In scientific literature, it is commonly stated that linear models tend to maintain robustness even when the assumption of normality is violated during hypothesis testing and parameter estimation, provided that outliers are effectively addressed (Ali & Sharma, 1996; Box & Watson, 1962; Gelman & Hill, 2007; Lumley et al., 2002; Miller, 1997; Puth et al., 2015; Ramsey & Schafer, 2013; Schielzeth et al., 2020; Warton et al., 2016; Williams et al., 2013; Zuur et al., 2010). Therefore, even without the usual assumption, the OLS estimators are the best linear unbiased estimators under the Gauss–Markov assumptions (Gujarati, 2009).

Then, the study tests multicollinearity and heteroscedasticity to detect whether the other assumptions are valid or violated and to decide whether to conduct the least squares models for multiple regressions. Several rules are considered to detect multicollinearity among explanatory variables. One indication is a high R^2 value accompanied by only a few significant t-ratios. Another is the presence of high pairwise correlations among regressors or a high zero-order correlation coefficient between two regressors. Examining partial correlations can also help. Auxiliary regressions are useful as well; if the R^2 from an auxiliary regression is not greater than the overall R^2, then multicollinearity may not be a significant concern.

Furthermore, examining eigenvalues and the condition index can provide insight if the condition number (k) is between 100 and 1,000, this suggests moderate to strong multicollinearity, and values above 1,000 indicate severe multicollinearity. Alternatively, if the condition index ($CI = \sqrt{k}$) is between 10 and 30, it reflects moderate to strong multicollinearity, and values above 30 indicate severe multicollinearity. Additionally, tolerance values and the variance inflation factor (VIF) are commonly used indicators. Finally, scatterplots may also reveal multicollinearity patterns visually.

The study has used pairwise correlation and the VIF to detect multicollinearity. After detecting multicollinearity, the study tested for heterogeneity and cross-sectional dependency since the sample consisted of cross-sectional data from six countries in the same region. Since the sample comprises countries from the same region, the countries can share the same values and be subject to heterogeneity owing to cultural and institutional differences (Baltagi, 2005; Uddin & Sarntisart, 2019). Therefore, to detect heteroscedasticity, the study conducted the Breusch-Pagan-Godfrey test. The remedial causes for the heteroscedasticity study identified the weighted least square method (when σ^2i known) and White's heteroscedasticity-corrected variances and standard error (when σ^2i not known).

The other sample characteristic can be cross-sectional- dependency. The concept of cross-section independence refers to the lack of correlation among the individual units in a dataset. However, in cross-country studies, this assumption may not hold owing to the interdependence of countries resulting from economic and financial integration. Even when areas are not geographically adjacent, they may still experience CSD if they are economically or socially interconnected (Jensen & Schmidt, 2011; Ward & Gleditsch, 2008). This interdependence can give rise to standard shock or unobserved factors that affect the cross-section units captured by the error term. Consequently, the residuals of the regression correlate among the cross-section units, indicating the presence of cross-section dependence. If cross-sectional dependence arises from unobserved common factors, which affect the disturbance term and are uncorrelated with the included regressors, standard fixed-effects (FE) and random-effects (RE) estimators remain consistent but inefficient, and the standard errors are biased.

Various estimation methods can address this issue. One approach is using standard FE/RE methods while correcting the standard errors, as Driskoll and Kraay (1998) suggested. Alternatively, efficient estimators can be obtained using methods proposed by Robertson and Symons (2000) and Coakley et al. (2002). However, if the unobserved components correlated with the included regressors cause the interdependencies, these methods fail, making FE and RE estimators biased and inconsistent. In such cases, the approach proposed by Pesaran (2006) may be followed. An instrumental variables (IV) approach using standard FE IV or RE IV estimators can also be considered. However, finding suitable instruments correlating with the regressors rather than the unobserved factors can

take time and effort. The instrumental variables approach(ex.GMM) is more suitable for the trim panel dataset where cross-sectionals are more significant than the time series ($N > T$).

The impact of CSD on dynamic panel estimators is particularly significant. Phillips and Sul (2003) demonstrate that ignoring sufficient CSD in data can drastically reduce estimation efficiency, potentially making the pooled least squares estimator less beneficial than single equation OLS. This finding is crucial because it implies that pooling a homogeneous population of cross-sections in slope parameters without considering CSD can negate the expected efficiency gains over individual OLS regressions (De Hoyos & Sarafidis, 2006). Several alternative tests are available for identifying CSD in panel data. Notably, the Lagrange Multiplier (LM) test by Breusch and Pagan (1980) and the CD test by Pesaran (2004), as well as tests by Friedman (1937) and Frees (1995, 2004). Breusch and Pagan (1980) proposed the LM test for panels with few cross-sections (N) and a long-time horizon (T). However, for panels where $N > T$, this test may exhibit size distortion and bias. Conversely, the tests by Pesaran (2004), Friedman (1937), and Frees (1995, 2004) are more suitable for panels with $N > T$. However, the Friedman and Frees tests could be better for dynamic panel models (De Hoyos & Sarafidis, 2006).

In this study, given that the periods exceed the number of cross-sections ($T > N$), the LM test by Breusch and Pagan (1980) is employed to assess cross-sectional dependence. When cross-sectional dependence is present, first-generation panel unit root tests—such as those by Levin et al. (2002), Im et al. (2003), and the Fisher-ADF test—become less reliable because they assume cross-sectional independence. If this assumption is violated, these tests may incorrectly reject the null hypothesis of a unit root, potentially leading to the mistaken conclusion that the data are stationary, even when they are not (Uddin & Sarntisart, 2019). Monte Carlo simulations have shown that this limitation can result in size distortion and reduced power (Banerjee et al., 2004, 2005; Gengenbach et al., 2009). Therefore, a second generation of panel unit root tests that can account for cross-section dependence has been proposed, such as Pesaran's cross-sectional augmented IPS (CIPS) test and Bai and Ng's PANIC test by Pesaran (2007), Bai and Ng (2004, 2010), and Moon and Perron (2004).

Before conducting the PURT tests, the optimal lag length was identified based on several criteria: the Sequential modified LR test statistics (each test at a 5% level), the Schwarz

information criterion (SIC), the final prediction error (FPE), the AIC, and the Hannan–Quinn information criteria (HQ). After testing stationary and non-stationary datasets, a panel co-integration test was conducted to examine whether long-run convergence among variables exists. Including non-stationary variables in the regression may compromise the model's goodness of fit and potentially lead to spurious results (Phillips, 1998). However, this issue can be mitigated if the non-stationary variables are cointegrated, signifying long-term relationships among them. According to Pagan & Wickens (1989), when at least two explanatory variables are integrated of order 1, or I (1), there may exist a co-integration among these *i* (1) variables, resulting in a stationary disturbance term. Additionally, suppose the dataset exhibits heterogeneity across panel members. In that case, it necessitates considering co-integration across all panel members, as it would be incorrect to assume that the co-integration vectors are identical for all panel members (Law et al., 2014).

Based on the Engle and Granger (1987) co-integration model, which accounts for a significant degree of heterogeneity, Pedroni/Kao (2004; 1999) proposed several test statistics. Pedroni (2004; 1999) developed seven-panel co-integration tests based on the cointegrating residuals. Three of these tests are group mean panel co-integration tests based on the between-dimension approach. The remaining four, called panel co-integration tests, are based on the within-dimension approach and are formulated by summing the numerator and denominator terms separately. Kao (1999) introduced five statistical tests to examine panel co-integration. Four of these tests are derived from the Dickey–Fuller specification, while the other is based on the augmented Dickey–Fuller (ADF) specification across the *N* dimension.

Once co-integration is established, panel co-integration regression can be performed to analyse the long-run relationship among variables. Depending on the order of integration among variables, several methodologies, such as fully modified OLS (FMOLS), dynamic OLS (DOLS), and panel ARDL models, may be employed for this purpose. Finally, causality tests, such as panel vector error correction, can be employed to determine the causal linkages among variables when panel data analysis provides evidence of significant relationships. After identifying the characteristics of the panel dataset, the methods selected to conduct the analysis separately for the panel dataset before the financial crisis, after the financial crisis, before COVID-19 and overall, to investigate the

relationship between economic growth and external debt and assess the risk of external debt as follows.

4.5.2 Investigating the Determinants of External Debt From 2002–2021

Based on the characteristics of the panel data from 2002–2021, it is identified that the dataset is composed of heterogeneity, mixed stationery and co-integration. Therefore, the study decided to employ dynamic panel data regression analysis. Accordingly, the FMOLS method has been employed. Other dynamic panel data analysis methods, such as DOLS and the panel ARDL model, as well as static panel data models like pooled OLS, FE and Random-Effects models, were also utilised to determine the most appropriate method and to assess the goodness of fit of the model (see Figure 4.5.) The DOLS corrects for potential simultaneity bias among regressors, while the FMOLS procedure corrects for endogeneity and serial correlation and eliminates sample bias.

Since the study analysed data from six countries with unique characteristics such as political regimes, religions, history, etc., it is essential to identify the heterogeneity effect (Baltagi, 2005 Gujarati, 2009; Hajivassiliou, 1987). Therefore, the econometric model was adjusted with i terms for the intercepts (β) to suggest that the intercepts of six countries may differ. This is known as the fixed-effect regression model. The differential intercept dummy technique should be introduced to conduct the regression analysis using the fixed-effect regression model. However, there are some drawbacks in conducting this fixed-effect least square dummy variable model since introducing more dummy variables will violate the degree of freedom assumptions, may cause multicollinearity, may not be able to identify time-invariant variables and complexity in error terms owing to assumptions on autocorrelation and heteroscedasticity. Therefore, the least square dummy variable model, the fixed effect within the group estimator, can be used instead of using a fixed effect. However, it also has some drawbacks, including ignorance of time-invariant variables, distortion of parameter values and removing long-run effects. As an alternative, we can use the first difference method. However, it also consists of the drawback of ignorance of time-invariant variables. Because of these drawbacks, the error components model (ECM) or random-effects model (REM) can be an alternative. The ECM model considers that the six countries included in our sample are a drawing from a much larger universe of such countries and have a standard mean value for the intercept

(= β1). The individual differences in the intercept values of each country are reflected in the error term εi.

$$EXD_{it} = \beta_{1i} + \beta_2 X_{it1} + \beta_k X_{itk} + \varepsilon_i + \mu_{it} \quad (4.2)$$

$$EXD_{it} = \beta_{1i} + \beta_2 X_{it1} + \beta_k X_{itk} + w_{it} \quad (4.3)$$

Where $wit = \varepsilon i + uit$, εi is the cross-section, or individual-specific, error component, and μ_{it} *is* the combined time series and cross-section error component

Hausman and Tylor's approach can be used to check the appropriateness of the random or fixed-effect model. Hausman's test can also determine whether the coefficients in a REM are consistent. Then, the Chow test can select the ordinary effect, pooled OLS regression or fixed effect. Moreover, the study tests the LM to select the random or common effect.

However, since the study data comprise dynamic characteristics such as co-integration and mixed stationaries, for the investigation of determinants over 2000–2021, the study employed dynamic panel data models such as panel ARDL, which encompasses pooled mean group (PMG), dynamic fixed effect (DFE), mean group (MG), DOLS and FMOLS.

The PMG, DFE and MG estimators are predicated on the maximum likelihood procedure and the ARDL model. Notably, the PMG restricts the long-run parameters to be consistent across panel members while allowing the short-run parameters, intercepts, and error variances to vary (Kim et al., 2010). If the long-run homogeneity restrictions are valid, PMG is more suitable than MG estimates, which can be inefficient and produce misleading results (Pesaran & Smith, 1995). The DOLS method, initially introduced by Stock &Watson (1993) and extended by Kao & Chiang (1999), is utilised to estimate long-run relationships in the presence of co-integration. It corrects biases in OLS estimates by incorporating the differenced regressors' leads, lags, and contemporaneous values (Law et al., 2014). However, DOLS may be inefficient when long-run parameter homogeneity exists and in small sample sizes with fewer than 20–30 cross-sections (Shaari et al., 2020).

FMOLS, developed by Pedroni (1999), provides consistent parameter estimates even with relatively small samples and controls for serial correlation and endogeneity (Hansen & Phillips, 1990). Given the properties of the study data, being first order integrated and

having a small sample size, the Pedroni (2000) FMOLS approach is deemed appropriate as it addresses biases caused by the endogeneity of regressors by incorporating Phillips and Hansen's (1990) semi-parametric corrections into the OLS estimator. FMOLS is advantageous in applications such as exchange rate literature, specifically the purchasing power parity literature. Similarly, Alexius & Nilson (2000), Canzoneri et al. (1999), and Chinn (1997) applied these FMOLS tests to test the Samuelson-Balassa hypothesis, which suggests that long-run movements of actual exchange rates are driven by differences in long-run relative productivity among countries.

In external debt studies, previous researchers such as Edo and Oigiangbe (2024), Beyene and Kotosz (2020a), and Fatukasai et al. (2020) have applied dynamic panel data models. Edo and Oigiangbe (2024 have employed DOLS and FMOLS for 43 developing economies of Sub-Saharan Africa from 1990 to 2022 to estimate the external debt problem. Beyene and Kotosz (2020a) have employed an ARDL model in a dataset covering the period 1981–2016 for Ethiopia. The results showed that the saving-investment gap, trade deficit, fiscal deficit and debt servicing have a positive relationship with external debt for Ethiopia. Conversely, the growth rate of GDP, trade openness and inflation were revealed negative relationship with external debt. Furthermore, using the panel-corrected standard error estimation technique and dataset spanning 1990–2017 for heavily indebted low-income countries, Beyene and Kotosz (2020b) revealed that debt servicing, import and growth rate have a positive relationship with external debt.

In contrast, exports and FDI revealed a negative relationship with external debt. Fatukasai et al.,2020, using FMOLS, examined Nigeria's external debt determinants from 1981 to 2018. The unit root problem was tested using augmented Dickey–Fuller, Phillip Perron and Johansen co-integration. Findings from the Fully Modified Ordinary Least Square estimation showed a positive relationship between insecurity level, real exchange rate and external debt.

The selection of estimation techniques in this study is grounded in both theoretical reasoning and the empirical characteristics of the dataset. The Debt Overhang theory, which posits that excessive external debt discourages investment and slows economic growth, implies a long-run equilibrium relationship between debt and macroeconomic variables. Accordingly, the Fully Modified Ordinary Least Squares (FMOLS) estimator is appropriate as it corrects for endogeneity and serial correlation in non-stationary,

cointegrated panel data, capturing the long-term dynamics consistent with the overhang hypothesis.

4.5.3 Investigating the Determinants of External Debt Pre- and Post-Financial Crisis and COVID-19

The dataset before the financial crisis consists of seven time periods (2002–2008) and six cross countries ($T > N$). The dataset does not present the multicollinearity but the panel unit root, and there was no co-integration. Therefore, considering the characteristics of the dataset, the study decided to select the panel generalised least square method with cross-section weights since the number of periods is greater than the number of cross-sections and introducing lags/differences since most of the variables are non-stationary. The period after the financial crisis includes 13 periods (2009–2021) and six cross-sections ($T > N$). The dataset is free from multicollinearity. However, it presents panel unit root and co-integration. Therefore, the study used the fully modified OLS method.

Before COVID-19, the sample comprised 18 periods (2002–2018) and six cross-sections ($T > N$). Without considering the period before the financial crisis, the sample size was small, and hence, the sample generated insignificant results. Therefore, the study considered both before the economic crisis and before COVID-19 as the sample period before COVID-19. The dataset has the same characteristics, so the study used the fully modified OLS method. The sample after COVID-19 consisted of three periods (2019–2022) and six cross-sections. Owing to the small sample size, the study conducted only fixed effects.

4.6 Investigating the Relationship Between Economic Growth and External Debt

First, the study confirmed the absence of cross-sectional dependence, multicollinearity, and co-integration among the variables. Second, based on the results of the Hausman test, the random effects model was selected from the available static panel models to examine the relationship between external debt and economic growth. Finally, pairwise Dumitrescu–Hurlin panel causality tests were performed to determine the presence and direction of causal relationships between the variables.

4.7 Risk Assessment of the External Debt

The research employed quantile regression analysis as its primary methodological approach, leveraging insights from existing empirical applications presented in Section 3.4.4.3. Although a standardised methodology for evaluating external debt risk is not comprehensively developed within the literature, quantile regression provides a robust framework for capturing heterogeneous effects across the spectrum of external debt determinants. This method is particularly pertinent for analysing diverse country contexts within South Asia. This decision is further substantiated by recent scholarly works, such as Mohsin et al. (2021), which investigated the effects of external debt on economic growth in South Asia from a quantile regression perspective, and San and Chin (2023), who assessed the impact of public debt on economic growth utilising a similar methodological approach. These studies demonstrate the appropriateness of quantile regression in revealing subtle policy insights, particularly in emerging economies.

Quantile regression estimates the relationship between the dependent variable (external debt) and independent variables (such as CC, ASPI, DS, etc.) at different quantiles of the dependent variable's distribution. The coefficient of the quantile regression indicates the estimated change in the dependent variable (external debt) for a one-unit change in the explanatory variable. Therefore, the quantile regression results represent the explanatory variables' marginal effects or elasticities. This helps to understand how the impact of the independent variables changes across different levels of the dependent variable.

In conclusion, despite the numerous advantages that panel data offer over purely cross-sectional or time series data, it is imperative to acknowledge and address the intricacies involved to achieve unbiased and efficient estimators. Thus, selecting an appropriate empirical approach depends on the specific issues that require attention. Chapter 5 expounded on the comprehensive empirical estimations implemented in this study. For the development of the debt management framework for the South Asia study, the comparative analysis was used based on the study's outcomes, which is discussed in Chapter 6.

4.8 Summary of the Chapter

This chapter comprehensively explains the methodologies employed to investigate the determinants of external debt, assess its risks and develop a debt management framework for South Asia. The study utilises advanced econometric techniques to address the specific characteristics of the panel dataset, including heterogeneity, mixed stationarity, and co-integration, ensuring robust and unbiased results. Essential methods include pairwise correlation and the VIF to detect multicollinearity, followed by heteroscedasticity and cross-sectional dependency tests. The Breusch–Pagan–Godfrey test is used for heteroscedasticity, while the Breusch–Pagan LM test is applied to examine cross-sectional dependence. These tests enable the study to address critical econometric challenges such as biases from endogeneity and inefficiencies from residual correlation.

Dynamic panel regression models such as fully modified OLS (FMOLS), Dynamic OLS (DOLS) and panel ARDL (PMG, MG and dynamic fixed-effect estimators) are employed to examine the determinants of external debt over various periods, including pre-and post-financial crises and the COVID-19 pandemic. These models are chosen based on data characteristics and ensure accurate analysis of long-run relationships among variables while addressing co-integration and endogeneity issues. For smaller timeframes, fixed and random-effects models are applied, with model selection based on Hausman tests and other statistical criteria.

Random-effect models are used to assess the relationship between external debt and economic growth, supported by pairwise Dumitrescu–Hurlin panel causality tests to examine causation patterns. Additionally, the study evaluates the risk of external debt using quantile regression analysis, which identifies how the impact of independent variables varies across different levels of external debt. Thus, the study offers a novel perspective on external debt risk management in South Asia. Finally, the chapter discusses the comparative analysis used to develop a debt management framework tailored for the South Asian context, leveraging the findings from empirical investigations. It emphasises the importance of adapting empirical approaches for region-specific economic, cultural and institutional variations. This chapter is a critical foundation for the empirical results discussed in Chapter 5 and the proposed debt management framework elaborated in Chapter 6. Addressing data complexities and

methodological intricacies ensures that the study's findings are robust, reliable and relevant to policymakers in the South Asian region.

Chapter 5: Data Analysis and Discussion

5.1 Introduction

Chapter 4 outlined the research methodology supporting the analytical framework of this study. It offered a comprehensive justification for the selection of explanatory variables, detailed the data sources and sampling criteria, and assessed the suitability of various regression techniques in addressing the stated research questions. Building upon this methodological foundation, the present chapter systematically presents and critically evaluates the analytical results, aligning key findings with the study's objectives and hypotheses. For ease of reference and continuity, the research objectives, questions, and associated hypotheses previously outlined in Chapters 1 and 4 are reiterated below.

The study identifies the following specific objectives:

- To investigate the determinants (both country-specific and economic) that affect the external debt of South Asian countries from 2002–2021 (before and after COVID-19 and the financial crisis)
- To assess whether debt determinants show a short- or long-term impact on South Asian countries
- To evaluate the relationship between the level of external debt and economic growth of South Asia from 2002–2021 (before and after COVID-19 and the financial crisis)
- To assess the level of risk in external debt in South Asian countries from 2002–2021 (before and after COVID-19 and the financial crisis)
- To devise a debt management framework for South Asian countries.

Based on the issues and objectives outlined above, this study aims to answer the following questions and the sub-questions:

- RQ1: How do the determinants of external debt vary in South Asian countries from 2002 to 2021?
    - RQ1.1: How did the determinants of external debt vary in South Asian countries before the financial crisis (2002–2008)?

    - RQ1.2: How do the determinants of external debt vary in South Asian countries after the financial crisis (2009–2021)?
    - RQ1.3: How did the determinants of external debt vary in South Asian countries before COVID-19 (2002–2018)?
    - RQ1.4: How do the determinants of external debt vary in South Asian countries after COVID-19 (2019–2021)?
- RQ2: Do debt determinants have a short-term or long-term impact on South Asian countries?
- RQ3: How does external debt affect the economic growth of South Asian countries from 2002 to 2021?
- RQ4: What are the risk determinants of external debt in South Asia from 2002 to 2021?

The study systematically applied a series of regression methods to investigate the research questions and complemented them with various diagnostic tests to determine the most appropriate analytical approach. The empirical estimations were conducted using EViews version 12 and Stata version 18 as the designated statistical software platform. Before the initiation of regression analyses, a comprehensive evaluation of the dataset's characteristics has been undertaken. This examination encompasses an exploration of the interrelationships among independent variables and thoroughly assessing their stationary properties. Subsequently, the following sections of this chapter discuss the estimation results, which also address each respective research question. Finally, a summary of the estimation findings is provided.

5.2 Findings of the Study

This section presents and discusses the empirical findings of the study through a structured analytical framework designed to address the twenty-five hypotheses (H1 to H25). The analysis is partitioned into three major components. Firstly, the determinants of external debt are examined, both at the regional level for South Asia and on a country-specific basis. This approach permits the identification of common patterns and country-level heterogeneities in the factors influencing external debt accumulation.

Secondly, the study evaluates the risk factors associated with external debt utilising marginal effects derived from quantile regression. This methodology facilitates a more nuanced understanding of how risk dynamics fluctuate across different levels of external debt, particularly at higher quantiles where vulnerability may be more pronounced. Thirdly, the analysis explores the impact of external debt on economic growth across South Asian countries. This segment contributes to the understanding of whether external borrowing promotes or impedes long-term economic performance within the region. Prior to these core analyses, the study employed stepwise regression, as detailed in Section 4.3, to identify the most statistically significant explanatory variables. Following variable selection, descriptive statistics and correlation matrices were generated to assess data distribution, central tendencies, variability, and interrelationships among variables. Appropriate panel data analysis methods were then applied based on the characteristics of the panel data, ensuring methodological rigour and consistency. This section integrates empirical evidence with theoretical insights to augment the understanding of the complexities and policy implications surrounding external debt in the region. The section concludes with a summary of key findings, setting the stage for further discussion in subsequent chapters.

5.2.1 Descriptive Statistics

Before analysing the data, it is essential to understand the characteristics of the sample through statistical measures such as mean, median and standard deviation. Table 5.1 shows the descriptive statistics of all the variables used in this study. These statistics highlight the diversity of the South Asian countries discussed in Chapter 2. However, it is essential to note that the dataset covers 20 years (from 2002 to 2021), contributing to the significant variation in the dataset. Since the study covers a considerable period (T) with few countries (N), the dataset can be categorised as a long panel dataset (Cameron & Trivedi, 2009).

Table 5.1: Descriptive statistics for subset model from 2000 to 2021

Variable	Measurement	Observation	Mean	Median	Std dev.	Min.	Max.
EXDGDP	External debt as a % of GDP	120	0.32	0.28	0.14	0.15	0.92
TB	Difference between export and import % of GDP	120	−0.08	−0.07	0.10	−0.40	0.15
FR	Foreign remittance as % of GRS	120	0.76	0.73	0.67	0.00	3.84
FDI	Foreign direct investment as a % of GDP	120	−0.02	−0.01	0.03	−0.17	0.00
GRS	Government reserves as a % of GDP	120	0.13	0.12	0.07	0.02	0.35
DS	Debt service as a % of GDP	120	0.03	0.02	0.02	0.01	0.14
ROA	Return on asset ratio	120	1.63	1.32	1.46	−2.38	6.40
CC	Control of corruption Index	120	−0.65	−0.66	0.33	−1.60	−0.08
PS	Political stability index	120	−1.03	−1.11	0.90	−2.81	1.08
ASPI	All share price index in USD	120	0.99	0.47	1.38	0.02	11.12
OI	Oil imports% of total imports	120	0.17	0.16	0.07	0.04	0.33
UN	Unemployment % of total population	120	1.56	0.06	2.47	0.01	8.00

The research study analyses 120 observations representing macro-economic and country-specific factors of South Asian countries from 2002 to 2021. Based on the descriptive statistics in Table 5.1, the external debt-to-GDP ratio in real terms for these countries ranges from 15 to 92%, with an average value of 32% and a standard deviation of 0.14. The highest external debt-to-GDP ratio of 92% was recorded in Maldives in 2020. Maldives has been significantly affected by the global health crisis COVID-19, which led

to a 67% decline in its primary income-generating sector, tourism. This decline also affected reinvestment of earnings and repatriation of profits in the tourism sector.

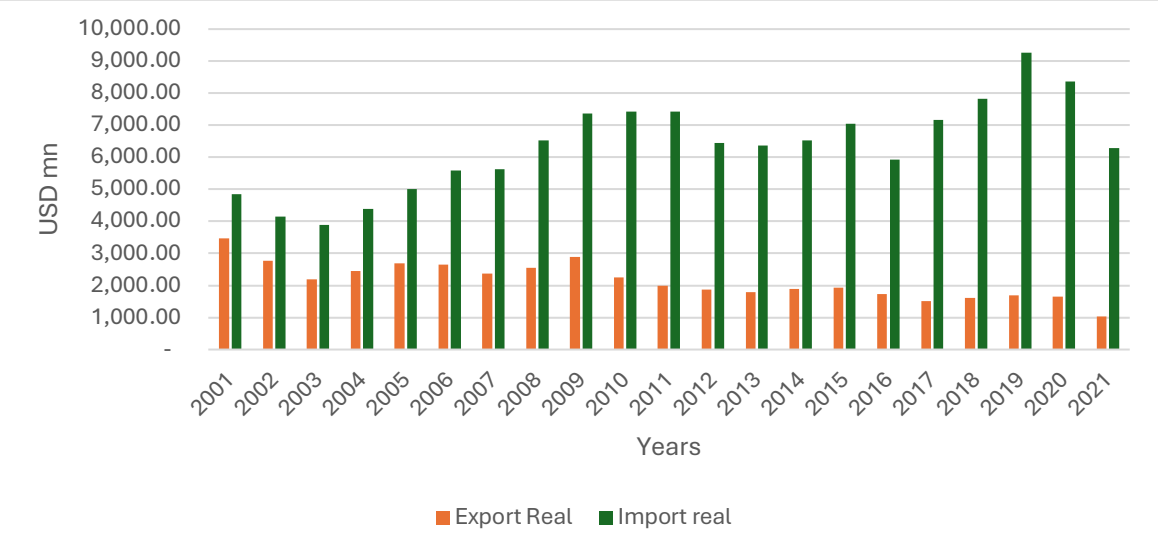
Additionally, a decline in worker remittances in 2021 widened the current account deficit, increasing short-term foreign liabilities. The 32% decrease in the gross domestic product owing to revenue contraction during the pandemic and the increased financing needs contributed to the higher external debt in terms of GDP (Maldives Monetary Authority, 2020). The Ministry of Finance of the Maldives reported that the increase in external debt in 2020 was mainly owing to budget support loans obtained to address cash flow constraints caused by COVID-19, as well as high disbursements made under the Velana International Airport development projects, which added a total of MVR 2,193 million to the direct external disbursed outstanding debt during this period. The Reserve Bank of India's USD 400 million foreign currency swap increased the country's foreign liabilities. The growth in external debt was also driven by commercial banks' borrowings from head offices and branches, loans obtained by the government from multilateral and bilateral sources, as well as loans in the form of buyer's credit, which is a loan facility extended to importers by banks or financial institutions to finance the purchase of high-cost items.

Conversely, the lowest external debt-to-GDP ratio during the study period was recorded by India in 2005 at 15%. According to the Reserve Bank of India's 2005 report, India ranked among the top 15 debtor countries globally but had the second-lowest debt-to-GDP ratio, next to China. India's foreign exchange reserves exceeded its external debt by USD 26,400 million, covering 121.1% of the external debt stock at the end of March 2006. The debt to current receipt ratio was 64% in 2005, which reflects that the country’s exports of goods, services and remittances exceeded the external debt stock. The concessional element in India’s external debt portfolio was significant, ranking second highest after Indonesia. However, the share of concessional debt in India's total external debt significantly declined to 31.5% at the end of March 2006 from 33.3% at the end of March 2005. The increase in exports, remittance and services, and foreign reserves exceeding the external debt have assisted India in recording the lowest external debt-to-GDP ratio among the South Asian countries in 2005.

The difference between exports and imports in real terms as a percentage of GDP from 2002 to 2021 has recorded −0.40 as the lowest, which means that it is the highest deficit as a percentage of GDP recorded by South Asian countries during the study period and

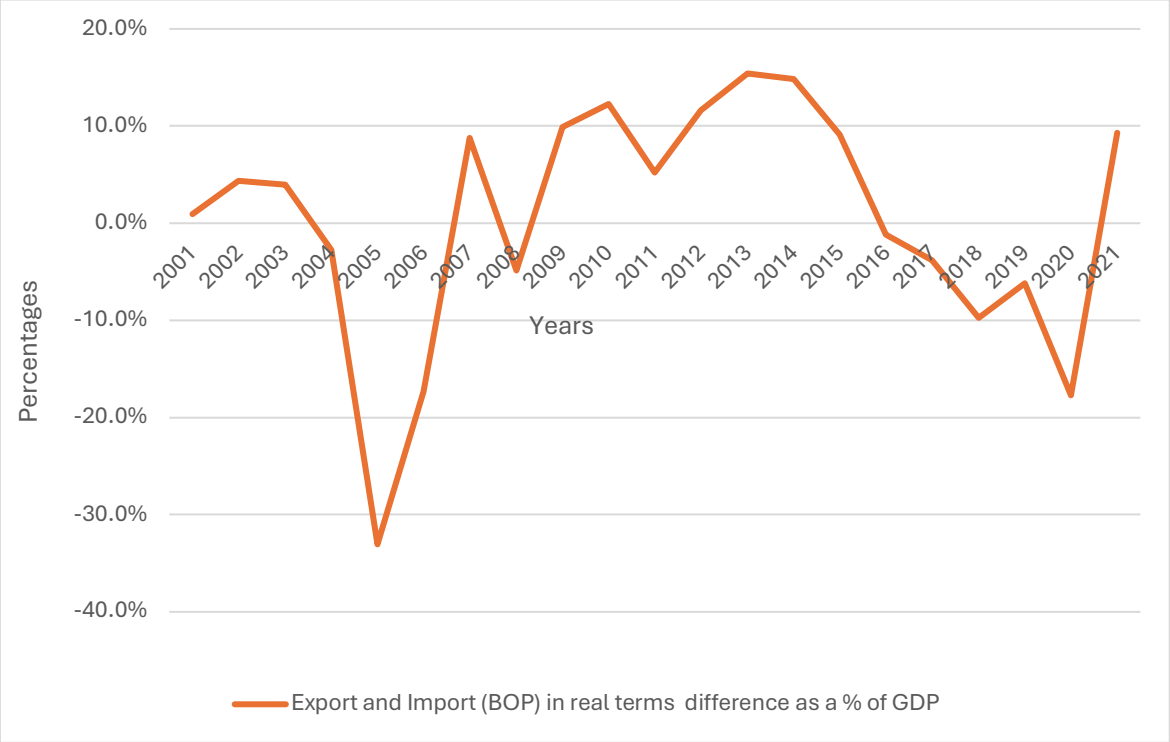
the highest balance of 0.15 surplus with a mean deficit of 0.08 and a standard deviation of 0.10. The highest deficit (−0.40) was recorded by Nepal in 2021, and the highest surplus (0.15) was recorded by Maldives in 2013. As shown in Figure 5.1 below, according to the Ministry of Finance of Nepal, in 2021, although the growth rate of exports was higher than the imports, the country recorded a deficit owing to the increased volume of imports and price increase in the international market. The country's imports were predominantly sourced from India and China, and in 2021, the imports from India rose by 23.5%, while imports from China increased by 13.2%. As a result, the trade deficit with key trading partners experienced significant growth, rising by 20.8% with India, 13.3% with China, and 36.9% with other countries.

Figure 5.1: Exports and imports of Nepal in real terms (USD million) from 2001 to 2021



As illustrated in Figure 5.2, in 2013, Maldives experienced a significant surplus, with USD 3,000 million in exports and USD 2,300 million in imports in real terms, as indicated by the BP. According to the Monetary Authority of Maldives, the surplus of USD 508 million was recorded mainly owing to the strong rebound in tourism receipts, which increased the service surplus. However, this service surplus largely stemmed from the increase in imports.

Figure 5.2: Export and import differences of Maldives as a percentage of GDP in real terms from 2001 to 2021



The foreign remittance in real terms as a percentage of GRSs from 2002 to 2021 has recorded 0.005% as the lowest and 3.84% as the most significant remittance flow to South Asia during the study period with a mean of 0.76% and a standard deviation of 0.67. The lowest foreign remittance, as well as the highest external debt-to-GDP, was recorded by the Maldives in 2020. The lowest foreign remittance recorded in 2020 by the Maldives was mainly owing to the increase in outward remittance than inward remittance.62% of the outward remittance was going to Bangladesh every year, and in 2020, it increased by 83% compared with 2019. India received 12% of outward remittances from the Maldives. Inward remittances declined by 45% compared with 2019. Pakistan recorded the highest foreign remittance to GRSs in 2016. According to the annual reports by the State Bank of Pakistan, the country's foreign reserves are mainly from foreign remittances. Remittances from Gulf countries recorded the highest inflows to the government.

The net FDI, which is the difference between FDI net inflows and outflows as a percentage of GDP, has ranged from −0.17% as the lowest to 0.001% as the highest. The mean value is −0.02%, with a standard deviation of 0.03 during the study period from 2002 to 2021. This indicates a low growth in net FDIs in South Asia. The Maldives

recorded a negative net FDI of −0.17% in 2019. The negative net FDIs denote foreign direct outflows exceeding the foreign direct inflows. According to The World Bank's definition, FDI outflows are considered assets and net FDI inflows are liabilities. In 2019, Maldives received net FDI more significantly than the foreign direct outflows. The Maldives Monetary Authority reported a significant increase in net FDI inflows and reinvestment of earnings in the tourism sector, compared with a marginal net outflow of FDI this year. Nepal recorded the highest net FDI in 2006.

The GRSs have recorded 35% as the highest percentage and 2% as the lowest, with a mean of 13% and 0.07 standard deviation during the study period. The highest GRSs were recorded by Nepal in 2016, which included an increase in gross foreign exchange reserves from $8,100 million in 2015 to $9,700 million in 2016. According to the ADB's 2016 macro-economic updates on the economy of Nepal, this increase was enough to cover 14.1 months of imports of goods and non-factor services. The lowest GRSs were recorded by Pakistan in 2003. According to the State Bank of Pakistan's annual report, the 2003 reduction in GRSs was owing to the one-off large prepayment of expensive external debt, focusing on the liberalisation of the exchange regime and the rise in imports.

The debt services have recorded 14% as the maximum and 1% as the lowest, with an average of 3% and a standard deviation of 2%. The Maldives recorded the highest percentage of debt services in 2021, mainly reflecting the increase in principal and interest payments on debt acquired through bonds and loans from bilateral sources. Bangladesh recorded the lowest debt services in 2016, at USD 1,045 million, 4.7% less than the repayment of USD 1,097 million in 2015.

The return on assets (ROA), used to measure financial institutions' performance, reached its highest ratio of 6.40 and its lowest at −2.38, with an average of 1.63 and a standard deviation of 1.46. In 2006, financial institutions in Maldives achieved the highest ROA ratio. This increase in performance can be attributed to the expansion of Bank of Maldives Plc's branch network, which included opening 20 new branches. The decrease in the minimum reserve requirement from 30% to 25% also allowed for lower funding costs. Furthermore, the remarkable recovery of the economy after the 2004 tsunami resulted in increased demand for credit from the private sector, public sector and tourism and commerce sectors. These factors collectively contributed to the improved performance of the financial institutions in the country (Maldives Monetary Authority, 2006).

The lowest financial institution ROA was recorded by Nepal in 2003. According to the Nepal Rastra Bank 2003 annual report and the annual bank supervision report, the development banks have decreased loan disbursement by 39% and the co-operative societies loans and advances by 11.3%. Further, out of 375 branches of 17 commercial banks, 233 branches belong to two public sector banks, which account for 42.01% of gross assets, 33.87% of loans and advances and 37.06% of deposits, which, however, recorded negative net worth.

The CC index has recorded a maximum index of −0.08 and the lowest index of −1.60, with a mean index of −0.65 and a standard deviation of 0.33. All the countries in South Asia recorded negative CC index scores. Bangladesh had the lowest score in 2004, indicating the highest level of corruption among the South Asian countries included in the study. The Maldives recorded the highest CC index and the highest PS index of 1.08 in 2002. Pakistan had the lowest PS index of −2.81 in 2011, with an average of −1.03 and a standard deviation of 0.9.

The stock market performance measured by the ASPI was 11.12% in Sri Lanka in 2020, the highest performance owing to the recovery of the Colombo Stock Exchange from the decline during the pandemic and increased domestic investor interest in equity investments. Nepal recorded an ASPI of 2% in 2012, the lowest from 2002 to 2022, with an average of 0.99% and a standard deviation of 1.38.

The oil imports showed the highest record of oil imports at 33% and lowest at 4% from 2002 to 2020, with a mean of 17% and a standard deviation of 0.07. The lowest oil imports were recorded by Bangladesh in 2016, which was at its 10-year low level owing to the decrease in oil prices worldwide by 26.5%, stable exchange rates and involuntary production shutdowns (Central Bank of Bangladesh, 2016). The highest oil imports were recorded by Pakistan in 2012. According to the State Bank of Pakistan's 2012 annual reports, this is mainly because over one-quarter of the import bill comprises petroleum imports, and there is a significant amount of volatility in these imports compared with non-oil imports. And in 2012, there was a 9.8% rise in petroleum crude imports. In June 2023, international oil prices increased by 6.2% owing to political tensions in Syria and Libya and unstable situations in Iraq and Sudan/South Sudan. Middle Eastern countries also performed well owing to the firm oil prices, causing increased import prices for Pakistan in 2012.

Unemployment was recorded at its highest at 8% and lowest at 0.01%, with a mean of 1.56% and a standard deviation of 2.47. In 2020, India recorded the highest unemployment rate, while Nepal recorded the lowest in 2007 and 2008. Even though the countries belong to the same continent, their development and economies are in different stages. From the descriptive statistics, a few variables, such as foreign remittance, ROA, unemployment and ASPIs, have a considerable standard deviation compared with other standard deviations. This is possible owing to each country's market volatility, the size of its share trading and share markets, population variations and the heterogeneity of the countries under the study.

5.2.2 Pairwise Correlation

After analysing the fundamental statistics of the dataset, the subsequent step involves investigating the relationships among the predictor variables. When there are more than five independent variables in a multiple regression equation, one of the most frequent issues is that two or more independent variables are highly correlated. This issue is referred to as multicollinearity. Therefore, this step aims to identify any variables that exhibit high correlation, as this can lead to less precise regression parameters (Gujarati, 2003b). In practice, correlation among predictor variables is common, especially with macroeconomic variables. However, multicollinearity may be problematic if a correlation coefficient matrix with all the independent variables indicates correlations of 0.8 or higher (Gujarati, 2009). When two variables are highly correlated, they measure the same phenomenon. When one enters the regression equation, it tends to explain most of the variance in the dependent variable related to that phenomenon. This leaves a slight variance to be explained by the second independent variable (Gujarati, 2003b). Also, this includes inaccurate *t*-statistics and incorrect coefficient signs (Asteriou & Hall, 2011).

Further, high multicollinearity complicates regression's ability to determine a predictor variable's effect on the dependent variable (Studenmund, 2014). Therefore, examining the correlation among the independent variables is crucial before proceeding with the regression analysis. This is done using pairwise correlation and VIF. VIF and the Pearson’s correlation coefficients and results are presented in Tables 5.2 and 5.3, respectively, showing no threat of severe multicollinearity concerning the variables used in the estimation. This is so because none of the VIF values exceed the value of 10, which is the rule of thumb for severe multicollinearity, and there are no correlation values

exceeding 0.8, which indicates high multicollinearity (Gujarati, 2009). As shown in Table 5.2, none of the VIFS exceeds five, suggesting that the regressions have high validity and predictive power. The correlation matrix presented in Table 5.3 shows that FDI, GRS, oil imports (OI), the ASPI and unemployment have a negative correlation between external debt and GDP. In contrast, CC, DS, FR, PS, ROA and TB show a positive correlation between external debt and these variables.

Table 5.2 Variance inflation factors 2002 to 2021

	Coefficient	Centred
Variable	Variance	VIF
ASPI	0.00	1.73
CC	0.00	2.25
DS	0.31	1.96
FDI	0.19	3.15
FR	0.05	3.61
GRS	0.03	2.71
PS	0.00	3.78
ROA	0.00	2.19
TB	0.00	1.56
UNP	0.00	2.36
OI	0.03	2.50
C	34.66	

Table 5.3: Correlation matrix 2002 to 2021

Variables	EXTERNAL_DEBT	ASPI	CC	DS	FDI	FR	GRS	OI	PS	ROA	TB
EXTERNAL_DEBT	1.00										
ASPI	−0.002	1.00									
CC	0.28	0.35	1.00								
DS	0.69	0.12	0.39	1.00							
FDI	−0.28	0.20	−0.15	−0.51	1.00						
FR	0.08	−0.10	−0.39	−0.17	0.47	1.00					
GRS	−0.25	−0.07	0.32	−0.16	−0.03	−0.46	1.00				
OI	−0.16	0.34	0.20	0.03	0.12	−0.01	−0.04	1.00			
PS	0.24	0.00	0.46	0.42	−0.51	−0.49	0.28	−0.41	1.00		
ROA	0.10	−0.30	0.06	0.32	−0.60	−0.29	0.14	−0.29	0.59	1.00	
TB	0.11	0.19	−0.13	0.26	−0.25	−0.06	−0.32	0.16	−0.12	−0.03	1.00
UNP	−0.32	0.45	0.12	−0.01	0.21	0.05	−0.07	0.64	−0.27	−0.30	0.23

5.2.3 Heteroscedasticity

After testing for pairwise correlation, the study tested the heteroscedasticity of the dataset since it includes a cross-country dataset, which might be subject to heterogeneity and cultural and institutional differences (Baltagi, 2005; Uddin & Sarntisart, 2019).

Table 5.4: Heteroskedasticity test: Breusch–Pagan–Godfrey results

Heteroskedasticity Test: Breusch–Pagan–Godfrey			
Null hypothesis: homoskedasticity			
F-statistic	4.74	Prob. F (11,108)	0
Obs*R-squared	39.06	Prob. Chi-Square (11)	0.0001
Scaled explained SS	55.19	Prob. Chi-Square (11)	0

As shown in Table 5.4, the $p < 0.05$ indicates that the dataset is heteroscedastic since it rejects the null hypothesis of homoscedasticity. The heteroscedasticity of the variables shows that even though the countries are in the same region, there are differences in the countries. This is confirmed by Tiruneh (2004), who used a panel data approach and found that developing countries are heterogeneous in terms of colonial heritage, creditworthiness and geopolitics, which is attributed to high levels of indebtedness.

Even though there is heteroscedasticity in cross countries, the study tested the cross-sectional dependency, which may arise owing to the presence of standard shocks and unobserved components that become part of the error term ultimately, spatial dependence, as well as owing to idiosyncratic pairwise dependence in the disturbances with no particular pattern of standard components or spatial dependence (Anselin, 2001; Baltagi, 2005; Pesaran, 2004; Robertson & Symons, 2000). Therefore, when there is cross-sectional dependence (CSD) in the model, the estimated parameter obtained through OLS or dynamic OLS (DOLS) will be unreliable because of unobservable standard shocks or cross-sectional correlation (Pesaran, 2006; Zellner, 1962). The following section begins by introducing the CSD test, and based on the results of the test, appropriate methodologies are discussed for the panel unit root test (PURT), co-integration test and co-integration estimation.

5.2.4 Cross-Sectional Dependency Test

As discussed in Section 4.2.2, identifying the characteristics of the study panel dataset, several alternative tests exist to detect CSD based on the sample characteristics. In this study, given that the periods exceed the number of cross-sections ($T > N$), the LM test by Breusch and Pagan (1980) is employed to assess cross-sectional dependence. The null hypothesis of no cross-sectional dependence is tested in the LM statistic. As shown in Table 5.5, CD test results from $p > 0.05$ indicate accepting the null hypothesis. Therefore, even though the South Asian countries are in the same region, their dependency on each other cannot be identified. After conducting a cross-dependency test, since there was no CD, the study tested the stationary data to decide on the appropriate regression technique to employ.

Table 5.5: Results for the cross-sectional dependency test for Lagrange multiplier

Breusch-Pagan LM Test of Independence	
chi2 (15)	21.38
Pr	0.13

5.2.5 Panel Unit Root Test

A unit root test is conducted to check for stationarity or non-stationarity in a series. Given that the dataset is a long panel dataset ($T > N$), it is essential to identify stationary and non-stationary variables using a PURT to determine the order of integration of all variables. This serves as a prerequisite for a co-integration test or to test the convergence hypothesis. For variables to be cointegrated, they should be non-stationary at the level and integrated in some order.

In this study, as there is no cross-sectional dependency, first-generation PURTs are applied. Before conducting the PURT tests, the optimal lag length was identified based on several criteria: the Sequential modified LR test statistics (each test at a 5% level), the SIC, the FPE, the AIC and the Hannan–Quinn information criteria (HQ). As shown in Table 5.6, the optimal lag length of 1 was selected based on the SIC and HQ. Then, the first-generation panel unit root tests were conducted, and the results are presented in Table 5.7.

Table 5.6: VAR lag order selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	332.29	NA	0.00	−6.67	−6.35	−6.54
1	1038.07	1220.42	0.00	−18.38	−14.21*	−16.69*
2	1195.91	233.46	0.00*	−18.66	−10.65	−15.43
3	1353.84	194.13*	0.00	−18.96	−7.09	−14.16
4	1525.80	168.38	0.00	−19.54*	−3.83	−13.19

Note: * Indicates lag order selected by the criterion.

LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan–Quinn information criteria.

Table 5.7: Panel unit root test result for variables from 2002 to 2021

	Level				First Difference				Order of Integration
Variable	**LLC**	**IPS**	**ADF-Fisher**	**PP-fisher**	**LLC**	**IPS**	**ADF-Fisher**	**PP-Fisher**	
EXTERNAL_DEBT	−2.86*	−1.47**	20.53**	13.07	−2.13*	−2.32*	23.64*	0	I (1)
ASPI	−0.97	−0.58	14.06	21.49*	−5.75*	−5.92*	56.21*	103.53*	I (1)
DS	−0.55	−0.08	14.47	23.97*	−2.92*	−5.08*	47.63*	134.33*	I (1)
FR	−0.66	−0.21	12.12	11.04	−6.65*	−6.03*	56.43*	91.99*	I (1)
GRS	−1.68*	−1.12	17.31	20.51**	−5.80*	−5.81*	54.33*	145.97*	I (1)
PS	0.11	0.89	9.10	11.29	−1.98*	−3.76*	37.96*	72.32*	I (1)
UNP	0.06	0.38	11.28	20.28**	−0.43	−1.62**	20.62**	80.21*	I (1)
CC	−2.62*	−2.70*	28.38*	24.48*					I (0)
FDI	−2.42*	−2.09*	22.97*	22.73*					I (0)
OI	−2.17*	−2.29*	24.02*	22.52*					I (0)
ROA	−8.20*	−4.33*	69.31*	20.68**					I (0)
TB	−6.50*	−4.74*	48.05*	33.67*					I (0)

Note: * and ** denote significance at 5% and 10% levels of significance, respectively.

Table 5.7 presents the outcomes of the first-generation panel unit root tests. The stationarity of the variables was assessed using significance levels of 5% and 10%. The test results reveal that the dependent variable, external debt-to-GDP, is stationary at first difference. Similarly, the explanatory variables—ASPI, debt service, foreign remittance, GRSs, PS and unemployment—are stationary at the first difference (I (1)). Conversely, the remaining variables are stationary at level (I (0)), indicating a mixed order of integration among the variables in this study. Given that pooled OLS, FE and random-effects models can be applied to stationary variables—since these panel data analyses are static methods—a co-integration test was conducted to ascertain whether the variables exhibit long-term relationships. As elaborated in Section 4.5.1, including non-stationary variables in the regression may compromise the model's goodness of fit and potentially lead to spurious results (Phillips, 1998). However, this issue can be mitigated if the non-stationary variables are cointegrated, signifying long-term relationships among them. According to Pagan and Wickens (1989), when at least two explanatory variables are integrated of order 1, or I (1), there may exist a co-integration among these I (1) variables, resulting in a stationary disturbance term.

5.2.6 Co-Integration Test

A panel co-integration test examined whether long-run convergence among variables exists. Additionally, as previously noted under heteroscedasticity, the dataset exhibits heterogeneity across panel members. This heterogeneity necessitates considering co-integration across all panel members, as it would be incorrect to assume that the co-integration vectors are identical for all panel members (Law et al., 2014).

Given that the PURT results indicate the dataset contains both stationary and non-stationary variables and considering its heterogeneity, the Pedroni/Kao (Engle-Granger-based) co-integration estimator was employed to test for co-integration among the panel variables. Kao (1999) introduced five statistical tests to examine panel co-integration. Four of these tests are derived from the Dickey–Fuller specification, while the other is based on the augmented Dickey–Fuller (ADF) specification.

Table 5.8: Kao test for co-integration

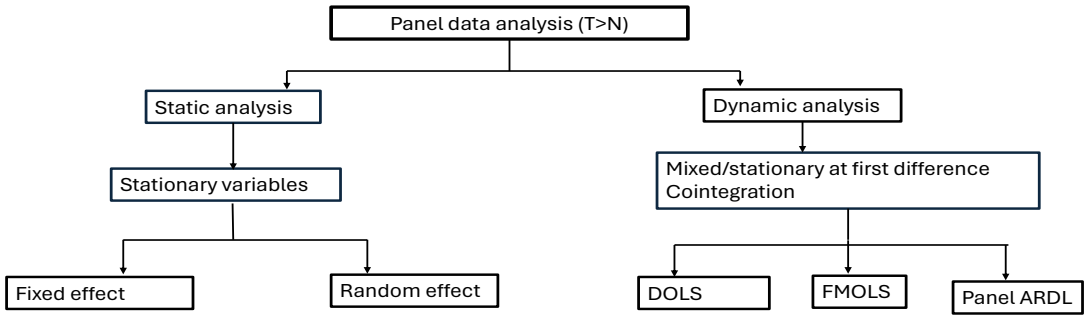
Test	Statistic
Modified Dickey–Fuller t	−4.30*
Dickey–Fuller t	−4.83*
Augmented Dickey–Fuller t	−2.76*
Unadjusted modified Dickey–Fuller	−7.92*
Unadjusted Dickey–Fuller t	−5.78*

Note: * denotes significance at 5% levels of significance.

Testing for co-integration statistics indicates that all statistics are significant at the 5% level. Therefore, the null hypothesis is rejected in favour of the alternative hypothesis, which suggests co-integration or the long-run relations across the panel data (see Table 5.8). Based on the tests conducted, this study's panel dataset can be characterised as a dynamic panel dataset owing to its heterogeneity and mixed stationarity properties. It includes both stationary variables (I (0)) and variables that are stationary at the first difference (I (1)). Additionally, the presence of co-integration indicates long-run convergence among the variables.

To address the research questions, dynamic panel data analysis is appropriate for this dataset, which spans 20 years and includes six cross-sections ($T > N$). This analysis accounts for mixed stationarity (I (0) and I (1)), co-integration and heterogeneity. Accordingly, the FMOLS method has been employed. Other dynamic panel data analysis methods, such as DOLS and the Panel ARDL model, as well as static panel data models like pooled OLS, FE and Random-Effects models, were also utilised to determine the most appropriate method and to assess the goodness of fit of the model (see Figure 5.3).

Figure 5.3: Panel data analysis



5.2.7 Model Selection: Common Effect (Pooled OLS) vs. Fixed Effects vs. Random Effects

As outlined in Section 4.5, the study follows a systematic model selection process. First, the study applies the Pooled Least Squares (PLS) method, which assumes homogeneity across cross-sectional units and time periods—effectively ignoring both individual-specific and temporal effects. Second, to account for unobserved heterogeneity across cross-sectional units, the Fixed Effects (FE) model is employed. This model allows for varying intercepts across entities, thus capturing individual-specific characteristics. Third, the Chow test is conducted to statistically compare the Pooled OLS and Fixed Effects models (Baltagi, 2005; Gujarati, 2009). As indicated in Table 5.9, the cross-section chi-square p-value is less than 0.05, suggesting that the Fixed Effects model provides a significantly better fit than the Pooled model. Subsequently, the Hausman test is applied to determine the suitability of the Fixed Effects model relative to the Random Effects (RE) model, which assumes that individual-specific effects are uncorrelated with the regressors and models the error structure as a combination of individual and time-varying components. (Blatagi, 2005; Gujarati, 2009). Based on the p-value of the Hausman test (0) is less than 0.05, the null hypothesis of no correlation is rejected, thereby validating the use of the Fixed Effects model over the Random Effects model for the analysis.

Table 5.9: Comparative Test Results: Common Effect, Fixed Effect, and Random Effect Models

Effects Test	Statistic	Prob.
Cross-section F	13.53*	0
Cross-section chi-**square**	60.59*	0
Period random (Hausman test)	44.52*	0

Note: * denote significance at 5% levels of significance.

Even though the above test results showed the fixed-effect model as the appropriate model owing to the dynamic characteristics of the panel dataset, the study decided to use a dynamic panel data model to conduct the study.

5.2.8 Dynamic Panel Data Models

The utilisation of traditional estimation techniques such as FE, instrumental variables, and GMM estimators in large panel datasets (T > N) may result in inconsistent and potentially deceptive outcomes unless the slope coefficients remain uniform across entities (Pesaran et al., 1999). In instances where panel data display mixed stationarity and co-integration, it is crucial to employ dynamic panel data models like panel ARDL, which encompasses PMG, DFE, MG, DOLS and FMOLS (see Figure 5.3). These models, as proposed by Pesaran and Smith (1995) and Pesaran et al. (1999), consider long-run equilibrium and the dynamic heterogeneity of the adjustment process (Demetriades & Law, 2006).

Given the data characteristics outlined in Chapters 4 and 5, the Fully Modified Ordinary Least Squares (FMOLS) method was chosen for this analysis due to its ability to address endogeneity and serial correlation effectively. FMOLS is particularly well-suited for small sample sizes and variables that are integrated of order one [I(1)]. By applying non-parametric corrections, it reduces biases associated with endogenous regressors, thereby producing reliable and consistent long-run estimates—an essential requirement for capturing the true nature of the relationships within the dataset.

5.3 Empirical Findings and Discussion

This section presents and discusses the empirical results of the study in light of the research objectives and theoretical framework. The analysis is structured around three key areas. First, it investigates the determinants of external debt, identifying the most influential macroeconomic, political, and financial variables contributing to debt accumulation. Second, it explores the relationship between external debt and economic growth, with a particular focus on whether debt supports or hinders long-term economic development in the selected South Asian countries. Finally, the section conducts a risk assessment of external debt, evaluating the exposure of these economies to debt-related vulnerabilities and examining the implications for sustainability and policy formulation. Each subsection integrates the empirical results with relevant literature to provide a comprehensive interpretation of the findings.

5.3.1 Investigating the Determinants of External Debt

As explained, the study employed the FMOLS method to investigate the determinants of external debt. The result presented in Table 5.10 from the FMOLS model presents the relationship of explanatory variables with the external debt-to-GDP from 2002 to 2021.

Table 5.10: The FMOLS results from 2002 to 2021

Variable	beta	*t*-stat
TB	0.44	11.83
FR	2.85	8.69
FDI	−0.37	−3.46
GRS	−0.19	−7.68
DS	5	22.81
OI	0.05	4.12
Variable	beta	*t*-stat
ROA	−0.03	−11.47
CC	−0.02	−15.89
PS	0.09	25.25
ASPI	−0.11	−2.88
UNP	1.32	13.88

The results accepted that there is a long-run relationship between external debt and all other explanatory variables in South Asian countries. However, as shown in Table 5.11, the short-run dynamics reveal that none of the explanatory variables have a statistically significant impact on external debt in the short run. This suggests that while external debt is influenced by external debt over the long term, short-term fluctuations in the explanatory variables do not immediately affect debt levels.

Table 5.11: Short-run results of panel ARDL from 2002 to 2021

Variable	Coefficient	*t*-Statistic	Prob.*
COINTEQ01	−0.20	−1.33	0.19
D (ASPI)	0.38	1.060	0.30
D (CC)	0.03	0.49	0.63
D (DS)	5.03	1.51	0.14
D (FDI)	2.10	1.74	0.09
D (FR)	−2.58	−0.94	0.35
D (GRS)	0.67	0.87	0.39
D (OI)	−0.26	−1.22	0.23
D (PS)	0.03	1.85	0.07
D (ROA)	−0.01	−0.87	0.39
D (TB)	−0.24	−0.42	0.67
D (UNP)	6.37	1.36	0.18

Table 5.10 presents the long-run estimation results obtained using the Fully Modified Ordinary Least Squares (FMOLS) method. The findings reveal several key insights. Firstly, there is a significant and positive long-run relationship between external debt and the trade deficit in South Asian countries. The results show that a one-unit increase in the trade deficit is associated with a 0.44-unit increase in external debt ($\beta = +0.44$), underscoring the substantial long-term impact of trade imbalances on debt accumulation. As previously discussed in the descriptive statistics and in Chapter 2, many South Asian countries rely heavily on external borrowing to finance persistent trade deficits, primarily due to import volumes exceeding exports. This empirical observation aligns with established theoretical models. The two-gap and three-gap models, developed by Chenery and Strout (1966) and Bacha (1990), argue that large and sustained current account deficits are a primary cause of rising external debt burdens in developing economies. Accordingly, improvements in the current account balance are expected to alleviate external debt stress in the region. Moreover, from the perspectives of neoclassical, classical, and Keynesian economic theories, the use of external debt for non-investment purposes—particularly for recurrent public expenditure—can have adverse intertemporal effects. As Ulusoy (2017) notes, the need to repay interest in the future can lead to reduced consumption, lower savings, and diminished capital accumulation for future generations.

Thus, classical and Keynesian frameworks emphasize that external borrowing should be directed towards productive investment activities, rather than for meeting short-term consumption or fiscal gaps. Research by Dawood et al. (2021), Abbas et al. (2020), Mahar and Dhakal (2020), Beyene and Kotosz (2020a), Ting and Menggang (2019), Waheed (2017), Al-Fawwaz (2016), Belguith and Omrane (2017), and Swamy (2015) also confirm a similar positive relationship between trade and external debt. However, our findings contradict those of Chiminya et al. (2018) and Awan et al. (2015) since they revealed a negative relationship between terms of trade and external debt. Waheed (2021), in his study about external debt in oil-importing countries, showed a positive effect of TB on external debt in oil-exporting countries and a negative impact of TB on external debt in oil-importing countries. This study revealed that the negative effects of the current account balance on external debt were robust in developing countries since most of the oil and gas importing countries' current account balance is in deficit. Further, Waheed (2021) revealed that a current account surplus may decrease external debt and, at the same time, can increase external debt since the current account surplus shows the country's positive creditworthiness.

According to The World Bank Debt Sustainability Framework, most countries utilise foreign remittances to finance trade deficits, thereby enhancing their foreign reserves. From a debt sustainability perspective, the IMF and World Bank's Low-Income Country Debt Sustainability Framework considers remittances as equivalent to other measures of repayment capacity (IMF & World Bank, 2009). In support of this perspective, evidence from South Asian countries reveals a positive and significant relationship between external debt and remittance inflows ($\beta = +2.85$). While remittances are generally used for repaying import expenditures, suggesting a potential negative relationship with external debt, the observed positive relationship in South Asia indicates that remittances may act as a buffer, facilitating access to further borrowing. This outcome reflects both enhanced creditworthiness and improved debt repayment capacity in these economies.

Although Batool and Zulfiqar (2012) identified a negative relationship between external debt and remittance, Mijiyawa and Oloufade (2022) found a positive and significant effect of remittance inflows on the external debt-to-GDP ratio across 50 low- and middle-income countries. However, when larger remittance-recipient countries were excluded from their sample, the relationship turned negative but statistically non-significant. These

contrasting findings may be attributed to the differing economic, political and social contexts of various regions, which shape the dynamics between remittances and external debt in diverse ways.

GRSs show a significant negative relationship with external debt ($\beta = -0.19$). This is opposed to the findings by Waheed and Abbas (2021), in which they identified a positive relationship between international reserves and external debt. The strong negative relationship represents that the increase in GRSs will decrease the external debt in South Asia. However, Nelesco (2012) found a positive relationship between external debt and international reserves. This can also be justified by the TB relationship since a more significant trade deficit as a percentage of GRSs or greater imports will significantly affect an increase in external debt. More imports reduce the GRSs and hence increase the external debt. If countries can increase exports comparatively to increase imports, the government can reduce their external debt dependency.

However, an increase in exports compared with imports will be challenging, for example, owing to the production capacity, labour availability, export demand and export destinations' economic conditions, and tax on export income. FDI is another source that increases the GRSs by increasing the foreign exchange reserves, which will enhance the liquidity to repay debt obligations. In this regard, an increase in FDI increases domestic productivity through enhanced investment activities along with the inflow of foreign exchange and reduces the need to borrow externally. Confirming the negative significant relationship between FDI and external debt, South Asian countries show a significant negative relationship ($\beta = -0.37$), indicating that FDIs increase the reserves for the countries, reducing the need for external debt. According to Chapter 2 and the descriptive statistics discussed, this relationship has been confirmed since most South Asian countries use FDI as a trade deficit financing. When the countries have more FDIs in a particular year, it means low external debt.

Even though Waheed (2017) and (2021), revealed a negative relationship between FDI and external debt in oil-exporting countries, the reason for this relationship is different from the South Asian countries. Waheed (2021) states that FDI is considered an alternative to external borrowing, and in most oil and gas exporting countries, the infrastructure is well developed. Therefore, they need less external borrowing to build infrastructure, which is why FDI inflows negatively affect external debt. However, for oil

and gas importing countries, Waheed (2021) reveals a positive and statistically significant relationship, stating that oil and gas importing countries' infrastructure is not well developed; they borrow externally to improve infrastructure facilities for the attraction of FDI, which accumulates the external debt in these countries.

However, the existing external debt should be repaid by all these countries, and these debt repayments are referred to as debt services. The study identified a strong positive relationship ($\beta = +5$) between debt service and external debt, indicating that South Asian countries are accumulating external debt for debt service rather than using external debt for productive activities. As discussed in Section 3.3.6, the failure to manage debt services causes crowding out and debt overhang effects. Additionally, the findings align with the classical view, which recognises external debt as a burden if investments cannot generate enough income to exceed outstanding debt payments. The debt cycle theory shows that external debt is crucial for meeting financing needs. The debt Laffer curve illustrates that larger debt stocks are associated with lower probabilities of debt repayment, leading to increased borrowing. The dependency theory argues that industrialised countries exploit the limited resources of unindustrialised countries through debt services and by offering more loans. A similar relationship between debt service and external debt was revealed by Beyene and Kotosz (2020a), Beyene and Kotosz (2020b), and Tiruneh (2004). However, Fatukasai et al. (2020) found an inverse relationship between debt service and external debt, indicating that increased debt services led to a reduction in existing external debt.

Most South Asian countries are oil importers. Waheed (2017) and Adamu (2019) introduced oil prices as a variable to explain the relationship with external debt and identified a positive coefficient. The current study also identified a positive relationship between oil imports and external debt in South Asian countries ($\beta = +0.05$). Further, the current study has identified a strong negative relationship between the performance of financial institutions and external debt ($\beta = -0.03$). This result reveals that a robust financial sector with efficient operations can effectively support domestic financing and economic growth, thereby reducing the country's reliance on external debt. Furthermore, strong financial performance is indicative of broader macro-economic stability, which in turn enhances investor confidence, promotes sound fiscal discipline and contributes to a decreased dependence on external borrowing. However, Colombo and Longoni (2009)

analysed the determinants of long-term external debt for 61 developing countries using both standard economic variables and sociopolitical factors for the period 1970–2000, and they found that external debt is positively correlated to the financial depth, which is a subpart of performance measurement of financial institutions. The study by Emmanuel (2013) identified that foreign or external debt negatively affects bank performance in Nigeria. Even though this study has identified the impact of external debt on bank performance, there is no evidence that the study attempted to determine the effect of bank performance on external debt.

The current study confirms there is a positive relationship between corruption and external debt and a negative relationship between low levels of corruption or the CC, ($\beta = -0.02$), indicating that if the government can control corruption, the countries can reduce the external debt. Azolibe (2021) and Awan et al. (2014) revealed that corruption increases a country's external debt. Confirming this, Nurudeen et al. (2015) showed that countries with low levels of corruption are less affected by the negative impact of debt on growth. In addition, they identified poor governance infrastructure, inefficient allocation of resources and political instability as significant contributors to corruption in less developed countries. The current study shows a positive, significant relationship between PS and external debt ($\beta = +0.09$), indicating that countries can attract foreign debts if they are stable and terrorism-free. Colombo and Longoni (2019) confirmed the study's result by identifying a positive relationship between PS and external debt.

The stock performance of the country is a novel variable the study used to show the country's stability as well as the country's performance indicates a negative relationship ($\beta = -0.11$) between ASPI or the stock performance and the external debt, revealing that if the country's company performance or the industry performance is better the low demand for the foreign debt.

Unemployment, which indicates the country's efficiency of the labour force and productivity, shows a strong positive relationship ($\beta = +1.32$) with external debt, which suggests that more unemployment means ideal capacity or a low level of production in the country, which increases the dependency on external debt. This confirms the theory of Keynesians, who consider debts as a strategy to increase government expenditure, which needs to rectify unemployment and depression owing to a shortage of demand.

Overall, the primary and control variables all showed significant results. The model equation presents the results as follows.

$$EXDGDP = 0.44TB + 2.88FR - 0.37FDI - 0.19GRS + 5Ds + 0.05OI - 0.03ROA - 0.02CC + 0.09PS - 0.11ASPI + 1.32UNP \quad (5.1)$$

While the preceding analysis examined the overall determinants of external debt for the South Asian region as a whole, it is important to recognise country-specific dynamics. Since the results are derived from panel data, Table 5.12 disaggregates the long-run effects of each explanatory variable, providing a country-level comparison to highlight how these relationships vary across individual South Asian nations.

Table 5.12: Long-Run Determinants of External Debt: A Cross-Country Analysis (2002–2021)

	Bangladesh		India		Maldives		Nepal		Pakistan		Sri Lanka	
Variables	**Beta**	***T* stats**	**Beta**	***T* stats**	**Beta**	***T* stats**	**Beta**	***T* stats**	**Beta**	***T* stats**	**Beta**	***T* stats**
TB	−0.75	−27.68	0.97	21.92	0.11	3.16	0.15	6.78	0.82	12.8	1.35	12
FR	0.04	10.94	0.89	29.42	16.48	12.71	−0.23	−26.33	−0.01	−3.76	−0.04	−1.7
FDI	−0.97	−5.38	0.13	1.2	−0.19	−1.03	0.06	0.14	−3.73	−7.2	2.45	3.8
GRS	0.17	2.99	0.69	22.43	1.3	6.13	−1.21	−40.86	−0.77	−5.81	−1.33	−3.68
DS	−0.35	−2.17	−0.21	−3.92	4.55	30.12	24.89	26.6	1.11	4.97	0.04	0.27
OI	0.49	18.6	0	−0.05	−0.31	−3.47	−0.84	−19.25	0.2	6.04	0.78	8.21
ROA	0.01	9.78	−0.03	−15.57	−0.08	−9.84	0.01	5.94	−0.02	−11.09	−0.05	−7.33
CC	−0.11	−28.72	−0.14	−19.82	−0.1	−3.41	0.04	3.67	−0.02	−2.76	0.23	12.1
PS	0	2.63	0.03	10.35	0.25	5.27	0.04	6.7	0.12	19.3	0.1	17.61
ASPI	−0.06	−12.8	0.01	11.13	−0.74	−8.16	0.22	10.21	−0.09	−11.49	0	4.05
UNP	1.27	11.86	0	−3.87	0.61	2.06	2.88	14.63	0	−2.76	3.13	12.07

The following section discusses the long-term impact of each explanatory variable on the external debt of South Asian countries based on the findings presented in Table 5.12. Then, based on the significance of the variables, the study has created external debt models for each country.

5.3.1.1 Bangladesh

Using external debt mainly on projects and foreign remittance to finance the trade deficit is the main reason Bangladesh shows a long-term negative and significant relationship between external debt and a positive significant relationship with foreign remittance (see Table 5.13). As described in Chapter 2, based on the information from annual reports from 2000–2021 of the Bangladesh Bank on economic overview and external sector of the country, in 2000 and 2001, showed that most of the external borrowing by the country was allocated for socio-economic infrastructure and health, education and social sectors and not for consumption. In addition, since Bangladesh became a middle-income country in 2005, the grant element in external debts has declined and reduced access to more concessional loan facilities. Bangladesh's priority is foreign remittance to finance the trade deficit, and if there are any more requirements, then it goes for the external debt.

Bangladesh is ranked the seventh-highest remittance-receiving country globally and 2nd among the six South Asian countries, followed by India (Bangladesh Bank, 2010). Further, the positive relationship between foreign remittance, GRSs, and external debt reveals that foreign remittance assures GRSs of accumulating external debt. The increase in FDIs reduces the country's external debt. In contrast, debt services lessen the country's external debt, indicating the country does not accumulate external debt for debt repayments or trade deficit financing. However, an increase in oil imports increases the external debt. The financial institution's performance shows the country's stability and creditworthiness; hence, there is a strong positive relationship between financial performance and external debt.

There is a strong negative relationship between stock performance and external debt, indicating that the higher the stock performance, the lower the need for external debt. A well-performing stock market can increase government revenues, improve investor confidence, create a stronger currency, improve debt repayment and refinancing options, increase economic growth and reduce corporate borrowing from foreign sources. All

these factors can contribute to a decrease in a country's external debt. Even though the CC shows a significant negative relationship, which means that a greater CC lowers the external debt, there is no relationship between PS and external debt. An increase in unemployment tends to raise external debt because a higher unemployment rate implies a less productive labour force, leading to reduced production of goods and services and consequently increasing the financial burden on the government.

Considering all the explanatory variables and the significance of the relationship with the external debt, the external debt model for Bangladesh can be presented as follows.

$$EXDGDP = -0.75TB + 0.04FR - 0.97FDI + 0.17GRS - 0.35DS + 0.49OI + 0.01ROA - 0.11CC - 0.06ASPI + 1.27UNP \quad (5.2)$$

5.3.1.2 India

According to Table 5.13, India's debt determinants, the TB, foreign remittance and GRSs, show a significant positive relationship. In contrast, FDI shows a weak positive relationship with external debt. The strong negative impact of debt services on external debt reveals that India does not accumulate external debt when servicing debt repayments. The performance of the financial institutions and CC reduce the external debt since there is a significant negative relationship between the ROAs and control of the corruption index, showing that these variables indicate the country's stability and the economy's health. In contrast, the increases in stock market performance and PS have increased the external debt, showing that a country's higher performance and stability enhance creditworthiness and attract more foreign debt. Unemployment shows no impact from an increase in unemployment for an increase in external debt in the long term or the decrease in external debt. The oil imports also show no relationship between the oil imports and the external debt. This is mainly owing to the domestic production of oil and gas (Reserve Bank annual reports). Accordingly, the following explanatory variables affect India's external debt.

$$EXDGPD = 0.97TB + 0.89FR + 0.69GRS - 0.21DS - 0.03ROA - 0.14CC + 0.03PS + 0.01ASPI \quad (5.3)$$

5.3.1.3 Maldives

The Maldives's external debt determinants reveal a significant positive relationship between TB, foreign remittance, GRSs, debt services, PS and unemployment. The positive relationship with foreign remittance is mainly owing to the fact that Maldives's net foreign remittance shows more remittance outflow than inflow, which increases the external debt in financing the trade deficit. The increase in debt service increases the external debt, indicating a risk of external debt accumulation in Maldives. Oil imports and external debt show a negative relationship, where the external debt increases when oil imports decrease. This is owing to the rise in re-exports of oil imports. If oil imports increase, re-exports of oil increase and reduce the need for more external debt. The significant negative relationship of external debt with the performance of financial institutions, stock performance and CC indicates that the growth of financial institutions, stock performance and CC decreases the country's external debt. However, increased PS and unemployment increase the country's external debt. Considering all these significant relations of determinants with external debt, the external debt model can be adopted for Maldives as follows.

$$EXDGDP = 0.11TB + 16.48FR + 1.3GRS + 4.55DS - 0.31OI - 0.08ROA - 0.1 + 0.25PS - 0.74ASPI + 0.61UNP \quad (5.4)$$

5.3.1.4 Nepal

Mahar and Dhakal (2020) show that external debt financing is high in Nepal, and most of the funding is used to meet current expenditures rather than capital expenditure, increasing the debt servicing and causing the crowding-out effect. According to the results on determinants of external debt for Nepal, it can be identified that there is a significant positive relationship between TB and external debt, which confirms that Nepal borrowed externally to finance the trade deficit. A significant negative relationship between foreign remittances, GRSs, and external debt shows that lower foreign remittances and GRSs increase external debt. An increase in debt services has increased external debt, showing that debt accumulation serves the existing debt.

There is a significant negative relationship between oil imports and external debt. According to the annual reports of the Nepal Rastra Bank and the IMF, although the country mainly depends on imports, the higher import tax reduced the need for external

debt to finance the increasing imports. The financial institutions' performance, CC, PS and stock performance show significant positive relationship, indicating that the country's stability and creditworthiness increase the ability to borrow more external debt. The increase in unemployment also significantly increases the external debt owing to lower domestic production, which enhances import dependency.

Based on Nepal's external debt determinants, the external debt model for Nepal can be adopted as follows.

$$EXDGDP = 0.15TB - 0.23FR - 1.21GRS + 24.89DS - 0.84OI + 0.01ROA + 0.04CC + 0.04PS + 0.22ASPI + 2.88UNP \quad (5.5)$$

5.3.1.5 Pakistan

According to the external debt determinants' result in Pakistan (refer to Table 5.13), the TB, debt services and oil imports significantly positively affect external debt in the long run. The positive impact of oil imports and debt service indicates that Pakistan accumulates the external debt for consumption purposes and pays off the external debt, not on capital productions, which causes the debt overhang and the crowding-out effects. The foreign remittance and the external debt show a robust inverse relationship, indicating that the country uses foreign remittance more to finance trade deficits, which reduces the increase in external debt to fund the trade deficit. Even though India, Nepal and Maldives show an insignificant relationship between FDI and external debt, Pakistan shows a significant negative relationship, indicating that an increase in FDIs decreases the need for external debt. Similarly, the rise in GRSs decreases the need for external debt. ROAs, CC, and stock performance all revealed significant negative relationship, indicating that the country's performance decreased the external debt requirements. The PS revealed the country's repayment capabilities, which shows a significant positive relationship with external debt. However, unemployment will not affect Pakistan's external debt in the long term.

Considering all the significant determinants, the external debt of Pakistan can be decided as follows.

$$EXDGDP = 0.82TB - 0.01FR - 3.73FDI - 0.77GRS + 1.11DS + 0.2OI - 0.02ROA - 0.02CC + 0.12PS - 0.09ASPI \quad (5.6)$$

5.3.1.6 Sri Lanka

The external debt determinants of Sri Lanka show that TB has a significantly positive relationship with external debt in the long term. In contrast, foreign remittances have an insignificantly negative relationship with external debt in the long run. This suggests that although the annual reports of the Central Bank of Sri Lanka state that foreign remittances reduce the trade deficit, the research indicates that depending on foreign remittances to reduce the trade deficit in the long term does not significantly reduce the need for external debt. The use of foreign remittances to cover the trade deficit instead of using them for investment in productive assets and their flow to private households rather than the government may be the reasons for this positive relation.

Additionally, while there is a positive relationship between external debt and debt service in the long run, it is insignificant. According to the Central Bank of Sri Lanka's annual report, 2018, 2019 and 2020, the country has reduced the use of new external debt to make debt services and has used GRSs and foreign direct inflows to pay the debt services. There is a positive relation between FDI and external debt, indicating that an increase in FDI increases external debt, as it acts as collateral for external debt repayments in the long term. Moreover, a significant negative relationship exists between GRSs and external debt, suggesting that Sri Lanka mainly uses GRSs to pay off external debt in the long run.

Similarly, a significant negative relationship exists between financial institutions' performance and external debt, indicating that an increase in financial institutions' performance decreases the external debt requirements in the long run. The CC and PS of the country will increase the ability to borrow external debt in the future, as secure and permanent peace has promoted business confidence, encouraging private investments and external debt. However, changes in stock performance have no impact on external debt. In the long term, external debt also increases if unemployment increases, owing to the significant positive relationship between unemployment and external debt.

Considering the significant determinants of Sri Lanka's external debt, the model can be modified as follows for Sri Lanka.

$$EXDGDP = 1.35TB + 2.45FDI - 1.33GRS + 0.78OI - 0.05ROA + 0.23CC + 0.1PS + 3.13UNP \quad (5.7)$$

As explained in Section 4.2.1, the data analysis was conducted for the whole period and then separately before and after the financial crisis and before and after COVID-19. It is important to note that the study covers the period from 2000 to 2021, but countries during this period suffered from the financial crisis and the COVID-19 pandemic. Therefore, to examine how unexpected events have affected the structural changes of countries, the study period was partitioned into four periods. The decision to use these periods was motivated by Gujarati (2009) and previous research by Islam (1995), Sakyi and Egyir (2017), Banerjee et al. (2018), Lin et al. (2021) and Egyir et al. (2020) which suggests that using a more extended period for panel analysis can result in outliers and disturbances that could affect the accuracy of the results. Additionally, Sala and Trivín (2014) note that this data transformation is beneficial for analysing long-term relationships among variables, which is crucial for developing effective policy resolutions. Therefore, the study has investigated the determinants of external debt separately before the financial crisis, after the economic crisis, before COVID 19 and after COVID-19 (see Table 5.13).

Table 5.13: External Debt Determinants Across Economic Shocks: Financial Crisis and COVID-19

	Overall-2002–2021		Before Financial Crisis (2002–2008)		After Financial Crisis (2009–2021)		Before COVID (2002–2018)		After COVID (2019–2021)	
	Method		Panel EGLS (Cross-Section Weights)		Fully Modified OLS		Fully Modified OLS		Fixed Effect	
Variable	**Beta/Coefficient**	***t*-stat**	**Beta/Coefficient**	***t*-stat**	**Beta/Coefficient**	***t*-stat**	**Beta/Coefficient**	***t*-stat**	**Beta/Coefficient**	***t*-stat**
TB	0.44	11.83	0.03	0.96	−0.18	−5.63	0.11	6	−0.93	−31.13
FR	2.85	8.69	0	−0.23	0.04	10.95	−0.01	−3.13	0.07	23.24
FDI	−0.37	−3.46	−3.06	−2.93	−0.93	−11.64	1.01	13.36	0.96	5.88
GRS	−0.19	−7.68	−0.02	−0.13	−0.39	−8.49	−0.42	−9.85	1.19	25.42
DS	5	22.81	0.17	0.28	4.5	42.67	3.17	31.9	5.64	21.13
OI	0.05	4.12	0.44	2.52	0.02	3.09	−0.32	−10.43	−0.67	−14.86
ROA	−0.03	−11.47	−0.01	−3.81	−0.03	−16.5	−0.02	−16.88	−0.05	−24.12
CC	−0.02	−15.89	−0.01	−0.2	0.14	12.18	−0.09	−12.58	−0.39	−14.36
PS	0.09	25.25	0.05	2.16	0.01	1.36	−0.04	−13.83	0.01	9.98
ASPI	−0.11	−2.88	−0.01	−1.35	0.01	4.93	0.02	6.58	0	13.97
UNP	1.32	13.88	0	1.88	−0.02	−19.95	0	0.91	−0.03	−14.43

5.3.1.7 Before Financial Crisis (2002–2008)

The dataset before the financial crisis consists of seven time periods and six cross countries ($T > N$). The dataset does not present the multicollinearity but the panel unit root for external debt, debt service, FDI, foreign remittance, GRSs, oil imports, PS, TB and unemployment. There was no co-integration. Therefore, considering the characteristics of the dataset, the study decided to select the panel generalised least square method with cross-section weights since the number of periods is greater than the number of cross-sections and introducing lags/differences since most of the variables are non-stationary. The results show that before the financial crisis, the previous year's external debt had a positive relationship with the current external debt, indicating the debt accumulation issue in South Asian countries. FDIs and ROAs show a significant negative relationship with external debt, while oil imports, PS and unemployment positively correlate with external debt.

5.3.1.8 After Financial Crisis (2009–2021)

After the financial crisis, the period includes 13 periods and six cross-sections ($T > N$). The dataset is free from multicollinearity. However, the dataset presents panel unit root and co-integration. Therefore, the study used the fully modified OLS method. The results show that, except for PS, all the variables have a significant relationship with external debt. Before the financial crisis, PS had a significant positive relationship with external debt, but after the financial crisis, PS and external debt showed an insignificant positive relation. This reveals that increased PS denoted countries' stability and creditworthiness. However, after the financial crisis, the PS of a country was not a significant determinant of external debt.

The performance of the financial institutions shows a significant negative relationship in both periods, but after the financial crisis, the significance of the effect of financial institutions' performance increased since before the financial crisis; the coefficient was only −0.012, which increased to −0.03 after the financial crisis. Before the financial crisis, debt services showed an insignificant positive relationship, but after the financial crisis, debt services showed a significant positive relationship. This reveals that South Asian countries have paid more attention to debt services during this time, but to pay the existing debt, they have used more external debt, which causes the accumulation of external debt.

The use of foreign direct investment for an increase in external debt has become low significant since the coefficient of FDI decreases from −3 to −0.9. The negative relationship between TB and external debt indicates that during this period, South Asian countries were mainly concerned with paying debt services and project loans rather than using external debt to cover trade deficits. During this period, according to the annual reports of South Asian countries, the trade deficit was mainly covered by foreign remittances. After the financial crisis, the importance of stock performance and the CC was improved, showing a positive relation with external debt.

5.3.1.9 Before COVID (2002–2018) and After COVID (2019–2021)

Before COVID-19, the sample comprised 18 periods and six cross-sections ($T > N$). Without considering the period before the financial crisis, the sample size was small, and hence, the sample generated insignificant results. Therefore, the study considered both before the economic crisis and before COVID-19 for the sample period before COVID-19. The dataset has the same characteristics, so the study used the fully modified OLS method. Except for unemployment, all other variables show a significant relationship. After COVID-19, the sample consisted of three periods and six cross-sections. Owing to the small sample size, the study conducted only fixed effects. The fixed-effect results show that all the other variables are significant except for FDI.

ASPIs show a significant positive relationship with external debt; however, the importance of stock performance in deciding the external debt has reduced compared with before the COVID period since there has been a decline in the coefficient after COVID-19. There is a significant negative relationship between CC and external debt both before and after COVID-19, but compared with before COVID-19, the impact of the CC after COVID-19 has increased since the increase in coefficients. Debt service shows a significant positive relationship, and compared with before COVID, the debt-service coefficient has increased, indicating that South Asians accumulate external debt for debt services rather than mainly for funding trade deficits.

The negative relationship between the external debt, trade deficit and oil imports can further support this. Even though most South Asian countries import oil and possess trade deficits, the relationship with the external debt to finance this is negative. This can be owing to the increase in significance of foreign remittance and GRSs in financing trade

deficit and oil imports and to the rise in import taxes as discussed under the results discussion of determinants of external debt from 2002–2021.

5.3.2 Identify the Relationship Between External Debt and Economic Growth

The study used a random effect to identify the relationship between external debt and economic growth. First, the study confirmed no cross-sectional dependency, multicollinearity and co-integration. (see Table 5.14)

Table 5.14: Test results for cross-sectional dependency, co-integration and multicollinearity

Test	Statistic
Residual cross-section dependence test	
Breusch–Pagan LM	48.85*
Pesaran scaled LM	6.18*
Pesaran CD	4.08*
Kao residual co-integration test	
ADF	0.70
Multicollinearity	
EXTERNAL_DEBT	6.02

Note: * denote significance at 5% levels of significance.

Then, the study selected random effect out of statics models based on the Hausman test (see Table 5.15).

Table 5.15: Selection of static model

Effects Test	Statistic	Prob.
Cross-section chi-square	437.37	0
Hausman test	2.25	0.13

As shown in Table 5.15, based on the chi-squared test, the study selected the fixed effect from the common effect and then conducted the Hausman test. The study selected the random effect from the fixed-effect model based on the test result. The results from the

random-effect model, as shown in Table 5.16, revealed a significant negative relationship between external debt and economic growth in South Asia.

Table 5.16: Random-effect model

Variable	Coefficient
EXTERNAL_DEBT	−1187.69*
C	3299.13*

Note: * denote significance at 5% levels of significance.

GDP per capita is the economic growth indicator, showing that economic growth decreases when external debt increases. The crowding-out effect and debt overhang theory confirm this and are consistent with the theoretical predictions of classical and neoclassical views that external debt hampers economic growth by discouraging investment. Based on the crowding-out effect, Siddique et al. (2016) state debt can positively affect economic growth up to a specific threshold limit. Then, external debt negatively affects economic growth because of the inefficiency of investments and the effects of resources. The negative impact of external debt on economic growth reveals that the country has more debt outstanding, and a large proportion of the output of the country is used to repay the outstanding debt, which decreases the incentive investment, and the government will experience debt overhang problem (Krugman, 1988; Sachs, 1989).

Confirming the negative impact of external debt on economic growth, Siddique et al. (2016), using the PMG, MG and DFE estimates, revealed an inverse relationship between external debt and economic growth. Additionally, Ale et al. (2022), employing the panel ARDL method for Bangladesh, India, Pakistan, Bhutan and Sri Lanka from 1980–2020, reveal a significant negative relationship between external debt and economic growth in the short and long run. Dawood et al. (2022) also identified a negative relationship between external debt and economic growth in both the short and long run, indicating that when economies grow, their income increases and this reduces their dependence on foreign debt, all other things being equal, and this subsequently reduces their external debt since borrowing will be reduced or halted (Al-Fawwaz, 2016; Bittencourt, 2015; Swamy, 2015; Waheed, 2017; Wanniarachchi, 2020). Beyene and Kotosz (2020a) also found a similar effect between external debt and economic growth. Other than identifying

the relationship between external debt and economic growth as a long-term significant negative, Hossain and Shirin (2016) have identified bidirectional causality between public sector external debt and economic growth in Bangladesh from 2000 to 2015. In addition, Easterly (2001), Pattillo et al. (2004) and Ademola et al. (2018) revealed a causality effect of economic growth and external debt. Therefore then, the study conducted pairwise Dumitrescu–Hurlin Panel Causality Tests to identify whether there were any casualties.

Table 5.17: Pairwise Dumitrescu–Hurlin panel causality test results

Pairwise Dumitrescu–Hurlin Panel Causality Tests	W-Stat.	Zbar-Stat.	Prob.
EXTERNAL_DEBT does not homogeneously cause GDP	0.87	−0.38	0.71
GDP does not homogeneously cause EXTERNAL_DEBT	3.31	2.94	0.0032

According to Table 5.17, the results revealed a heterogenous causality across the panel, which means external debt heterogeneously causes economic growth. The results show a homogenous causality across the panel as well since economic growth homogenously causes external debt. This implies that economic growth influences the levels of external debt in South Asian countries. Still, the strength and the direction of the effect of external debt on economic growth vary among the countries.

5.3.3 Risk Assessment of Determinants of External Debt in South Asia

The above sections identify the macro-economic and country-specific factors that affect the external debt from 2002–2021, considering the financial crisis and the covid 19. Even though the results identified the significance, the directions of the impact, and the long-term impact of these variables on external debt, the results do not present the changes of these impacts during different levels of external debt. That means identifying which variables show the highest effect in any changes to the level of external debt.

The study first decided to use quantile regression analysis. Quantile regression estimates the relationship between the dependent variable (external debt) and independent variables (such as CC, ASPI, DS, etc.) at different quantiles of the dependent variable's distribution. The coefficient of the quantile regression indicates the estimated change in the dependent variable (external debt) for a one-unit change in the explanatory variable. Therefore, the quantile regression results represent the explanatory variables' marginal effects or

elasticities. This helps to understand how the impact of the independent variables changes across different levels of the dependent variable. Since this is a novel for the external debt determinants studies, the study refers to the studies done by Mohsin et al. (2021) and the study done by San (2023).

As shown in Tables 5.18, 5.19, 5.20 and 5.21, the regression at different quantiles estimates the impact of the independent variables on the various quarters of the external debt values. It helps with understanding the factors influencing countries with different external debt levels. For example, the 0.05 quantile represents the 5th percentile of the external debt distribution. The regression at this quantile estimates the impact of the independent variables on the lowest 5% of the external debt values. It provides insights into the factors affecting countries with very low levels of external debt. The 0.25 quantile represents the 25th percentile. The regression at this quantile estimates the impact of the independent variables on the lower quarter of the external debt values. This helps with understanding the factors influencing countries with relatively low external debt.

Table 5.18: Results of quantile regression for CC, ASPI and DS

CC				ASPI				DS			
Quantile	Coefficient	t-Statistic	Prob.	Quantile	Coefficient	t-Statistic	Prob.	Quantile	Coefficient	t-Statistic	Prob.
0.45	0.1	2.03	0.04	0.1	0.02	3.05	0	0.05	3.89	11.96	0
0.5	0.08	1.8	0.07	0.15	0.02	2.88	0	0.1	3.74	7.7	0
0.95	0.08	1.97	0.05	0.2	0.02	3.3	0	0.15	3.5	7.27	0
				0.25	0.02	3.04	0	0.2	3.67	9.01	0
				0.3	0.01	2.5	0.01	0.25	3.64	8.1	0
				0.35	0.01	2.05	0.04	0.3	3.74	8	0
				0.4	0.01	1.81	0.07	0.35	3.8	7.35	0
				0.85	-0.02	-2.27	0.03	0.4	3.78	6.97	0
				0.9	-0.02	-2.63	0.01	0.45	3.74	7	0
				0.95	-0.02	-3.72	0	0.5	4	6.53	0
								0.55	5.06	1.93	0.06
								0.6	5.26	1.85	0.07
								0.65	5.86	1.77	0.08
								0.7	6.19	2	0.05
								0.75	6.84	2.25	0.03
								0.8	8.03	1.7	0.09
								0.85	10.55	4.5	0
								0.9	10.54	3.67	0
								0.95	11.25	6.98	0

According to Table 5.18, a 1% change in the CC will positively affect relatively lower levels of external debt and higher external debt. However, based on the *t*-statistics, it can be identified that the more significant impact of CC is at a lower level of external debt. That is, a 1% increase in CC will increase external debt by 0.10. This suggests that when countries have lower debt, improvements in corruption control may increase their ability to borrow more. The country-specific FMOLS estimates in Table 5.24 support these results. For all countries except Nepal, CC has a negative long-run relationship with external debt, meaning that better corruption control helps reduce debt over time. This indicates that these countries are in high-debt situations, where improving governance helps manage and lower debt. In contrast, Nepal shows a positive relationship between CC and external debt, which supports the idea that Nepal is at a lower debt level, where better corruption control makes it easier to access external borrowing. These findings together confirm the quantile regression results and highlight how the effect of corruption control on external debt depends on a country's existing debt level.

The coefficients for ASPI are positive at lower levels of external debt and negative at higher levels of external debt, suggesting that an increase in ASPI is associated with an increase in external debt-at lower levels and a decrease in external debt at higher external debt levels. This reveals that if a country has a higher external debt, the country's stock performance can reduce the external debt and in economies with lower debt, rising stock market activity may indicate increased speculative behaviour or external dependence, which could lead to higher debt. Although India held the highest share of external debt in the South Asian region in 2021 (World Bank, 2021), the results in Table 5.24 indicate a positive relationship between stock market performance and external debt. This suggests that India may be using stock performance as a signal or tool to facilitate further external borrowing. Since stock performance is identified as a risk factor at higher debt levels, countries like India can potentially use strong stock market indicators to manage or reduce their external debt. Therefore, India should consider strengthening its stock market performance over the long term, aligning this strategy with efforts to reduce external debt and achieve long-term debt sustainability.

The coefficients for debt service (DS) are positive and statistically significant (p-values < 0.05) across most quantiles, starting from the 0.05 quantile. This indicates that higher debt service payments are consistently associated with increased external debt-to-GDP

ratios, with the impact becoming more substantial at higher quantiles—for example, a coefficient of 11.25 at the 0.95 quantile. These findings suggest that rising debt service burdens contribute to the accumulation of external debt, posing challenges to debt sustainability. However, this trend does not apply to Bangladesh and India. Despite holding higher levels of external debt (see Table 2.1), these two countries appear to implement more effective debt management strategies, particularly in controlling and reducing their debt service obligations.

Table 5.19: Results of quantile regression for FDI and FR

FDI					FR			
Quantile	**Quantile**	**Coefficient**	***t*-Statistic**	**Prob.**	**Quantile**	**Coefficient**	***t*-Statistic**	**Prob.**
0.85	0.8	1.01	1.7	0.09	0.2	0.05	2.83	0.01
0.95	0.9	1.49	2.48	0.01	0.25	0.05	2.28	0.02
	0.95	1.53	2.25	0.03	0.3	0.05	2.53	0.01
					0.35	0.05	2.56	0.01
					0.4	0.05	2.66	0.01
					0.45	0.05	2.58	0.01
					0.5	0.04	2.04	0.04

According to Table 5.19 change in FDI only affects the increase in external debt at higher external debt levels, suggesting that if the country has higher external debt levels, more FDI means more external debt accumulation. This further reveal that if the country suffers from higher external debt and decides to use FDI to cover it, it will not reduce the external debt. Instead, it may be linked to capital outflows (profit repatriation) or unfavourable terms that increase external liabilities. This challenges the assumption that FDI always supports financial stability. The coefficients for FR are generally stable and significant only at lower quantiles, suggesting that at lower levels of external debt, increases in foreign remittances are associated with higher external debt-to-GDP ratios. This is because foreign remittance in South Asia is considered collateral for more external debt. However, foreign remittance does not affect external debt at higher external debt levels.

According to Table 5.20, the GRSs show a negative and significant coefficient only at the lower levels of external debt, and GRSs have no impact on external debt at higher external debt levels. This suggests that if a country has a low level of external debt, it can use GRSs to reduce the external debt and at high debt levels may mean that reserves are insufficient or not used effectively, thus showing no impact. An increase in oil imports at higher external debt levels may decrease external debt, possibly due to the financing terms and aid during high debt levels, which temporarily reduce the debt burden. The coefficients for PS are statistically significant and positive at lower levels of external debt, indicating that PS will allow more external debt to the country. However, if the country has higher external debt levels, the PS will decrease the external debt. Several factors can explain this relationship. First, politically stable governments are more likely to adopt prudent fiscal and debt management policies aimed at ensuring debt sustainability and avoiding the risks of debt distress or default. Political stability often supports the implementation of necessary reforms and fiscal discipline, which contribute to reducing external debt. Additionally, stable governments may face increased pressure from investors and international agencies to manage or restructure their debt obligations, further encouraging debt reduction. The coefficient for ROA is only significant at the higher quantile, where it is negative and significant, suggesting that at very high levels of external debt, better financial performance (higher ROA) is associated with a lower external debt-to-GDP ratio.

Table 5.20: Results of quantile regression for ROA, PS, OI and GRS

ROA				PS				OI				GRS			
Quantile	Coefficient	t-Statistic	Prob.	Quantile	Coefficient	t-Statistic	Prob.	Quantile	Coefficient	t-Statistic	Prob.	Quantile	Coefficient	t-Statistic	Prob.
0.85	-0.02	-1.71	0.09	0.5	0.04	1.76	0.08	0.85	-0.48	-1.75	0.08	0.05	-0.38	-3.01	0
0.95	-0.02	-1.69	0.09	0.9	-0.04	-1.75	0.08	0.9	-0.54	-1.97	0.05	0.1	-0.23	-1.78	0.08
				0.95	-0.05	-1.95	0.05	0.95	-0.51	-2.01	0.05	0.15	-0.32	-2.32	0.02
												0.2	-0.42	-2.71	0.01
												0.25	-0.47	-2.72	0.01
												0.3	-0.39	-2.67	0.01
												0.35	-0.44	-2.79	0.01
												0.4	-0.42	-2.86	0.01
												0.45	-0.49	-3.41	0
												0.5	-0.45	-3.21	0

Even though at lower debt levels, TB shows a negative impact and a positive impact at almost all other quantiles, the impact of changes in TB is not a significant factor in deciding the external debt in South Asia (see Table 5.21). The unemployment changes at lower and higher external debt levels suggest that low levels of labour force [4]and idle labour forces will significantly reduce the external debt (see Table 5.21). In contrast to advanced economies, numerous South Asian nations possess limited social safety net provisions. For instance, unemployment benefits are either non-existent or minimal in countries such as Bangladesh and Srii Lanka. Consequently, high unemployment rates do not necessarily lead to increased government expenditure through welfare payments, as might be observed in developed countries. This implies that fiscal deficits arising from unemployment are often insufficiently substantial to compel governments to engage in heightened external borrowing. Instead, policymakers tend to adopt a more risk-averse stance during periods of labour market distress, steering clear of substantial foreign loans due to pressures from multilateral lenders, domestic opposition, or conditionalities imposed by the IMF. As a result, the accumulation of external debt tends to decelerate or even decrease during periods of elevated unemployment periods. For instance, during the 2020–2022 economic crisis, Sri Lanka experienced high unemployment and a declining labour force participation rate. However, instead of increasing external borrowing, the country was forced to suspend debt repayments and limit new borrowing due to diminished investor confidence, sovereign credit downgrades, and IMF scrutiny (IMF, 2022; World Bank, 2022).

Table 5.21: Results of quantile regression for TB and UNP

TB				UNP			
Quantile	**Coefficient**	***t*-Statistic**	**Prob.**	**Quantile**	**Coefficient**	***t*-Statistic**	**Prob.**
0.05	−0.05	−1.15	0.25	0.05	−0.03	−2.78	0.01
0.1	−0.04	−0.86	0.39	0.1	−0.03	−3.38	0
0.15	−0.03	−0.55	0.58	0.15	−0.03	−3.2	0
0.2	0	0.02	0.98	0.2	−0.02	−3.4	0

[4] the proportion of the working-age population actively participating in the labour market by either working or seeking employment.

0.25	0	0.02	0.98	0.25	−0.02	−3.5	0
0.3	0.02	0.4	0.69	0.3	−0.03	−3.59	0
0.35	0.04	0.54	0.59	0.35	−0.02	−3.29	0
0.4	0.04	0.62	0.53	0.4	−0.02	−3.56	0
0.45	0.06	1.07	0.29	0.45	−0.03	−4.2	0
0.5	0.09	1.51	0.13	0.5	−0.03	−4.11	0
0.55	0.06	0.83	0.41	0.55	−0.02	−3.48	0
0.6	0.06	0.78	0.44	0.6	−0.02	−3.93	0
0.65	0.07	1.04	0.3	0.65	−0.02	−4.28	0
0.7	0.07	0.98	0.33	0.7	−0.02	−3.99	0
0.75	0.09	1.34	0.18	0.75	−0.02	−4.29	0
0.8	0.07	0.67	0.5	0.8	−0.02	−2.66	0.01
0.85	0.08	1.08	0.28	0.85	−0.01	−2.45	0.02
0.9	0.11	1.34	0.18	0.9	−0.02	−3.28	0
0.95	0	0	1	0.95	−0.02	−3.31	0

Based on the above quantile regression results, as shown in Table 5.22 below, at high debt levels, CC, debt service and FDI show a strong positive relationship with the external debt-to-GDP ratio, suggesting these factors are significant risk contributors for countries with high external debt. Lower-to-middle debt levels, CC, ASPI, debt-service foreign remittance and PS, are significant factors in increasing the external debt-to-GDP ratio.

Therefore, CC and debt service can be identified as significant risk factors in increasing external debt at lower and higher external debt levels. At high external debt levels, the share price index, oil imports, PS, ROAs, financial performance, and unemployment decrease external debt accumulations, indicating their protective effect at these debt levels. GRSs and unemployment reduce external debt at lower external debt levels, showing a protective effect.

Table 5.22: Risk factors at different external debt levels

Risk factor	At Lower External Debt Levels	At Higher External Debt Levels
CC	Increase external debt	Increase external debt
ASPI	Increase external debt	Decrease external debt
DS	Increase external debt	Increase external debt
FDI	No impact	Increase external debt
FR	Increase external debt	No impact
GRS	Decrease external debt	No impact
OI	No impact	Decrease external debt
PS	Increase external debt	Decrease external debt
ROA	No impact	Decrease external debt
TB	No impact	No impact
UNP	Decrease external debt	Decrease external debt

5.4 Summary of Key Findings

The results suggest that primary variables, namely foreign remittance, oil imports, PS, unemployment and control variables, TB (trade deficit) and debt services, show positive and significant relationship with external debt for South Asia from 2002 to 2021. The primary variables, namely, ROAs, CC, and ASPI and control variables, such as FDI and GRSs, show a significant negative relationship from 2002 to 2021 for South Asia. Before the financial crisis from 2002–2008, FDI and ROAs only show significant negative results with external debt. Oil imports and PS show positive significant results with external debt. After the financial crisis that is from 2009 to 2021, TB, FDIs, GRSs, ROAs and unemployment showed significant negative results, while foreign remittance, debt services, oil imports, CC and ASPIs showed significant positive relationship with external debt. Before the COVID-19 (2002–2018) TB, foreign investments and debt services, ASPIs showed a significant positive relationship, whereas foreign remittance, GRSs, oil imports, ROAs, CC, and PS showed a negative significant relationship with external debt. After COVID-19 from 2019–2021, foreign remittances, FDIs, GRSs, debt services, PS and ASPI show significant positive relationship, whereas TB, oil imports, ROAs, CC and unemployment show a significant negative relationship with external debt.

As shown in summary Table 5.23 for determinants at different periods before the economic changes—such as prior to the financial crisis and COVID-19—South Asia utilised external debt to cover its trade deficit. However, after the financial crisis and COVID-19, it shifted to using foreign remittances and FDIs for this purpose. After these crisis periods, South Asia exhibited a similar approach to covering trade deficits by relying on foreign remittances and FDIs. Nonetheless, even after the crisis periods, external debt has been used to service existing debt, indicating that South Asia primarily uses external debt for consumption rather than productive activities. Throughout nearly all periods, the performance of financial institutions has contributed to the increase in external debt, while PS has acted as an indicator of the country's stability for further external borrowings.

Table 5.23: Summary of the results of determinants at different periods

	Overall-2002–2021		Before Financial Crisis		After Financial Crisis		Before COVID		After COVID	
	Relationship	**Practice**	**Relationship**	**Practice**	**Relationship**	**Practice**	**Relationship**	**Practice**	**Relationship**	**Practice**
TB	Significant +	External debt to pay trade deficit	Insignificant +		Significant −	FR, FDI to cover deficit	Significant +		Significant −	FR, FDI to cover deficit
FR	Significant +	Foreign remittance to pay debt services	No impact		Significant +	External debt to pay DS, FR to pay TB	Significant −	External debt to pay TB	Significant +	External debt to pay DS, FR to cover TB
FDI	Significant −	FDI pay debt services	Significant −	FDI pay debt services	Significant −	FDI pay TB	Significant +	FDI pay DS	Significant +	FDI pay Trade deficit
GRS	Significant −	GRS pay DS	Insignificant −		Significant −	GRS pay DS	Significant −	GRS pay debt services	Significant +	GRS pay trade deficit
DS	Significant +	External debt pays DS	Insignificant +		Significant +	external debt pays DS	Significant +	external debt pays DS	Significant +	
OI	Significant +	External debt pay OI	Significant +	External debt pay OI	Significant +	external debt pay OI	Significant −	FR, FDI, GRS to pay OI	Significant −	FR, FDI, GRS to pay OI
ROA	Significant −	Financial institutions performance decreases external debt	Significant −	Financial institutions performance decreases external debt	Significant −	Financial institutions performance decreases external debt	Significant −	Financial institutions performance decreases external debt	Significant −	Financial institutions performance decreases external debt
CC	Significant −	CC reduces external debt	Insignificant −		Significant +	CC use as an indicator of stability	Significant −	CC reduces external debt	Significant −	
PS	Significant +	PS uses as an indicator of stability	Significant +	PS uses as an indicator of stability	Insignificant +		Significant −		Significant +	PS uses as an indicator of stability
ASPI	Significant −	Stock performance reduce external debt	Insignificant −		Significant +	Stock performance use as an indicator of stability	Significant +	Stock performance use as an indicator of stability	No impact	
UNP	Significant +	Low productivity more imports increase external debt	No impact		Significant −	Non-repayment capacity reduces external debt	No impact		Significant −	Non-repayment capacity reduces external debt

Table 5.24: Results summary of South Asian countries on determinants of external debt

	Bangladesh	India	Maldives	Nepal	Pakistan	Sri Lanka
TB	Significant negative relationship-External debt uses for project investments	Significant positive relationship-External debt uses for consumption-Cover trade deficit	Significant positive relationship-External debt Cover trade deficit	Significant positive relationship Cover trade deficit	Significant positive relationship Cover trade deficit	Significant positive relationship–Cover trade deficit
FR	Significant positive relationship–cover trade deficit	Significant positive relationship–cover debt service	Significant positive relationship-not enough foreign remittance inflow to cover trade deficit	Significant negative relationship–cover trade deficit, debt service	Significant negative relationship cover trade deficit	Significant negative relationship Cover trade deficit, debt service
FDI	Significant negative relationship–cover trade deficit	Significant positive relationship–cover debt service	Insignificant negative relationship	Insignificant positive relationship	Significant negative relationship Use to cover trade deficit	Significant positive relationship Use to cover debt service
GRS	Significant positive relationship–cover trade deficit, debt services	Significant positive relationship–cover debt service	Significant positive relationship-cover trade deficit, debt services	Significant negative relationship covers trade deficit	Significant negative relationship cover trade deficit	Significant negative relationship cover debt service
DS	Significant negative relationship-Pay off the external debt	significant negative relationship-Pay off the external debt	Significant positive relationship-Accumulate external debt to pay existing debt	Significant positive relationship Accumulate external debt to pay existing debt	Significant positive relationship Accumulate external debt to pay existing debt	Insignificant positive relationship
OI	Significant positive relationship-Oil imports increase external debt	No impact-Oil exports available owing to oil and gas production	Significant negative relationship-re export oil	Significant negative relationship Taxes on oil imports	Significant positive relationship Oil imports increase external debt	Significant positive relationship Oil imports increase external debt
ROA	Significant positive relationship–act as a security in borrowing	Significant negative relationship-Increase in financial performance increase the domestic funds availability	Significant negative relationship-Increase in financial performance increase the domestic funds availability	Significant negative relationship Increase in financial performance increase the domestic funds availability	Significant negative relationship Increase in financial performance increase the domestic funds availability	Significant negative relationship Increase in financial performance increase the domestic funds availability
CC	Significant negative relationship-Shows the countries stability	Significant negative relationship-Shows the countries stability	Significant negative relationship-Shows the countries stability	Significant positive relationship act as a security in repayments	Significant negative relationship Shows the countries stability	Significant positive relationship act as a security in repayments

PS	No impact	Significant positive relationship-Shows the countries stability	Significant positive relationship-Shows the country's stability	Significant positive relationship Shows the country's stability	Significant positive relationship Shows the country's stability	Significant positive relationship Shows the country's stability
ASPI	Significant negative relationship-Increase in stock performance attract more investors and decrease borrowing	Significant positive relationship-shows the country's stability	Significant negative relationship Increase in stock performance attract more investors and decrease borrowing	Significant positive relationship shows the country's stability	Significant negative relationship Increase in stock performance attract more investors and decrease borrowing	No impact
UNP	Significant positive relationship Low productivity increases external debt	No impact	Significant positive relationship Low productivity increases external debt	Significant positive relationship Low productivity increases external debt	No impact	Significant positive relationship Low productivity increases external debt

Overall, South Asia has used external debt for consumption purposes and not in income-generating investments except in Bangladesh (see Table 5.24). Most South Asian countries have used foreign remittance GRSs and FDIs to cover trade deficits and pay debt services. However, according to Table 5.24, Maldives, Nepal and Pakistan have accumulated more external debt in paying debt services. Although Sri Lanka has used the same process, but paying debt services using external debt is insignificant for Sri Lanka. They have mainly used foreign remittances, GRSs and FDI to repay their debt services. The increase in oil imports is a matter for South Asia regarding increasing external debt, except for India, Maldives and Nepal. Only Bangladesh uses financial institution performance as an indicator for extra external borrowing; for others, financial institutions' performance increases have decreased external debt. Bangladesh, India, Maldives and Pakistan's CC decrease the external debt, which means an increase in the external debt corruption is another matter for these countries. However, for Nepal and Sri Lanka, CC indicates the country's stability to go for more external debt. If the country has more corruption, foreign countries will not lend money. However, both Nepal and Sri Lanka use external debt more for consumption. Sri Lanka has the highest average external debt-to-GDP from 2002 to 2021, and Nepal has the third highest average external debt-to-GDP (see Table 5.25).

Table 5.25: Average of the determinants from 2002 to 2021

Country	EXDGDP	TB	FR	FDI	GRS	DS	OI	ROA	CC	PS	UNP	ASPI
South Asia	32%	−9%	0.76	−2%	13%	3%	17%	1.63	−1.03		1.56	0.99
Pakistan	31%	−8%	1.49	−1%	5%	2%	24%	0.79	−0.92	−0.71	3.53	0.80
Sri Lanka	51%	−8%	0.98	−1%	9%	4%	15%	1.22	−0.30	−1.08	0.06	1.75
India	19%	−3%	0.19	−1%	17%	2%	26%	0.75	−0.39	−1.20	5.63	2.77
Bangladesh	23%	−7%	0.97	−1%	9%	1%	8%	1.31	−1.09	−1.26	0.04	0.46
Nepal	27%	−25%	0.90	0%	23%	1%	15%	1.58	−0.69	0.30	0.02	0.06
Maldives	40%	0.42%	0.01	−8%	14%	5%	14%	4.14	−0.52	−0.52	0.08	0.11

Except for Bangladesh, all other South Asian countries show a positive relationship between PS and external debt, suggesting that PS shows the country's stability. For countries Bangladesh, Maldives and Pakistan, stock performance is essential in attracting more investment and decreasing borrowing. For India and Nepal, stock performance indicates the economy's stability and creditworthiness. Unemployment increases external

debt in Bangladesh, Maldives, Nepal and Sri Lanka, except for India and Pakistan. All these relations are long-term, and South Asia had no significant relations of these determinants in the short term. External debt has a long-term negative impact on South Asia's economic growth. This negative long-term relation confirmed the results of Rauf and Khan (2017), Siddique et al. (2016) and the theories by classical, neoclassical and Keynesian views.

As shown in Table 5.26, the study's findings are consistent with the previous findings and match the theories suggested on external debt. The positive and significant relationship with TB confirms the findings of Dawood et al. (2021), Abbas et al. (2020), Mahar and Dhakal (2020), Beyene and Kotosz (2020a), Ting and Menggang (2019); Waheed (2017), Al-Fawwaz (2016), Belguith and Omrane (2017), Swamy (2015) and the theories two-gap and three-gap models proposed by Chenery and Strout (1966) and Bacha (1990), classical, neoclassical and Keynesian views. The positive relationship of foreign remittance confirms the findings of Mijiyawa and Oloufade (2022). Findings on FDI consist of negative relationship confirming the findings of Benedict et al. (2014), Ostadi and Ashja (2014), and Abbas et al. (2020).

However, the study findings of GRSs are opposite to those of Waheed and Abbas (2021), revealing a positive relationship. The relationship of debt services is according to the theory of classical view, debt cycle, debt Laffer curve and dependency theory and according to the findings of Beyene and Kotosz (2020a), Beyene and Kotosz (2020b) and Tiruneh (2004). A positive relationship with oil imports confirmed the findings of Waheed (2017) and Adamu (2019). Financial performance, ASPI, and unemployment are new variables introduced by the study to external debt studies since there were no previous findings on those variables. However, the Keynesian view confirms the positive relationship identified by the study on these variables. CC's negative relationship according to the findings of Azolibe (2020) and Awan et al. (2014). PS's positive relationship confirmed the findings of Colombo and Longoni (2019).

Then, the study identified the risk factors of external debt in South Asia and found CC; debt services are risk factors in low and high debt levels. Stock performance, foreign remittance, and PS are risk factors in low debt levels but act as factors that assist in reducing external debt at higher debt levels, except for foreign remittance. In addition, oil imports and ROAs act as external debt reduction factors for higher debt levels.

Unemployment is an external debt reduction factor at lower and higher external debt levels. However, the trade deficit has not been identified as a risk factor for external debt in South Asia.

Table 5.26: The results—Consistency with literature and theory

Variable	Identified Relationship	Previous Literature	Theory
TB	Positive	Dawood et al. (2021), Abbas et al. (2020), Mahar and Dhakal (2020),	Based on the national income accounting theory savings-investment gap, foreign investment gap, two-gap theory or dual gap theory and financing gap theory the two-gap model and three-gap models proposed by Chenery and Strout (1966) and Bacha (1990) Classical and Keynesian
FR	Positive	Mijiyawa and Oloufade (2022)	Debt overhang theory
FDI	Negative	Benedict et al. (2014), Ostadi and Ashja (2014), Abbas et al. (2020)	Debt overhang theory
GRS	Negative	Waheed and Abbas (2021) -positive effect	Based on the national income accounting theory savings-investment gap, foreign investment gap, two-gap theory or dual gap theory and financing gap theory two-gap model and three-gap models proposed by Chenery and Strout (1966) and Bacha (1990)
DS	Positive	by Beyene and Kotosz (2020a), Beyene and Kotosz (2020b) and Tiruneh (2004)	Classical view, Debt cycle, debt Laffer curve and debt dependency theory, debt overhang, crowding out
OI	Positive	Waheed (2017) Adamu (2019)	Crowding out, debt overhang, terms of trade theory
ROA	Negative	New variable	Debt cycle theory, debt overhang, Dual gap theory and financing gap theory
CC	Negative	Azolibe (2020) and Awan et al. (2014)	The public choice theory and agency cost theory
PS	Positive	Colombo and Longoni (2019)	The public choice theory and agency cost theory
UNP	Positive	New variable	Keynesian view
ASPI	Negative	New variable	Debt cycle theory, debt overhang, efficient market hypothesis

5.5 Summary of the Chapter

This chapter discusses the results of the study investigating hypotheses H1-H25, Investigating the determinants of external debt of South Asia before and after the financial crisis and COVID-19, Identifying the relationships between determinants and external debt are short term or long-term, Identifying the significance of the determinant in deciding the external debt of South Asia, risk assessment of external debt of South Asia and identifying the relationship between economic growth and the external debt in South Asia. Based on the results and the analysis, the study has derived the debt management framework for each South Asian country separately. The study hypothesis tested the overall region and the countries separately from 2002 to 2021. The next chapter, Chapter 6, presents the development of a debt management framework for South Asian countries based on the data analysis and the economics of countries and then Chapter 7 summarises and concludes this study.

Chapter 6: A Debt Management Framework for South Asian Countries

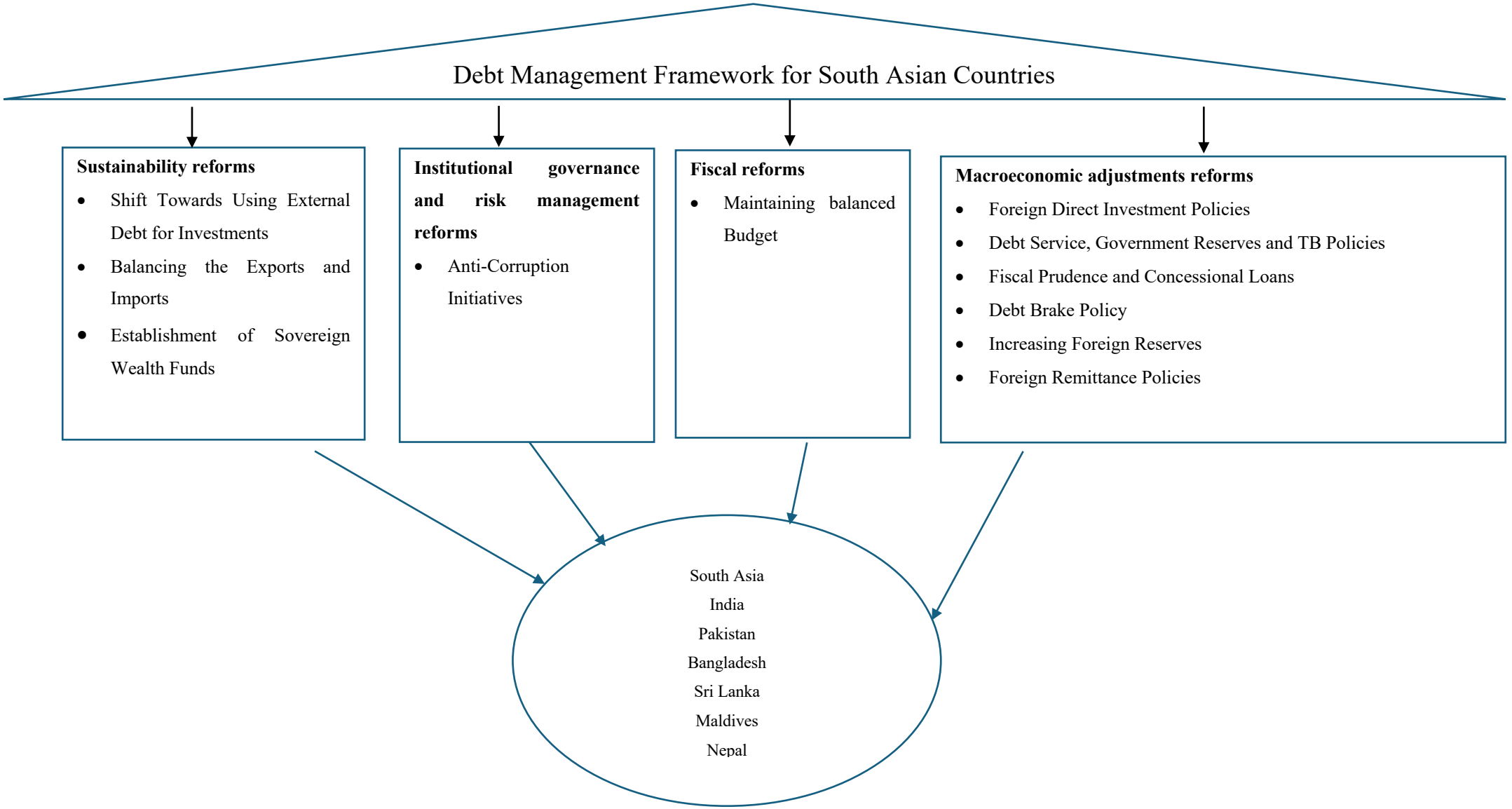
6.1 Introduction to Debt Management

Chapter 5 offers a comprehensive analysis of the study's findings, emphasising the determinants of external debt in South Asian countries. Building upon these findings and considering the prevailing economic conditions within the region, this chapter introduces a debt management framework (refer figure 6.1) specifically tailored to the unique circumstances of South Asian economies. The proposed framework accounts for the key factors influencing external debt and the associated risks, and it is articulated both at the regional level and for individual countries. This chapter is organised into several critical sections: it initiates with the rationale for establishing a debt management framework, proceeds with a detailed articulation of its objectives, ultimately presents specific reform initiatives applicable to both the region as a whole and to each country individually, and discusses the political and institutional feasibility and implementation challenges of debt initiatives.

6.2 Rationale for Establishing a Debt Management Framework

The study identifies several compelling reasons for introducing a dedicated debt management framework in South Asia. As revealed in Chapter 5, while most South Asian nations have experienced a substantial increase in external debt levels, their debt repayment capacities have not shown a corresponding improvement. This growing imbalance necessitates the development of a framework to manage external debt more effectively and sustainably. Another key rationale stems from the region's dependency on imports, particularly oil. As highlighted in the findings, this import-oriented economic structure renders these countries vulnerable to macroeconomic shocks such as oil price volatility and TB fluctuations. Consequently, there is an urgent need to address these vulnerabilities through sound debt management practices. Furthermore, the findings underscore institutional weaknesses prevalent in several South Asian countries, including inadequate anti-corruption measures, political instability and weak fiscal discipline. These governance deficits significantly contribute to unsustainable debt accumulation, reinforcing the necessity of implementing a structured debt management framework aimed at institutional effectiveness reform.

Figure 6. 1 A debt management framework for South Asia



The risk assessment conducted in Chapter 5 identified critical determinants that influence external debt levels. Among these, corruption control, debt-servicing obligations and FDI were identified as significant risk factors, while variables such as the ASPI, oil imports, PS, ROAs and unemployment were identified as non-risk factors, which may help mitigate external debt pressures. Furthermore, foreign remittances, GRSs and trade balances were shown to have no significant effect at higher levels of external debt, suggesting that existing reserves and remittance inflows are insufficient to counteract growing debt burdens. Given this context, it is imperative that governments in South Asia address both the identified risk and non-risk factors comprehensively. The observed gaps in current policies particularly regarding debt sustainability and transparency further strengthen the justification for a region-specific debt management framework.

6.3 Objectives for Establishing a Debt Management Framework

Based on the identified challenges and economic realities, this study formulates the objectives of the debt management framework through the following five reform areas:

1. Reforms for sustainability

   To shift the purpose of external debt from financing consumption to funding productive economic activities that yield long-term returns
2. Reforms for risk management

   To reduce the exposure to risk arising from external debt determinants at various levels of indebtedness.
3. Reforms for institutional governance

   To strengthen anti-corruption mechanisms, promote PS and enhance transparency and accountability in debt management practices.

   To restructure inefficient or non-performing public sector institutions to alleviate the fiscal burden on the government
4. Fiscal reforms

   To improve government revenue collection efficiency and reduce dependency on external borrowing.
5. Reforms for macro-economic adjustments

   To increase foreign reserves and attract long-term FDI, thereby reducing reliance on high levels of external debt.

Each of these reform categories provides a foundational pillar for developing robust, country-specific debt management strategies while contributing to the broader regional stability and economic resilience of South Asia.

6.3.1 Reforms for Sustainability

Sustainability reforms are crucial for ensuring a country's external debt remains manageable over the long term without compromising economic stability or development. These reforms aim to shift the motive of external debt borrowing from consumption-driven spending to productive, growth-oriented investments. The core objective is to ensure that borrowed funds generate sufficient economic returns to support debt servicing, reduce fiscal stress and foster inclusive economic growth. South Asian countries face particular challenges in implementing these reforms owing to their past reliance on borrowing to finance recurrent budget deficits, import-heavy consumption and subsidies rather than strategic investments in infrastructure, technology or productive sectors. The following debt management strategies are introduced under the reforms for sustainability for South Asia and for the individual countries based on the study findings and the current practices by the South Asian countries.

6.3.1.1 Shift Towards Using External Debt for Investments

Unlike Bangladesh, which utilises external debt for investment purposes, other countries in the region primarily borrow for consumption. As a result, debt servicing presents significant challenges for these nations. However, a strategic shift towards using external debt for investment projects where the revenue generated from such projects is allocated to debt servicing could enhance debt management outcomes. For instance, the State Bank of Pakistan's annual report (2006) highlights that Pakistan's external debt grew mainly to finance its trade deficit. Research by Awan et al. (2011) shows that Pakistan is heavily dependent on external debt owing to a considerable trade deficit, limited foreign earnings from low-value-added exports, and inadequate domestic resource mobilisation. Ahmad (2015) further identifies unfinished investment projects, borrowing for military expenditures and political instability as major contributors to Pakistan's increasing external debt.

6.3.1.2 Balancing the Exports and Imports

Balancing exports and imports by increasing exports and reducing import dependency—is a common policy recommendation for all countries in the region. For India, which possesses domestic oil and gas production capabilities, prioritising increased production in these sectors can lessen import dependency. However, cutting imports is unfeasible for smaller resource-constrained countries like the Maldives. Instead, promoting its primary industries fishing and tourism and re-exporting oil imports are practical strategies to manage external debt. These measures have already proven successful in reducing the Maldives' debt levels.

Sri Lanka's Central Bank Annual Report (2006) highlights the significance of utilising the country's rising per capita incomes, a well-educated workforce and steady export growth to promote knowledge-based exports, such as IT and professional services. Given the limited opportunities for expanding traditional agricultural exports like tea, rubber and coconut, sustainable export growth necessitates a focus on value addition, branding and crop diversification. Moreover, transitioning to renewable energy sources and encouraging the adoption of electric vehicles is advisable for all South Asian countries. For instance, Nepal's investment in alternative energy sources, such as hydropower plants, has contributed to a reduction in its oil import costs. Furthermore, countries should reduce their dependency on limited export destinations and expand their exports to more profitable markets. In achieving this, the consideration of export and import agreements and tax cuts is essential.

6.3.1.3 Establishment of Sovereign Wealth Funds

Countries in South Asia can explore establishing sovereign wealth funds (SWFs) to invest in future-oriented projects and generate returns for debt servicing. A notable example is India's National Investment and Infrastructure Fund, which aims to attract long-term capital for infrastructure development. Pakistan's Pakistan Investment Corporation and Bangladesh's Bangladesh Infrastructure Development Fund have similar objectives, albeit on a smaller scale. While the Maldives and Sri Lanka do not currently have established SWFs, they could benefit from creating funds supported by tourism revenues or natural resource management to build buffers against external shocks.

6.3.2 Fiscal Reforms—Maintaining a Balanced Budget

Maintaining a balanced budget is a crucial part of effective external debt management. Numerous countries worldwide exemplify prudent fiscal policies. Nations that successfully handle budget deficits usually strike a harmonious balance between government expenditures and revenues, alongside strategies for long-term sustainability. Germany is praised for its fiscal discipline and unwavering commitment to maintaining balanced budgets. The country adheres to strict budgetary regulations outlined in the European Union's Stability and Growth Pact, which requires EU member states to limit their annual budget deficits to 3% of GDP. Switzerland is bound by a constitutional mandate to balance the federal budget throughout the economic cycle. This ensures that the government generates surpluses during prosperous times and avoids excessive deficits during downturns.

The Swiss government has enacted fiscal regulations that restrict deficit spending while prioritising long-term fiscal sustainability. Singapore has long been recognised for its outstanding fiscal management, consistently maintaining a balanced budget without public sector borrowing while also ensuring future stability through the accumulation of financial reserves. In recent decades, Canada has worked to reduce its budget deficit and public debt, focusing on maintaining a balanced budget over the long term. Canada's fiscal strategy emphasises prudent public finance management, underscoring the importance of diminishing budgetary imbalances and ensuring that deficits remain below sustainable levels. The government's policy of fiscal responsibility includes measures aimed at curbing expenditures and boosting revenues through taxation.

Historically, Australia has managed its budget deficit relatively well, especially following the 2008 GFC. The government implemented a fiscal consolidation strategy aimed at reducing income deficits and stabilising public debt. The Australian government has focused on optimising tax collection, controlling public sector expenditures and promoting economic growth to increase revenues, with the intent of returning to budget surplus when conditions allow. While Japan holds one of the highest levels of public debt relative to GDP globally, it has effectively managed its fiscal policy by sustaining a robust economy, maintaining low interest rates and adopting measures for fiscal consolidation. The Japanese government has placed a strong emphasis on fiscal discipline; despite the

high public debt, the nation's budget deficit has remained relatively manageable owing to economic stability and a strong savings culture within society.

Therefore, the study suggests that South Asian countries maintain a balanced budget by cutting unnecessary government expenditures, such as subsidies and incentives for citizens, while increasing government revenue and allocating it to essential government expenditures.

6.3.3 Reforms for Institutional Governance and Risk Management

Institutional reforms are also crucial for effective debt management. Weak institutional and policy environments elevate external debt owing to limited debt management capacity and inefficient resource utilisation (Kappagoda, 2007). Therefore, South Asian countries should implement corruption control mechanisms and enhance service delivery through digitalisation and innovative strategies, such as drive-through services, to improve institutional performance. As identified in Chapter 5, the relationship between corruption control and external debt in the region varies under risk assessment. In most South Asian countries, better corruption control correlates with reduced external debt. However, increased efforts to control corruption coincide with rising external debt levels in Nepal and Sri Lanka. This suggests that, in these two countries, improved corruption control acts as a safeguard for debt repayment. Despite these variations, all South Asian countries in this study rank poorly on global corruption control indices, highlighting widespread corruption-related challenges. Tackling this issue is essential for sustainable debt management and regional economic stability.

This study aims to explore and recommend effective anti-corruption initiatives for South Asia by examining practices from the world's least corrupt countries. Transparency International's Corruption Perceptions Index (CPI) 2024 identifies Denmark as the least corrupt country, followed by Finland, New Zealand, Norway, Singapore, Sweden, Switzerland, the Netherlands, Germany, Luxembourg and Ireland. In this context, the study focuses on Denmark and other top-ranking nations to analyse their anti-corruption strategies and determine how similar policies can be adapted for South Asia.

Furthermore, countries that have successfully diminished corruption, like Georgia, were acknowledged for their significant measures. This dual approach offers a comprehensive framework to identify effective anti-corruption practices that could be applied in South

Asia. According to the Organisation for Economic Co-operation and Development (OECD) Anti-Corruption and Integrity Outlook 2024, Denmark's success in combating corruption is owing to several key factors. First, the country maintains a high level of transparency in public information. Political finance regulations require political parties to publish their financial reports, which ensures accountability. A wide array of crucial datasets, including the state budget, electoral results, public tenders and their outcomes, business and land registries, and the salaries of senior civil servants, are made publicly accessible. According to the OECD country fact sheet on Finland, the nation's strengths in combating corruption stem from robust political finance regulations, effective conflict-of-interest policies and transparency in public information. Moreover, Finland enhances the capacity of government institutions to connect budgets with performance outcomes while empowering citizens and civil society to monitor and evaluate these processes.

The transformational leadership of Lee Kuan Yew, Singapore's founding father and first prime minister, provides an exemplary economic and institutional reform case. With a population of 1.58 million, the country had a per capita GDP of merely USD 400, an unemployment rate of 14%, and half of its population residing in squatter huts. However, through visionary leadership and strategic governance, Singapore emerged as a First World nation with a population of 5.47 million, a per capita GDP of USD 56,284 (S$71,318), an unemployment rate of 1.9%, and 80.4% of its population living in public housing apartments by 2015 (Department of Statistics, Singapore, 2015).

One of Lee Kuan Yew's core policies was to place the 'right person in the right job,' supported by open recruitment systems and structured appraisal processes rather than depending on personal recommendations (Quah, 2010). In pursuing a clean and honest government, Lee introduced measures to lower the cost-of-living allowances for senior civil servants and advocated for competitive salaries for political leaders. He argued that adequate remuneration was crucial to deter corruption and maintain integrity in governance (Quah, 1992). Professor S. Jayakumar, who collaborated with Lee from 1984 to 2008, emphasised the significance of 'a sound legal system and the rule of law, impartially administered' as central to Lee's vision of transforming Singapore into 'a First World oasis in a Third World region' (Jayakumar, 2015). This legal foundation instilled confidence among foreign investors and tourists while assuring Singaporeans of safety and security, which are crucial for sustained development and foreign investment.

Similarly, Georgia's anti-corruption journey presents another remarkable success story. Once regarded as one of the most corrupt nations globally, Georgia underwent transformative reforms beginning in 2003. These reforms included eradicating corruption in the civil service, simplifying tax regulations and improving the business environment. Significant enhancements in tax administration led to a considerable increase in tax revenues, rising from 12% of GDP in 2003 to 22% by 2007 (IMF, 2023). Subsequent improvements in fiscal transparency and public investment management further solidified these achievements. The impact of these reforms is evident in surveys like the Eurobarometer, which indicated that 99% of Georgian citizens reported no direct experience with bribery. Additionally, The World Bank acknowledged Georgia's considerable progress in corruption prevention, detection, and law enforcement in public services (World Bank, 2012). Legislative reforms, such as Article 24 of the Georgian Constitution, guarantee citizens the right to seek, receive and share information, albeit with specific state security or public safety restrictions.

Georgia also introduced innovative service delivery systems, such as Public Service Halls, based on the 'One-Stop-Shop' model. These systems streamlined public services, making them more accessible and user-friendly. Unique projects like 'JUST DRIVE' and 'JUST CAFÉ' further enhanced service convenience, allowing individuals to access services via drive-through facilities or while enjoying a café environment. Rwanda provides another compelling example of success in combating corruption, strengthening fiscal governance and reforming tax administration to boost revenue collection within a brief period. Drawing lessons from these initiatives, this study analyses the current situation in South Asian countries and emphasises the vital importance of controlling corruption to manage external debt effectively.

6.3.3.1 Overall Anti-Corruption Initiatives in South Asia.

The study presents several recommendations to improve governance and fiscal management in South Asian countries. First, governments are encouraged to introduce comprehensive digital systems for public services, including options for one-day service and drive-through capabilities, ensuring that all transactions are processed electronically. Additionally, it suggests the creation of online tax collection systems and promotes greater transparency in financial transactions. By the end of each fiscal year, the government should provide taxpayers with an annual statement that details how their tax

contributions have been utilised. In addition, cutting government expenditure on non-development expenditures, as suggested by Chaudhary et al. (2020) and Waheed (2021), will improve the government's revenue. This approach would boost transparency, build trust and enhance accountability in public financial management. Governments should aim for balanced annual budgets, ensuring predicted expenditures correspond to estimated revenues. Moreover, digitising citizens' identity information would streamline access to public services via integrated platforms. Adequate salaries for politicians should be guaranteed to encourage integrity, alongside a requirement for publishing audited assets and financial statements at the end of each year. Finally, hiring decisions should be free from political biases or personal recommendations; instead, governments should collaborate with universities and accredited higher educational institutions to facilitate a merit-based recruitment process.

6.3.3.2 Anti-Corruption Initiatives in Bangladesh

According to the annual reports from the country and the IMF, Bangladesh's Anti-Corruption Commission (ACC) has made significant strides in raising public awareness about corruption control. However, drawing from initiatives in countries with lower corruption levels, the study recommends enhancing the independence of the judiciary by eliminating political interference in appointments. Furthermore, it suggests implementing strict laws that penalise corruption in both public and private sectors, ensuring timely and transparent trials. Establishing an independent national audit institution with the authority to investigate all levels of government would promote transparent financial practices. Additionally, regular government projects and department audits should be conducted to mitigate mismanagement and bribery. A national open government data platform should also be launched to give citizens real-time information on public spending, procurement contracts and government decisions.

6.3.3.3 Anti-Corruption Initiatives in India

As highlighted in Transparency International's 2022 overview of corruption and anti-corruption developments in India, the country contends with various forms of corruption, including petty, political, nepotism, patronage networks and grand corruption. India has implemented several measures to tackle these issues, such as an online platform for citizens to report bribes, mandatory asset declarations for public servants, and the *Lokpal*

and Lokayuktas Act, which investigates corruption among senior government officials. The Comptroller and Auditor General of India is responsible for auditing all receipts and expenditures at the central and state levels. However, the study further suggests strengthening and enforcing the Whistleblowers Protection Act and establishing an independent body to protect and encourage whistleblowers, ensuring their anonymity and safety from retaliation. A nationwide anonymous online reporting platform should be developed to enable citizens to report public sector corruption without fear. Furthermore, the study recommends mandatory ethics training and anti-corruption workshops for government employees and public officials to support a culture of integrity. It also advocates for mandatory annual asset declarations for elected politicians and high-ranking government officials, accompanied by audits to detect discrepancies or unexplained wealth.

6.3.3.4 Anti-Corruption Initiatives in The Maldives

According to country and IMF staff reports, the Maldives ACC is pivotal in investigating reported corruption cases. The ACC also conducts awareness sessions, training on corruption prevention, student integrity sessions, surveys and research and provides guidelines for establishing national standards in the code of conduct for state employees. However, the study recommends establishing an independent Anti-Corruption Agency similar to Finland's. This agency would be empowered to investigate high-level corruption, ensure swift prosecution and prevent political interference in investigations. It further suggests creating a transparent, open bidding system for public contracts accessible online to all citizens. Additionally, the judiciary should be revamped to guarantee its independence from political influence, and specialised anti-corruption courts should be introduced to handle corruption cases efficiently.

6.3.3.5 Anti-Corruption Initiatives in Sri Lanka

Sri Lanka has made notable progress in its anti-corruption reforms, especially with the backing of the IMF’s Extended Fund Facility program. The passage of a new Anti-Corruption Bill in August 2023 has bolstered the asset declaration system and broadened the investigative powers of the Commission to Investigate Allegations of Bribery or Corruption. Additionally, the release of Asia's first Governance Diagnostic Report (GD Report) in September 2023 has provided invaluable recommendations for comprehensive

reforms. Despite these efforts, systemic corruption continues to pose a significant challenge in Sri Lanka, encompassing petty corruption and the extensive misuse of public power within the political arena. According to perception-based Third-Party Indicators and the 2023 GD Assessment, corruption vulnerabilities in Sri Lanka go beyond petty corruption, reflecting a broader systemic misuse of public power throughout the political system and government agencies. In 2022, systemic corruption in Sri Lanka, as indicated by the Regime Corruption Index, was higher than the average for Asian countries. Moreover, corruption vulnerabilities in Sri Lanka seem to have worsened between 2012 and 2022. While comparable to lower-middle-income countries and South Asian peers, corruption in Sri Lanka was perceived to be more prevalent than in many higher-middle-income countries and Asian counterparts in 2022.

The study suggests additional measures to mitigate corruption risks. These measures include creating open government platforms to enhance transparency in procurement, regulating political party financing to enhance accountability, and digitalising public services. To streamline public service delivery and minimise opportunities for corruption, the introduction of comprehensive digital systems, such as one-day services and drive-through capabilities, is also advocated. Furthermore, the anti-corruption initiatives recommended for South Asian countries should be considered so that Sri Lanka can address these challenges more effectively.

6.3.3.6 Anti-Corruption Initiatives in Nepal

Nepal has implemented various measures to tackle corruption, including penalties for corrupt actions, the establishment of the Commission for the Investigation of Abuse of Authority, a special court and the Office of the Auditor General. Additionally, government officials must declare their assets, and technical audits of government projects are conducted. However, the study suggests creating special anti-corruption courts to expedite cases and ensure fair trials. It also advocates for comprehensive laws to protect whistleblowers and encourages civic engagement in reporting corruption, including offering rewards for information that leads to the conviction of corrupt officials. Mandatory audits of public offices and significant government projects should be undertaken, with findings made publicly available to promote transparency.

6.3.3.7 Anti-Corruption Initiatives in Pakistan

Pakistan has two dedicated anti-corruption laws: the Prevention of Corruption Act (1947) and the National Accountability Bureau Ordinance (1999) (Transparency International, 2015). Nevertheless, the study suggests strengthening and depoliticising institutions such as the National Accountability Bureau to ensure these agencies operate independently without political manipulation. It also underscores the necessity of merit-based recruitment and promotion systems in public service to reduce nepotism and political favouritism. Furthermore, establishing a transparent online portal for public services would facilitate the disclosure of procurement contracts and public sector activities. The study additionally calls for the enforcement of mandatory asset disclosures for all high-ranking officials and parliamentarians, subject to third-party verification, to ensure the authenticity of these declarations.

6.3.4 Reforms for Macro-Economic Adjustments

Macro-economic adjustment reforms are introduced to strengthen the country's own macro-economic fundamentals, such as improving and attracting long-term FDIs and managing the GRSs and debt services.

6.3.4.1 Foreign Direct Investment Policies

FDI is vital to the economies of South Asian countries, serving as a significant factor in managing external debt and the balance of trade. The relationship between external debt and FDI differs across the region: Bangladesh and Pakistan show a negative correlation, while India and Sri Lanka exhibit a positive relationship. For the Maldives and Nepal, these correlations are insignificant. Bangladesh and Pakistan mainly utilise FDI to tackle trade deficits, whereas India and Sri Lanka depend on it to fulfil debt-service obligations. However, at elevated levels of external debt, a decline in FDI inflows may worsen trade deficits and heighten debt-service obligations, rendering FDI a risk factor in these situations. To address these concerns, the study analysed the FDI policies of each country and recommended specific strategies for improvement.

6.3.4.2 FDI Policy for South Asia

Generally, the study suggests facilitating foreign investments through online platforms that provide easy access to information, application submissions, account openings and

other investment-related activities. Implementing digital government tools, including information portals and one-stop services, is essential for attracting FDI. According to UNCTAD, enhancing the quality of digital business and investment facilitation platforms can lead to increased FDI, with developing countries experiencing an 8% increase in FDI for each additional point in the quality of these portals. Further recommendations include removing entry restrictions and conditions, such as minimum capital requirements and partial prohibitions on FDI in specific sectors.

Additionally, an information portal is imperative to enhance transparency within investment-related legislation and procedures. Streamlining investment processes via one-stop shops and offering and linking essential services such as investor visa facilitation and alternative dispute resolution mechanisms is also crucial for supporting a more appealing investment climate. Furthermore, the study advocates for the implementation of tax incentives, financial incentives and the elimination of operational constraints on foreign investment. Adopting public-private partnership initiatives is recommended, reducing the influence of less productive state-owned enterprises while increasing the prominence of more efficient private companies. This includes providing incentives such as tax and financial benefits for investment and other incentives (e.g., citizenship by investment programs) and enhanced treatment and protection guarantees for investors.

The easing of labour or migration regulations, introducing or expanding screening mechanisms for national security purposes, and reducing reliance on debt-financed FDI in favour of equity-based investments will also assist in mitigating risks associated with FDI. For example, as indicated in the Investment Policy and Promotion Operational Guide by The World Bank, Tunisia's FDI policy is noteworthy. Tunisia urgently needed to generate productive employment and economic opportunities for its young population. Attracting FDI in priority sectors constituted a critical element of the government’s agenda to create jobs. In pursuit of this goal, the government undertook proactive outreach initiatives aimed at Canada, China and Japan, targeting investors in the automotive, aerospace and business process outsourcing sectors. The Tunisian outreach efforts resulted in engagements with 30 companies, yielding 21 investment leads and three announced FDI projects, including two manufacturing facilities established by Japan’s Sumitomo and China’s SAIC Motor, which were confirmed despite the challenges posed

by the pandemic. FDI must benefit the domestic economy rather than merely the foreign economy.

6.3.4.3 FDI Policy for Bangladesh

In Bangladesh, FDI is encouraged across industrial activities, except for specific reserved sectors such as arms production, forest plantations, nuclear energy, and the printing and minting of currency notes (Bangladesh Development Authority, 2020). Investments may be conducted independently or through joint ventures with local private or public entities. The Foreign Private Investment (Promotion and Protection) Act of 1980 guarantees non-discriminatory treatment and protection for foreign investments. Recent liberalisation measures include tax exemptions for power generation, duty-free imports for export-oriented industries, and provisions for the repatriation of capital, profits and dividends.

Bangladesh has implemented significant reforms to attract FDI. For example, the One-Stop Service portal, launched in 2019, simplifies obtaining licenses, permits and registrations from various agencies. Other recommendations include concentrating FDI in key income-generating sectors such as ready-made garments, information technology, and pharmaceuticals, incentivising long-term agreements that lessen sovereign guarantees, and promoting equity-based investments.

6.3.4.4 FDI Policy for India

India's FDI policies are formulated by the Department for Promotion of Industry and Internal Trade with implementation overseen by federal ministries and regional counterparts. While India permits 100% FDI under the automatic route in most sectors, restrictions remain in multi-brand retail and foreign e-commerce areas. Export Processing Zones and incentives like tax holidays, duty exemptions, and support for renewable energy projects have improved India's investment environment.

Since 2015, the Invest India initiative has evolved into a globally recognised investment facilitation platform. The study suggests developing online platforms for information portals, application submissions and investment activities. Furthermore, decreasing reliance on debt-financed FDI, promoting technology transfer agreements and encouraging green and sustainable projects would enhance the investment framework.

6.3.4.5 FDI Policy for Maldives

The Maldives has adopted FDI-friendly policies, including customs duty exemptions for large-scale projects, long-term land leases and the freedom to employ foreign workers. Incentives such as business and corporate resident visas and international arbitration for dispute resolution have also been introduced. However, FDI inflows remain low in the country. To address this, the study recommends focusing on FDI in high-income sectors like fishing and tourism while enhancing infrastructure to attract foreign investors.

6.3.4.6 FDI Policy for Sri Lanka

Pathberiya and Wijeweera (2005) point out several challenges facing Sri Lanka's investment climate. The country grapples with ineffective utilisation of allocated capital budgets in the public sector, sluggish export growth and a heavy dependence on imports. Major issues include a notable savings-investment gap, elevated external debt and rising trade deficits, along with FDI, oil imports, unemployment and insufficient CC. The US Department of State's 2024 Investment Climate Statement notes that Sri Lanka's FDI, which amounted to $730 million in 2023, remains low compared with similar countries. Investments are predominantly in tourism, real estate and telecommunications. The government aims to attract investments in renewable energy, IT, agriculture, electronics and light manufacturing, which are facilitated by the Board of Investment. However, investors encounter high transaction costs, unpredictable policies, sluggish government services and corruption, particularly in large infrastructure projects and procurement.

Additional challenges include a shortage of skilled labour, restrictions on land acquisition for foreign entities, and significant worker migration during the economic crisis, which has affected sectors like apparel, tourism and IT. Employee retention, frequent public holidays and limited labour mobility further obstruct efficiency. The study suggests developing a digital platform for investors to reduce high transaction costs and enhance investment facilitation. This could streamline processes, reduce inefficiencies and boost Sri Lanka's appeal for FDI.

6.3.4.7 FDI Policy for Pakistan

A complex and inconsistent regulatory framework has significantly discouraged Pakistan's domestic and FDI. According to The World Bank (2024), the country has

attracted relatively low FDI inflows compared with similar economies. This problem is further worsened by a challenging business environment characterised by burdensome and inconsistent regulatory enforcement (World Bank, 2023). Such challenges impose substantial costs on firms, as resources are diverted towards navigating regulatory obstacles rather than being allocated to productive activities, ultimately reducing investment opportunities, including FDI. To address these issues, the study recommends introducing incentives for investors, easing restrictions on FDI and implementing clear and compelling laws and regulations to support a more conducive investment environment.

6.3.4.8 FDI Policy for Nepal

Nepal presents substantial opportunities for FDI, particularly in hydropower, agriculture, tourism and ICT. However, its landlocked geography, inadequate transportation infrastructure and high export costs impede investment growth. To improve its investment attractiveness, the study recommends focusing on renewable energy projects, sustainable infrastructure and transportation development.

6.3.4.9 Debt Service, Government Reserves and TB Policies

In South Asia, except for Bangladesh and India, most countries depend on additional external debt to meet existing obligations, leading to debt accumulation. This study examined the debt-service policies of Bangladesh and India, along with other global instances that exhibit high credit ratings and effective debt management strategies. Data were collected from The World Bank, the IMF and the annual reports of the respective countries. Given the effective debt management strategies employed by high credit rating countries, the study suggests the following policies for managing the debt service, GRSs and the TB of South Asian countries.

6.3.4.10 Fiscal Prudence and Concessional Loans

Bangladesh has implemented a prudent strategy for managing external debt, primarily relying on concessional loans from multilateral and bilateral entities. This approach has significantly reduced its debt-servicing obligations, allowing for sustainable debt management. Additionally, Bangladesh employs a comprehensive monitoring system for external debt and prioritises infrastructure projects that promote long-term development.

According to the data analysis presented in the study, as Bangladesh is the only South Asian nation that borrows for investment purposes, the current study recommends that other South Asian countries adopt a similar external debt strategy focused on reliance on concessional loans.

6.3.4.11 Debt Brake Policy

For federal budgets, Germany's 'debt brake' is a constitutional rule that limits the structural deficit to 0.35% of GDP. This policy has maintained manageable debt levels since it became legally binding in 2016. Germany's fiscal discipline, commitment to balanced budgets and well-diversified economy reduce vulnerability to economic shocks and ensure consistent revenue streams. Its export-driven economy and long-term government bonds with low interest rates further enhance fiscal stability. These practices are supported by high industrial output and a focus on high-value sectors such as automotive and technology, which generate revenues that aid in debt servicing. Switzerland also employs a 'debt brake' mechanism to ensure that government spending aligns with economic cycles, thus maintaining long-term fiscal sustainability. Therefore, the study suggests that South Asian countries introduce debt breaks based on debt-to-GDP ratios and budget deficits, which will restrict additional external debt accumulations.

6.3.4.12 Increasing Foreign Reserves

Increasing foreign reserves is another crucial strategy for reducing external debt. Bangladesh, India and the Maldives demonstrate a positive relationship between GRSs and external debt. For Bangladesh, reserves are essential for covering trade deficits and servicing debt, as external debt is predominantly used for investments. India and the Maldives need reserves to service debt incurred for consumption purposes. In contrast, Nepal and Pakistan show a negative relationship between reserves and external debt because these countries utilise reserves to address trade deficits, thereby lowering the need for additional borrowing. Sri Lanka's reserves are primarily designated for debt servicing rather than managing trade deficits. Diversifying investment portfolios, transitioning to export-driven economies and attracting FDI are recommended strategies to strengthen reserves, as exemplified by countries like China and Singapore. China has accumulated one of the largest foreign exchange reserves globally through its export-driven economy, attracting FDI and maintaining a stable exchange rate. It also invests its

reserves in foreign bonds and assets, generating returns that further enhance its reserves. Singapore's government has effectively leveraged its SWFs, such as Temasek Holdings and GIC, to produce returns on its reserves. It also encourages foreign investment and maintains a robust trade surplus.

6.3.4.13 Foreign Remittance

Foreign remittances have been identified as a non-impactful risk factor in cases of high external debt levels, contributing to increased external debt only when levels are low. In nations with high debt, remittances are used to service existing obligations, yet additional borrowing is still required to cover trade deficits. This is owing to the inadequate flow of remittances to effectively reduce external debt. Thus, promoting foreign remittances as a risk management strategy is not beneficial. Instead, countries aiming to boost remittance flows should focus on facilitating more overseas employment opportunities and migration. In the case of the Maldives, foreign remittances have not alleviated trade deficits or the burden of debt service, as outflows exceed inflows. Therefore, it is advisable to promote remittance inflows while considering taxation on outflows.

6.4 Political and Institutional Feasibility and Implementation Challenges

The effectiveness of debt management policies is profoundly influenced by institutional capabilities and political dynamics. The foundation for implementing reforms is characterised by political will and stability. However, short electoral cycles, conflicting political interests, and frequent leadership changes are prevalent features of the political landscapes in many South Asian nations. These factors often impede sustained commitment to debt sustainability strategies. Efforts to reduce external debt burdens may be hindered by political pressures that prioritise populist expenditures or immediate economic gains over sound fiscal management.

Furthermore, political unrest or instability can undermine investor confidence and disrupt policy continuity. Institutional capacity varies across the region, with numerous countries facing challenges such as limited technical expertise in debt management, weak coordination among government agencies, and bureaucratic inefficiencies. These institutional deficiencies impair the effective monitoring, reporting, and administration of

external debt. Additionally, the ability of policymakers to make well-informed decisions is constrained in some nations by the absence of comprehensive and transparent debt databases. Addressing these obstacles necessitates the adoption of international best practices, strengthening of institutional frameworks through capacity building, and improvements in governance. External factors also influence the implementation of debt management policies, including reliance on foreign funding under variable terms due to global economic conditions and susceptibility to external shocks such as pandemics and commodity price fluctuations. These factors may limit policy flexibility and require adaptable strategies. Socioeconomic disparities, public awareness gaps, and opposition from special interest groups may pose further challenges.

In conclusion, the development of effective and practical debt management frameworks in South Asia depends on identifying and resolving institutional, political, and implementation barriers. To achieve successful outcomes, policies must be tailored to the complex political and institutional realities, as well as the prevailing economic environment. This entails enhancing transparency, bolstering institutional capacity, and establishing mechanisms for consensus building.

6.5 Summary of the Chapter

This chapter presents a tailored debt management framework for South Asian countries, examining the various factors that influence a nation's capacity to manage and service its external debt. The study starts by identifying critical risk factors that contribute to challenges associated with external debt. Among these, corruption control, debt-servicing requirements and FDI stand out as significant contributors to the debt burden. In contrast, other factors such as the ASPI, oil imports, PS and unemployment are deemed non-risk contributors, having minimal impact on debt reduction when external debt levels are high. Furthermore, foreign remittances, GRSs and trade balances exert little influence on debt reduction when levels are already elevated.

One of the most crucial elements of effective debt management is controlling corruption, which the study identifies as a vital factor. The link between corruption and debt is particularly significant in South Asia, where better corruption control generally aligns with reduced external debt in most countries. However, in Nepal and Sri Lanka, attempts to control corruption correspond with increasing debt levels, indicating that stronger

corruption control may act as a safeguard for debt repayment in these nations. To combat corruption, the study references successful global examples such as Denmark, Finland, Singapore and Georgia. These countries have implemented essential reforms, including the digitalisation of services, transparency in financial systems, political finance regulations and merit-based recruitment processes. Their practices offer valuable models for South Asia, especially concerning digitalising public services, introducing one-stop services, drive-through facilities and establishing online tax collection systems. These initiatives could enhance governance, improve transparency and aid in controlling corruption, ultimately advancing debt management.

The role of FDI is another significant focus of this chapter. The study analyses FDI's impact on debt management, noting that FDI plays a crucial role in managing external debt, trade balances and economic growth. However, the relationship between FDI and debt varies across South Asia. In Bangladesh and Pakistan, FDI has a negative correlation with external debt, indicating that these countries benefit from FDI in managing their debt. Conversely, India and Sri Lanka demonstrate a positive correlation between FDI and debt. However, at higher levels of external debt, FDI can exacerbate trade deficits and increase debt-service obligations, posing a risk. The study provides several recommendations for improving FDI policies, including facilitating investments through digital platforms, removing entry barriers, enhancing transparency, offering incentives and focusing on equity-based investments.

Additionally, countries are encouraged to streamline investment procedures and reduce reliance on debt-financed FDI. The study further emphasises that, apart from Bangladesh and India, most South Asian countries incur additional external debt to service existing obligations, worsening the debt burden. Drawing on data from The World Bank, IMF and annual reports, the study recommends a range of policies to tackle this issue, including adopting prudent fiscal strategies, implementing debt brakes, leveraging concessional loans, transitioning toward investment-driven debt, improving reserves, balancing budgets, diversifying exports and establishing SWFs. These measures and strong fiscal discipline would help ease the pressure of external debt and ensure sustainable debt management. Countries with high credit ratings and fiscal discipline provide valuable examples for South Asia in managing external debt responsibly. Additionally, the study highlights the importance of strong institutions for effective debt management. South

Asian countries should improve their institutional capacities, particularly in corruption control, digitalisation and efficient debt management systems. This would improve governance, increase service delivery and enable better debt tracking and management.

While foreign remittances are not a significant risk factor for countries with high external debt, they still help alleviate short-term financial pressures. The study suggests that focusing on overseas employment, improving remittance facilitation, and implementing tax measures to curb outflows could provide additional support for debt management efforts in South Asia.

Chapter 7: Conclusion and Recommendations

7.1 Introduction

This chapter summarises and concludes the study. First, it reviews the research objectives, questions, and hypotheses, providing an overview of the empirical results derived from hypothesis testing. The chapter then articulates the study's theoretical and empirical contributions to the existing body of knowledge. It proceeds to examine the practical implications of the findings, offering insights relevant to policymakers, practitioners and stakeholders in the South Asian context. Furthermore, the chapter presents well-informed policy recommendations aimed at enhancing external debt management in the region. Finally, it acknowledges the study's limitations and proposes directions for future research, highlighting areas where further investigation could extend and refine the current study work.

7.2 Overview

The primary objective of this thesis is to investigate the determinants of external debt and assess the associated economic and risk implications in the context of South Asian countries. External debt remains a vital source of financing for developing economies; however, its relationship with macro-economic and country-specific factors remains inadequately explored, particularly in the South Asian region. This study aims to bridge that gap by evaluating both economic and country-specific variables to understand their influence on external debt levels and by assessing whether external debt affects economic growth. Furthermore, it identifies the risk factors that contribute to debt vulnerability and proposes a framework for debt management tailored to the region.

Accordingly, Chapter 4 outlines the methodology adopted in the study, presenting a range of panel data regression models used to examine the determinants of external debt across six South Asian countries Bangladesh, India, Maldives, Nepal, Pakistan and Sri Lanka over the period of 2002 to 2021. This includes separate assessments of the pre- and post-GFC periods, as well as the pre- and post-COVID-19 pandemic periods. Chapter Five presents and analyses the empirical findings of the study. Key determinants considered include remittances, imports, unemployment, stock market performance, financial institution performance, PS and CC. GRSs, FDI, TB and debt servicing were incorporated

as control variables. The chapter also explores the short- and long-term effects of these variables on external debt levels.

To meet the study objectives, the following research questions have been drawn:

- RQ1: How do the determinants of external debt vary in South Asian countries from 2002 to 2021?
    - RQ1.1: How did the determinants of external debt vary in South Asian countries before the financial crisis (2002–2008)?
    - RQ1.2: How do the determinants of external debt vary in South Asian countries after the financial crisis (2009–2021)?
    - RQ1.3: How did the determinants of external debt vary in South Asian countries before COVID-19 (2002–2018)?
    - RQ1.4: How do the determinants of external debt vary in South Asian countries after COVID-19 (2019–2021)?
- RQ2: Do debt determinants have a short-term or long-term impact on South Asian countries?
- RQ3: How does external debt affect the economic growth of South Asian countries from 2002 to 2021?
- RQ4: What are the risk determinants of external debt in South Asia from 2002 to 2021?

Overall, this thesis makes a direct contribution to the understanding of the economic and country-specific drivers of external debt in South Asia and provides evidence-based insights for managing external debt more effectively. It contributes to the broader empirical literature on debt sustainability in developing economies, offering a methodological framework that can be applied to future policy development and academic research.

7.3 Contribution of the Thesis

The academic contribution of this study is outlined in five main areas:

Comprehensive study of external debt determinants: South Asia is one of the poorest regions globally, facing the highest external debt-to-GDP ratio and significant debt growth. Previous research on external debt has largely focused on general macro-

economic factors like GDP, inflation and exchange rates, with few studies examining specific factors for individual countries. This study fills that gap by exploring both macro-economic and country-specific factors influencing external debt across South Asian countries, considering the period before and after the financial crisis and COVID-19.

Evaluation of risk factors: This study examines the risk factors related to external debt across South Asia. Previous research has often focused on limited factors, like exchange rates and interest rates, without considering other important elements. This study aims to expand on existing research by incorporating a wider range of risk factors, providing a better understanding of external debt risks, and contributing to the development of effective risk management strategies.

Introduction of new variables: The study introduces new variables into the external debt analysis for South Asia, such as stock market performance, financial institution performance, oil imports, corruption control and PS. While some of these variables have been studied in a limited number of countries, their impact across all South Asian countries before and after the financial crisis and COVID-19 has not been explored. This brings new perspectives to understanding the complex factors influencing external debt.

Identification of long-term relationships: By using dynamic panel models, this study identifies the long-term relationships between macro-economic and country-specific factors affecting external debt. It covers the period before, during, and after the GFC and the COVID-19 pandemic, providing valuable insights into the long-term trends and changes in external debt dynamics.

Development of a debt management framework: This study proposes a debt management framework for South Asia, emphasising the importance of country-specific strategies for managing external debt. Effective debt management is crucial for economic stability, but many South Asian countries lack tailored frameworks. This study aims to fill that gap by suggesting frameworks that can help countries manage their external debt and reduce risks.

Practical Contribution

First, the significance of this study lies in its potential to assist South Asian nations in making informed decisions regarding the management of external debt, thereby helping

to avert future financial crises. While external debt is a familiar concept to South Asian countries, its effective management remains a persistent challenge. Second, this study's findings can serve as a vital tool for policymakers in South Asian countries. Policymakers can utilise these findings to develop debt policy guidelines that can safeguard their nations during times of crisis and manage national savings, foreign reserves and infrastructure development projects. The study can also assist in economic planning and stabilisation by offering policymakers valuable insights into the effective management of external debt.

Third, by establishing a debt management framework, policymakers can efficiently allocate domestic resources, enhance the production of value-added goods, and make informed decisions regarding private and FDIs. This can significantly affect the economy by enabling policymakers to effectively manage their country's external debt and mitigate the risks of future financial crises. Finally, the study's examination of sector-specific performance, particularly within the financial sector, can help countries focus on improving the efficiency of their financial systems. As Ncube and Senbet (1997) noted, an efficient financial system is crucial in promoting domestic capital formation and gaining a competitive advantage in the global capital market. Therefore, by addressing inefficiencies within the banking sector, South Asian countries can enhance their overall economic competitiveness and attract greater foreign investments, leading to sustainable economic growth.

Overall, the findings of this study form background information to help further the policy development and manage the external debt of South Asia.

7.4 Summary of Research Hypothesis, Methods and Findings

Research Question 1 & 2: How do the determinants of external debt vary in South Asian countries before and after COVID-19 and the GFC? Assess whether debt determinants' short or long-term impact on South Asian countries is significant.

To investigate the determinants of external debt, the study uses 120 observations for countries Bangladesh, Pakistan, India, Nepal, Maldives and Sri Lanka from 2002–2021. First, the study identified the determinants of external debt from 2002 to 2021 using a fully modified OLS method and found that there is a long-term relationship between determinants and the external debt, and the relationship between external debt and all the

determinants are significant in the long run but not in the short run. These two questions addressed the hypothesis from H1 TO H13.

The findings reveal that TB, oil imports, debt services, foreign remittances, PS and unemployment have significant positive relationship with external debt during the period 2002–2021. FDI, government revenues, ROAs, CC and the ASPI have negative relationship with external debt.

Then, the study investigated determinants separately before and after the financial crisis and before and after COVID-19. Before the financial crisis from 2002 to 2008, the study used panel EGLS with cross-section weight and identified FDI, oil imports, ROAs and PS as the only significant factors before the financial crisis. FDI and ROAs show a significant negative relationship, and oil imports and PS have a significant positive relationship with external debt. After the financial crisis from 2009 to 2021, using a fully modified OLS method study found all the variables except PS are significant, and foreign remittance, debt services, oil imports, CC and ASPI show positive significant relationship and the rest of the negative significant relationship.

Following this, before COVID-19, the study using fully modified OLS found that except for unemployment, all other variables were significant, and TB, FDI, debt services and ASPIs showed a positive relationship with external debt. After COVID-19 from 2019–2021, the study using the fixed-effect method found all variables were significant, and foreign remittance, FDI, GRSs, debt services, PS and ASPIs show positive relationship with external debt and the rest of negative relationship with external debt.

Next, the study investigated the determinants separately for each South Asian country from 2002–2021 using the fully modified OLS method and found that TB has a significant positive relationship with external debt for all the South Asian countries except Bangladesh. Foreign remittance showed a significant positive relationship for Bangladesh, India and Maldives, but for others, it is a negative relationship. FDI shows negative relationship for Bangladesh, Maldives and Pakistan and positive relationships with external debt for the rest of the countries. GRSs show a positive relationship with external debt for Bangladesh, India and Maldives, and the rest have a negative relationship with external debt. Except for Bangladesh and India, all other countries show positive significant relationships with debt services and external debt.

Bangladesh, Pakistan and Sri Lanka had a positive relationship with oil imports and external debt, and Maldives and Nepal had a negative relationship with external debt. There was no impact from oil imports for India. Except for Bangladesh, which shows a positive relationship, all other South Asian countries show a negative relationship with ROAs and external debt. CC shows a negative relationship with external debt for Bangladesh, India, Maldives and Pakistan and a positive relationship for Nepal and Sri Lanka. Except for Bangladesh, which shows no impact, all other South Asian countries have a positive relationship with PS and external debt. All share price indices show a negative relationship with external debt for Bangladesh, Maldives and Pakistan and for India and Nepal, a positive relationship and no impact for Sri Lanka. Except for India and Pakistan, which show no impact, unemployment positively affects external debt.

Research Question 3: What are the risk determinants of external debt in South Asia from 2002 to 2021?

These two questions cover hypotheses H14 to H24. To identify the risk factors, the study conducted quantile regression analysis and found CC, ASPI, debt services, foreign remittance and PS as the risk factors at lower debt levels and CC, debt services, and FDI as the risk factors at higher debt levels. GRSs and unemployment contribute to reducing external debt at lower debt levels, and ASPIs, oil imports, PS, ROAs and unemployment as the risk control factors at higher debt levels from 2002 to 2021.

Research Question 4: How does external debt affect the economic growth of South Asian countries before and after COVID-19 and the financial crisis?

This covers hypothesis H25. Using random effects, the study found a negative impact of external debt on economic growth. A causality effect was found using pairwise Dumitrescu–Hurlin Panel Causality tests. There is a heterogenous causality across the panel, which means external debt heterogeneously causes economic growth. There is also a homogenous causality across the panel since economic growth homogeneously causes external debt.

7.5 Policy Implications

The study has developed debt management frameworks for each South Asian country separately in Chapter 6, recognising the unique institutional, political, and economic

contexts of the region. Across these frameworks, three major risk factors for elevated external debt were identified: corruption control (CC), foreign direct investment (FDI), and debt servicing. To mitigate corruption-related risks, the study recommends accelerating the digitalisation of public services and strengthening institutional transparency. Specific measures include enforcing political finance regulations, safeguarding judicial independence, adopting merit-based recruitment, and expanding digital service delivery mechanisms such as one-stop service centres, drive-through facilities, and online tax collection platforms. Together, these reforms would enhance accountability, curb leakages, and strengthen fiscal credibility.

In terms of FDI, the study highlights the need to shift from the current pattern of low net inflows toward greater attraction of equity-based and sustainable investments. Increasing government revenue, curbing unnecessary expenditure, and aligning external debt levels with risk factors should accompany broader reforms in investment policy. Recommended measures include facilitating investments through digital platforms, reducing entry barriers, enhancing transparency, offering targeted incentives, and streamlining approval procedures. By focusing on equity-based FDI rather than debt-financed inflows, South Asian economies can reduce their dependence on external borrowing while stimulating productive growth.

Beyond country-specific frameworks, the study further proposes a comprehensive set of regional measures to address debt servicing pressures and secure long-term sustainability. These include adopting prudent fiscal strategies, introducing debt brakes to curb unsustainable borrowing, making greater use of concessional financing, and transitioning toward investment-driven debt that promotes development. Establishing early warning systems to monitor vulnerabilities in external debt dynamics is crucial. Complementary policies such as strengthening reserves, maintaining balanced budgets, and establishing sovereign wealth funds (SWFs) would provide buffers against shocks and support macroeconomic resilience.

Tackling persistent trade deficits is another key priority. To achieve greater balance between exports and imports, South Asian economies should deepen regional integration and align trade policies with inclusive and environmentally sustainable development

objectives. Concluding pending Free Trade Agreements (FTAs), such as the India–Maldives and India–Sri Lanka Enhanced Cooperation agreements and expanding the South Asian Free Trade Area (SAFTA) through the reduction of negative lists and non-tariff barriers are critical to revitalising regional trade. Operational reforms should focus on digitalising trade systems, modernising customs procedures, and expanding regional currency settlement mechanisms such as the Asian Clearing Union (ACU).

Empowering micro, small and medium enterprises (MSMEs) through tax credits, export-readiness programmes and sectoral incentives will further enhance competitiveness. Priority areas include garments, agro-processing, ICT and tourism. Export diversification should be pursued aggressively. For example, Sri Lanka could expand ICT services, gems and boat building while the Maldives could strengthen sustainable fisheries and high-value tourism. Aligning trade strategies with national priorities such as supporting women-led businesses, fostering digital services and promoting green industries will ensure inclusive and sustainable growth. For Sri Lanka, revisiting the "Breaking into India" strategy and developing logistics corridors with Bangladesh and Nepal could unlock new trade opportunities.

Energy security is equally critical, given the region's reliance on imported oil and its strong correlation with rising debt. Recommended measures include building strategic petroleum reserves, incentivising renewable energy and green infrastructure, advancing a South Asian Energy Agreement, and adopting smart subsidy frameworks to mitigate price volatility and reduce dependence on external oil markets.

Foreign remittances remain a vital lifeline, especially for Nepal, Bangladesh, and Pakistan. These flows can be strengthened by expanding digital remittance platforms, reducing transfer costs, and integrating comprehensive migrant welfare programs. To reduce reliance on outward migration and address high youth unemployment, governments should expand vocational and digital training, introduce internationally recognised skills certifications, create youth policy councils, and establish entrepreneurship and startup support programs.

Finally, improving financial institutions and capital markets is essential to reduce systemic risks. Strengthening regulatory oversight, enhancing stress-testing protocols, and modernising financial infrastructure will improve stability, while capital market

reforms should focus on stronger investor protections and mechanisms to encourage cross-border investment.

The study's policy implications, as outlined earlier, have been structured to provide a practical roadmap for addressing South Asia's external debt challenges. As shown in Appendix E, based on urgency, feasibility, and implementation sequencing, the recommendations are divided into short-term, medium-term, and long-term actions. Each phase is accompanied by an assessment of potential impacts on international lenders, foreign investors, and opportunities for strengthening regional cooperation. Short-term measures prioritise quick-impact initiatives such as digitising public services, enhancing fiscal transparency, and managing trade deficits through prudent borrowing. Medium-term actions emphasise structural improvements, including export diversification, investment policy reforms, and regional trade facilitation. Long-term strategies focus on sustainable transformation through energy security, green investments, and deeper economic integration. Together, this phased approach offers policymakers a balanced, forward-looking framework in which reforms are designed to attract lenders, inspire investor confidence, and promote lasting regional economic resilience.

7.6 Limitations of the Study and Agenda for Future Research

This study, while providing valuable insights into the determinants and risks associated with external debt in South Asian countries, is subject to several limitations. These limitations, which primarily fall under data-related and methodological categories, should be acknowledged to contextualise the findings and guide future research. The first limitation pertains to the data coverage, particularly in the post-COVID-19 period. The analysis includes only three years following the onset of COVID-19 (2019–2021), owing to the limited availability of updated and reliable data. As a result, the full extent of the pandemic's long-term impact on external debt cannot be comprehensively assessed.

Second, there were significant challenges related to the availability and consistency of country-specific data. Public data for certain variables was either incomplete or reported in non-standard formats, often limited to local currencies. This necessitated time-consuming conversions to a uniform currency and led to the exclusion of Bhutan from the study. Additionally, owing to missing data on key indicators, the years 2000 and 2001 had to be excluded from the final dataset.

A third limitation involves methodological constraints. While dynamic panel modelling and second-generation panel data tests were considered, the limited availability of research literature and up-to-date software tools in this area presented technical hurdles that restricted deeper econometric exploration. Fourth, as the study relies solely on secondary data sources—primarily government-reported figures—it is inherently limited by the quality and transparency of those reports. There was no opportunity to triangulate findings using primary data or alternative independent sources. Fifth, the issue of model overfitting also emerged. To maintain robustness and avoid multicollinearity, several potentially relevant factors were excluded from the final model.

Despite these limitations, the study lays the groundwork for several avenues of future research. First, subsequent studies could more closely examine the risk dynamics of external debt by extending the analysis beyond 2021 as more post-COVID-19 data becomes available. Incorporating primary data collection, particularly for country-specific factors such as governance quality, institutional performance and informal sector activities, could offer a more nuanced understanding of debt behaviour. Second, including countries like Bhutan, which is currently excluded owing to data unavailability, would enrich regional comparisons. Future work could also differentiate between creditor profiles by analysing the sources of external debt (e.g., multilateral vs bilateral lenders), offering greater insight into debt sustainability.

Third, it is recommended that future research consider incorporating additional macro-economic variables such as population aging, government spending patterns and tax revenues. These factors may offer further clarity on fiscal capacity and debt repayment dynamics in the region.

Overall, while this study makes a meaningful contribution to the literature on external debt in South Asia, the identified limitations provide a clear agenda for continued inquiry into this complex and evolving policy area.

7.7 Conclusions

This study provides an in-depth analysis of the factors influencing external debt in South Asian countries, examining their effects on economic growth, assessing risk and suggesting a customised debt management framework. Through extensive empirical research utilising panel data from 2002 to 2021, the study reveals both macro-economic

elements and country-specific aspects of external debt during different economic phases, specifically before and after the GFC and COVID-19 pandemic. The findings confirm that external debt dynamics in South Asia are influenced by a combination of trade balance oil imports, debt services, foreign remittance, political stability and unemployment, among others. These variables show varying degrees of impact depending on the time period and specific country context. The quantile regression analysis further uncovers the risk determinants associated with different debt levels, offering a nuanced understanding of where policy interventions are most urgently needed.

The study contributes significantly to the literature by incorporating underexplored variables such as stock market performance, institutional effectiveness and corruption control into the debt discourse. It also establishes long-term relationships among these determinants, providing empirical evidence that supports the formulation of sustainable debt policies. Notably, the study finds a negative association between external debt and economic growth, with evidence of bidirectional causality, suggesting that debt accumulation strategies should be approached with caution to avoid undermining economic performance. From a practical standpoint, the study underscores the importance of enhancing governance mechanisms, attracting sustainable FDIs and maintaining strong fiscal discipline. The proposed policy frameworks for individual South Asian countries offer actionable roadmaps tailored to their specific debt challenges. Emphasis is placed on anti-corruption reforms, digital governance and transparent financial management as critical enablers of effective debt oversight.

Despite its contributions, the study acknowledges certain limitations, including data availability, time constraints post-COVID-19 and methodological challenges in dynamic panel modelling. These limitations open pathways for future research to build on this foundation by incorporating more recent data, expanding the country sample (e.g., including Bhutan), and exploring qualitative dimensions of debt management practices.

In conclusion, this study provides robust evidence and thoughtful insights into external debt management in South Asia, contributing meaningfully to both academic discourse and policy formulation. The proposed frameworks and recommendations aim to support sustainable economic development and financial resilience in a region that continues to grapple with the complexities of external borrowing.

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Appendices

Appendix A

Table A1: The Comparative Analysis of External Debt Trends and Economic Characteristics Across South Asian Countries

Aspect/Indicator	Pakistan	Bangladesh	India	Sri Lanka	Nepal	Bhutan	Maldives
Initial Economic Status	Emerging from independence in 1947 with significant economic challenges.	One of the poorest nations in 1971, post-independence from Pakistan.	Gained independence in 1947 with a large, diverse economy and significant poverty.	Post-independence economic struggles after 1948, heavily reliant on agriculture and exports.	economically reliant on agriculture and remittances; development challenges post-1951.	primarily agrarian economy, isolated from global markets until the late 20th century.	Gained independence in 1965; initially relied on fishing and tourism for economic growth.
Growth to Lower-Middle Income Status	Achieved lower-middle income status through gradual economic progress over decades.	Reached lower-middle income status in 2015 owing to steady economic growth.	Transitioned to lower-middle income status by 2007, with strong IT and industrial sectors.	Reached lower-middle income status but struggled with debt and inflation.	Classified as a low-income country, reaching lower-middle income in the 21st century.	Achieved lower-middle income status owing to gradual economic reforms and growth in hydropower exports.	Attained lower-middle income status through tourism expansion and foreign investments.
External Debt Trends (Early Years)	Required foreign assistance shortly after independence; initial debt increased during the Cold War.	Negative external debt growth in 2000–2001, followed by a gradual increase from 2002–2004.	Low external borrowing initially; significant increase from the 1990s owing to liberalisation.	Accumulated significant debt post-1970s, worsened by civil conflict in the 1980s and 1990s.	Began accumulating external debt in the 1970s; slow growth until the 1990s.	External borrowing increased in the late 20th century for development, especially hydropower projects.	Initial low debt levels: debt increased with development of infrastructure and tourism projects.
Key Debt Drivers (Early Period)	Borrowed heavily owing to geopolitical influences (e.g., Cold War, regional conflicts).	Current account surplus in 2005 owing to higher exports and remittances reduced debt growth.	Borrowed for infrastructure and economic liberalisation projects.	Borrowed heavily for infrastructure; faced sanctions and loss of aid owing to civil conflict.	Borrowed for development projects and trade deficits; increased with the need for reconstruction.	Borrowed mainly for infrastructure projects, with a focus on hydropower development.	Borrowed for tourism infrastructure and import needs; driven by a narrow economic base.
Debt Growth Rate (Recent Years)	Averaged 6% external debt growth from 2000–2021; saw 11% growth in 2021.	Steady external debt growth post-2010, reaching a 19% increase by 2021.	Managed external debt growth through strategic borrowing; growth spiked during global crises.	Debt growth accelerated in the 2010s, culminating in a debt crisis in the late 2010s-2020s.	Debt growth linked to development needs and reliance on external funding, peaking after 2010.	External debt growth moderated by reliance on concessional loans, supported by hydropower revenues.	Moderate debt growth; increased during periods of global economic downturns and national crises.

Aspect/Indicator	Pakistan	Bangladesh	India	Sri Lanka	Nepal	Bhutan	Maldives
Major External Debt Influences	Reliance on commercial loans with high interest rates; funding current account deficits.	Managed debt primarily through long-term loans, influencing slower debt growth post-2010.	Borrowed for infrastructure, energy and defence, with moderate reliance on foreign direct investment.	Relied on foreign aid and commercial borrowing; increased borrowing for post-war reconstruction.	High dependency on concessional loans; influenced by political instability and trade imbalance.	External debt tied to large-scale hydropower projects and concessional funding from India and international organisations.	Debt influenced by reliance on imports, tourism earnings and foreign investment.
Key Economic Factors	Dependence on imports, worker remittances and borrowing at commercial rates for current needs.	Relied on worker remittances and export growth for economic stability and current account surplus.	Diverse economy with strong IT, services and industrial exports; substantial reliance on oil imports.	Dependent on tourism and agricultural exports; limited diversification of income sources.	Dependence on agriculture and remittances; limited export diversification.	Economy driven by hydropower exports, agriculture and foreign aid; low industrial base.	Economy driven by tourism, fisheries and import reliance; susceptible to global market changes.
Debt-Service Indicators	21% of export revenue on average used for debt servicing from 2000–2021.	Focus on long-term debt management, contributing to stable debt-service ratios.	Debt service moderated by strategic fiscal policy but affected during oil price fluctuations.	High debt-service ratios, exacerbated by lower revenue from tourism and exports.	Debt-service costs manageable but susceptible to political and economic volatility.	Debt service supported by revenue from hydropower exports, maintaining moderate levels of servicing.	Debt service affected by limited revenue streams; often relies on foreign aid to ease pressures.
Impact of External Aid	Received significant aid (e.g., Japan's $200 million grant, World Bank aid post-2005 earthquake).	Received notable aid post-1971 independence and during crises, including infrastructure support.	Received aid for economic liberalisation and rural development projects.	Depended on aid for infrastructure and humanitarian relief, especially post-war.	Relied on international aid and concessional loans for development and post-earthquake recovery.	Relied on concessional loans and aid, especially from India and multilateral agencies, for development projects.	Depended on international aid and concessional funding for major projects and crisis management.
Economic Challenges	Faced challenges with ineffective leadership and corruption affecting project completion.	Managed to avoid major setbacks in project implementation, focusing on long-term investment.	Challenges with income inequality, unemployment and balancing public spending.	Ongoing issues with governance, economic mismanagement and reliance on imports.	Political instability and natural disasters affected long-term economic planning.	Challenges include limited economic diversification, dependence on hydropower and vulnerability to external shocks.	Economic challenges include over-reliance on tourism, climate change risks and limited diversification.
Recent Economic Issues (2020s)	Increased debt owing to CPEC-related projects and persistent current account deficits.	Slower external debt growth owing to strategic long-term loans and effective current account management.	COVID-19 pandemic led to increased borrowing for relief and recovery programs.	Severe economic crisis driven by debt mismanagement and reliance on imports; IMF assistance sought.	Continued high debt relative to GDP with ongoing dependence on foreign loans and grants.	Managed economic impact through strategic hydropower exports; faced challenges owing to global market fluctuations.	Economic decline during the pandemic; increased debt to sustain economy amidst reduced tourism.

Appendix B: Backward Stepwise Regression

The study follows these steps to select the subset of predictors using backward stepwise regression. This approach ensures that only the most relevant explanatory variables remain in the final model, enhancing interpretability and predictive accuracy (James et al.,2013, 2017).

- Define the full model (Mp): Let Mp denote the model that includes all p predictors. In this context, p represents the total number of explanatory variables initially considered in the regression model.

The complete model (M p) is given by:

$$EXD_{it} = \alpha + \beta_1 X_{it1} + \beta_2 X_{it2} + \ldots + \beta_k X_{itk} + U_{it}$$

$$EXD_{it} = \alpha + \beta_1 X_{it1} + \beta_k X_{itk} + w_{it}$$

Where: EXD_{it} represents the external debt-to-GDP ratio (EXDGDP) for country i at time t, X_{itk} denotes the explanatory variable k for country i at time t, k represents the number of selected independent variables in the final model after stepwise regression, α is the intercept, representing external debt in the absence of other determinants, βk represents the coefficient of each explanatory variable, indicating its effect on external debt.U_{it} is the error term, composed of individual effects (m_{it}) capturing unobservable country-specific influences and time effects (l_{it}) accounting for time-specific changes and standard disturbance term (nit) representing random noise.

Independent variables considered in Model (3.7) initially considers a broad set of macro-economic, institutional and financial indicators. These variables are categorised as follows:

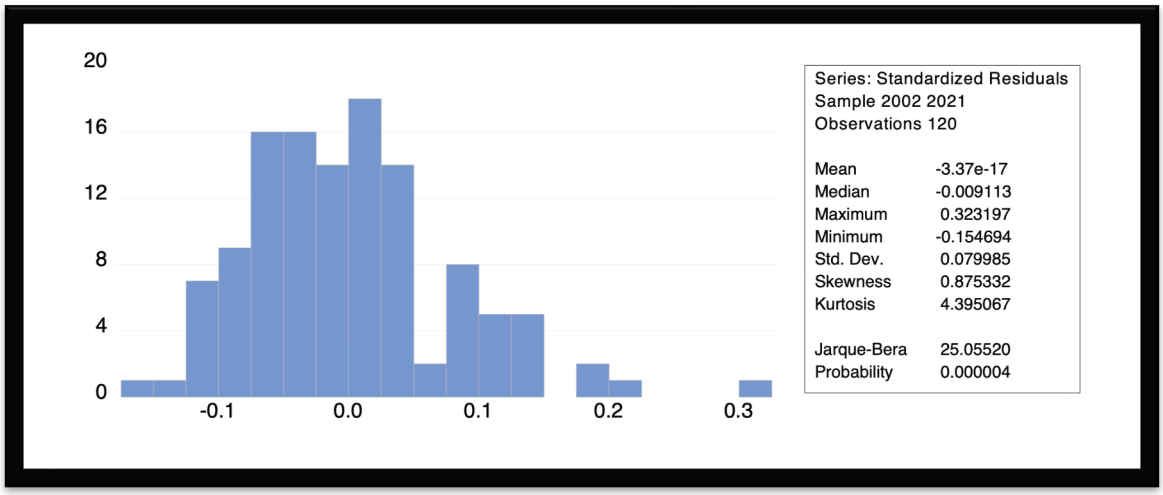
1. RI: Real interest rate
2. TB: Trade balance
3. FR: Worker remittance received
4. FDI: Foreign direct investment
5. INF: Inflation rate
6. ER: Exchange rate

7. STE: Short-term external debt as a proportion of total external debt
8. TR: Total reserves
9. DS: Debt service
10. UNE: Unemployment rate
11. OI: Oil imports as a percentage of total imports
12. TR: Tax revenue
13. ROA: Return on Assets
14. ASPI: All share price index
15. AP: Aging population as a percentage of total population
16. CC: Control of corruption
17. PS: Political stability estimate
18. Government and Financial Variables
19. GE: Government expenditure
20. GR: Government revenue
21. INV: Capital formation
22. GRS: Government reserves

Each independent variable is associated with a corresponding regression coefficient ($\beta 1,...,\beta 20$), quantifying its impact on external debt.

Appendix C

Figure C1: Normality Distribution



Appendix D

Table D1: Skewness and Kurtosis of Variables

Variable	Skewness	Kurtosis
EXDGDP	1	5
TB	−1	4
FR	2	7
FDI	−3	9
GRS	1	4
OI	0	2
DS	3	12
ROA	1	6
CC	−1	3
PS	0	3
ASPI	4	25
UNP	1	3

Appendix E

Table E 1 Phased policy roadmap for South Asia's external debt management

Time Horizon	Recommendations	Benefits for Foreign Investors	Benefits for Multilateral Lenders	Regional Coordination Impact
Short-Term (1–2 years)	1. Digitalisation of public services, online tax collection, political finance regulation, judicial independence 2. Prudent fiscal strategy, debt brakes, focus on concessional loans 3. Remove FDI entry barriers, enhance transparency, offer targeted incentives 4. Expand remittance platforms, reduce transfer costs, introduce migrant welfare schemes 5. Youth training, startup incentives, entrepreneurship support 6. Reduce unnecessary government spending, cut non-development expenditure	Increased transparency, lower corruption risk, easier market entry Stable macroeconomic environment reduces risk Immediate market opportunities and faster approvals Increased domestic consumption boosts demand Skilled labour pool for business operations Leaner public finances improve investment climate	Improved governance and repayment reliability Better debt structure lowers default probability Increased private capital reduces debt reliance Stable remittance inflows support reserves Job growth reduces fiscal pressure More resources available for debt repayment	Builds foundation for interoperable governance systems Encourages shared fiscal discipline norms Harmonised investment facilitation Regional remittance cost-reduction agreements Shared vocational training frameworks Common efficiency benchmarks

Medium-Term (3–5 years)	1. Finalise FTAs, expand SAFTA, harmonise customs procedures, expand Asian Clearing Union (ACU) 2. Export diversification into high-value sectors (ICT, tourism, agro-processing, fisheries) 3. Strategic petroleum reserves, smart subsidies, green investments 4. Balance trade by aligning import/export activities with development goals 5. Improve stock market performance, investor protection, cross-border investment mechanisms	Access to larger integrated markets Reduced exposure to commodity volatility Lower operational costs from stable energy supply More predictable market conditions Deeper and more liquid capital markets	Trade-driven growth boosts repayment capacity More stable foreign exchange earnings Reduced balance of payments stress from oil imports Healthier current account positions Reduced risk of capital flight	Stronger regional trade corridors Regional value-chain development Shared regional energy security Policy alignment across countries Integrated regional capital markets
Long-Term (5+ years)	1. Shift to investment-driven debt (Bangladesh model) 2. Establish Sovereign Wealth Funds (SWFs) 3. Institutionalise early warning systems for external debt risk 4. South Asian Energy Agreement, renewable energy incentives 5. Strengthen regulatory oversight in financial institutions 6. Enhance logistics corridors and connectivity	Returns from infrastructure-led growth Long-term investment stability Confidence in long-term stability Growth in clean industry investment Predictable, rule-based environment Lower trade costs, expanded markets	Productive debt use supports sustainability Enhanced fiscal buffers Risk monitoring enhances lending security Meets sustainability lending criteria Reduced systemic financial risk More resilient supply chains	Regional infrastructure integration Regional pooled investment vehicles Shared debt-risk monitoring platform Coordinated regional green transition Regional financial stability cooperation Integrated South Asian transport network