

UNIVERSITY OF WALES TRINITY SAINT DAVID

Master of Business Administration

DISSERTATION

**Export Dependence and Post-Pandemic Economic
Growth in South Asia: A Quantitative Study Using
World Bank Data from 2015 to 2024**

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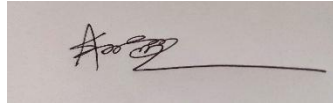
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DECLARATION

I, Asif Mahmud Emon, declare that this dissertation has been composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or qualification, in whole or in part, except as specified.



Signature:

Date: 28-08-2026.....

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Chapter 1. Introduction

1.1. Background and Problem Statement

Exports continue to be a vital part of economic development as they open up access to markets outside the domestic market, foreign exchange and can help to sustain production, employment and productivity. Market expansion, economies of scale, learning and international competition (Medina-Smith, 2001) are the explanations of these channels provided by Export-Led Growth Theory. There are however some variations in the empirical relationship. Export-growth results are country-specific and period-specific, and depend on the measure and econometric approach used (Giles and Williams, 2000), and Dependency Theory suggests that a high degree of external dependence can lead to greater vulnerability to external demand and other shocks (Dos Santos, 1970; UNCTAD, 2023).

The South Asian dimension is especially pertinent since the region has both an economy with a highly diversified export base and another with a highly concentrated one, and with varying degrees of exposure to the outside world. The export base of Bangladesh is manufacturing oriented, whereas, India is a diversified economy-based on both goods and services; Maldives is heavily dependent on internationally traded services and smaller economies like Bhutan and Nepal have a narrower export base. The same exports to GDP ratio can denote different productive capabilities and vulnerabilities because of these differences. There are differing conclusions from recent South Asian studies as well. The result of this study confirms the positive relationship between export growth and economic growth in the selected economies as reported by Kumar et al., (2020) and fails to get any strong evidence of export-led growth in the case of Nepal as reported by Panta et al., (2022). But, employing other indicators of trade openness (or total trade) than export dependence alone, Ahmadi, Rabin and Qadamshahi (2025) and Hemat et al. (2026) found positive relationships.

Another issue is that past studies have typically taken place over a short duration and employed a small unit of measurement. Many key South Asian studies stop at the time of COVID-19 disruption and recovery and recent studies tend to merge exports with imports,

exchange rates, foreign direct investment or other macroeconomic factors. Those designs consider larger determinants of growth and don't make the relationship between export dependency and GDP growth so apparent. Hence, the present dissertation emphasizes on the export of goods and services as a percentage of GDP and annual GDP growth of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka during 2015-2024. The period gives five pre-pandemic and five pandemic/recovery years, giving an updated comparison without having to assume that the relationship changed in 2020.

It is therefore not the question of the importance of exports in general, but of the statistical relationship between higher export dependence and more robust economic growth in a recent and regionally homogeneous panel of South Asian countries. The literature indicates that there are reasons to expect that positive and weak relationships are to be found. This uncertainty calls for a non-directional hypothesis and a design that accounts for the primary pooled relationship and for within-country evidence via fixed-effects robustness analysis.

1.2. Research Aim

The aim of this study is to examine the relationship between export dependence and economic growth in seven selected South Asian countries from 2015 to 2024 using open secondary data from the World Bank, while comparing the pre-pandemic period with the pandemic and recovery period.

1.3. Research Objectives

- To identify the patterns in export dependence and GDP growth across Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka from 2015 to 2024.
- To compare export dependence and economic growth between 2015-2019 and the 2020-2024 pandemic and recovery period.
- To test whether export dependence is statistically significantly related to economic growth using correlation and regression analysis.
- To interpret the findings in relation to Export-Led Growth Theory, Dependency Theory and the structural differences identified in the South Asian literature.

1.4. Research Questions

1. RQ1: What patterns are evident in export dependence and GDP growth from 2015 to 2024?
2. RQ2: How do the patterns compare between 2015-2019 and 2020-2024?
3. RQ3: Is export dependence significantly related to economic growth?
4. RQ4: How do the findings relate to Export-Led Growth Theory and dependency perspectives?

1.5. Significance and Relevance of the Study

The study is academically relevant as it is a focused measurement and coverage gap. It does not use total trade or a general trade-openness index, but rather exports of goods and services as a share of GDP and uses the same indicator for seven South Asian countries for a common recent period. This renders the relationship clear and replicable, and keeps the theoretical prudence that export exposure is not a measure of export quality, diversification or domestic value addition. The study also makes a contribution by using a two-way fixed-effects specification to separate cross-country differences from the changes that occurred in the countries over time, using pooled evidence.

The study is also of practical use. Although trade and export policy remains a key component of the development strategy in South Asian economies, the literature suggests that more external orientation does not necessarily lead to the same growth in all economies (World Bank, 2025; World Bank, 2026a). Evidence of the direct relationship can thus help to guide more cautious policy interpretation. Instead of taking it for granted that an increase in the export share leads to faster growth, policymakers should think about how the value of exports is affected by the national structure, concentration, domestic productive linkages and external shocks.

1.6. Brief Research Methodology

This dissertation is based on a positivist philosophy, a deductive approach and a quantitative secondary-data design. The data set includes World Bank World Development Indicators for seven countries for the years 2015-2024. The independent variable is export dependence, which is defined as exports of goods and services (in

percent of GDP). The dependent variable is economic growth, measured as the growth of GDP (annual %). The final balanced panel is comprised of 70 country-year observations. Descriptive statistics, trend figures, Pearson correlation, pooled ordinary least squares (OLS) regression with heteroskedasticity-consistent standard errors, period comparisons, influence diagnostics and a two-way country and year fixed-effects robustness model are all available for analysis in R. Because of the observational nature of the model, however, and the omission of other factors that affect growth, the study does not report causal relationships but rather associations.

1.7. Structure of the Dissertation

Chapter Two critically reviews Export-Led Growth Theory, Dependency Theory and the empirical evidence on exports and growth, and develops the conceptual framework and research gap. Chapter Three explains the research philosophy, design, secondary data, variable operationalisation, statistical procedures, quality safeguards, ethics and methodological limitations. Chapter Four presents the data, descriptive and inferential results, robustness analysis and discussion linked back to the literature and theoretical framework. Chapter Five summarises the main findings, provides conclusions for each research question, presents practical and theoretical recommendations, identifies limitations and proposes directions for future research. A consolidated reference list follows the five chapters.

Chapter 2. Literature Review

2.1. Introduction

This chapter critically reviews the theoretical and empirical literature on export dependence and economic growth in South Asia. It develops an argument for the later analysis by examining the mechanisms through which exports may support growth, the conditions that may weaken that relationship, and the reasons updated regional evidence is required. The dissertation retains a focused two-variable model in which export dependence, measured as exports of goods and services as a percentage of GDP, is the independent variable and annual GDP growth is the dependent variable (World Bank, 2026b; World Bank, 2026c).

The review combines the Export-Led Growth Theory, Dependency Theory, variable measurement, empirical findings, South Asian countries' structural diversity, and comparing 2015-2019 and 2020-2024. It does not view studies as stand-alone results, but rather compares the assumptions, samples, methods and conclusions of studies. This is required since the pandemic and recovery could have led to shifts in the transmission of export activity into output, driven by shifts in external demand, tourism, logistics, energy prices and financial conditions (World Bank, 2025; World Bank, 2026a).

2.2. Theoretical foundation

2.2.1. Export-Led Growth Theory

The major positive explanation of the suggested relationship is Export-Led Growth Theory. The export-led growth hypothesis suggests that export expansion can lead to output growth because it can provide access to markets other than the domestic market, foreign exchange, economies of scale, and international competition and learning opportunities. Medina-Smith (2001) models exports as a growth augmenting input in an augmented production function and Giles and Williams (2000) demonstrate that the hypothesis has spurred a large empirical literature. The theory does not imply that each extra percentage point that GDP grows as an export will have the same impact. The main argument of this paper is that export activity can provide avenues for the growth of productive capacity and aggregate output.

Recent studies have confirmed the export-led mechanism, while at the same time qualifying it. Adelakun, Ojo and Mpungose (2025) find that exports do contribute positively and significantly to GDP in EAC and SADC economies, while the results of their bidirectional causality indicate that higher GDP growth could lead to an increase in export capacity. A similar conclusion is reached by Orhan (2022) who differentiates export-led growth from growth-led exports. These results suggest that one should test an association, rather than take a one-way causal interpretation for granted, particularly in South Asia, where export capability and domestic expansion might be mutually reinforcing.

The extent to which these mechanisms will be effective depends on export composition. Hausmann, Hwang and Rodrik (2007) explain that some products have more technological content, are more productive, or have more spillover potential, and Li, Adam and Deng (2025) reveal that the export-growth relationship is different when digital capabilities are different, or regional conditions vary. This is important in the chosen South Asian economies as Bangladesh is a country with a garment-centred export base, India has diversified export base with business and technology services, Maldives is a tourist-oriented country, Bhutan and Nepal have lesser and more specialised export base. Hence, the value of the export-to-GDP ratio could indicate a variety of growth potential and productive structures.

2.2.2. Dependency Theory and external vulnerability

Another interpretation is given by Dependency Theory. The idea that international trade is evenhanded in its benefits, between industrial centres and peripheral economies was challenged by Prebisch (1950). years later, dos Santos (1970) gave a definition of dependence as a situation wherein development of some economies becomes patterned on the growth and needs of more powerful economies. When applied to export dependence, this view implies that the greater the dependence on foreign markets the more that export structures are concentrated, the weaker the domestic linkages, and the lower the domestic demand or prices, the more limiting it is for development.

The modern meaning of dependency is being vulnerable to volatility. According to UNCTAD (2023), dependence on a small number of exports may lead to higher exposure

to shocks from the global economy and hinder export diversification and domestic value creation. Where exports are not commodity driven it is the same logic that applies to South Asia: Bangladesh is vulnerable to a decline in demand from the concentration of its export industry into garments, Maldives and Sri Lanka are vulnerable if their exports are dependent on tourism, Bhutan is vulnerable if its exports are limited to specialised hydropower products, and Nepal is vulnerable if it has a smaller export base. Thus, export dependence can lead to a global expansion or contraction being passed on to domestic output.

Dependency Theory does not state that exports necessarily have a negative effect on growth. It rather focuses on the circumstances of export income generation and retention, rather than export volume. Export dependence may be conducive to growth where export industries are characterized by strong domestic supply chains and technology transfer and productive spillovers. The relationship can be weak, unstable or negative where they are enclaves, where they strongly rely on a few markets or where they have few local linkages. This is particularly relevant in the current pandemic context, as it sheds light on how the sectors that are oriented outwards, can amplify the expansion and what is happening in the world, but also its contraction.

2.2.3. *Theoretical synthesis*

All in all, the theories create a conditional and not an expectation beforehand. Export-Led Growth Theory suggests that there are positive channels via market access, foreign exchange, scale and productivity, while Dependency Theory suggests that there are negative channels via concentration, weak domestic linkages and external shocks that can weaken or reverse these. The theoretical expectations are mixed; thus, a non-directional hypothesis is used. They also set up the analysis steps to be taken in the dissertation, the relationship is first analysed by Pearson correlation and simple pooled regression and then followed by a two-way fixed-effects roughness model. Characteristics of the export mix, export diversification, export productivity, institutions and shocks are interpretative conditions (not additional explanatory variables).

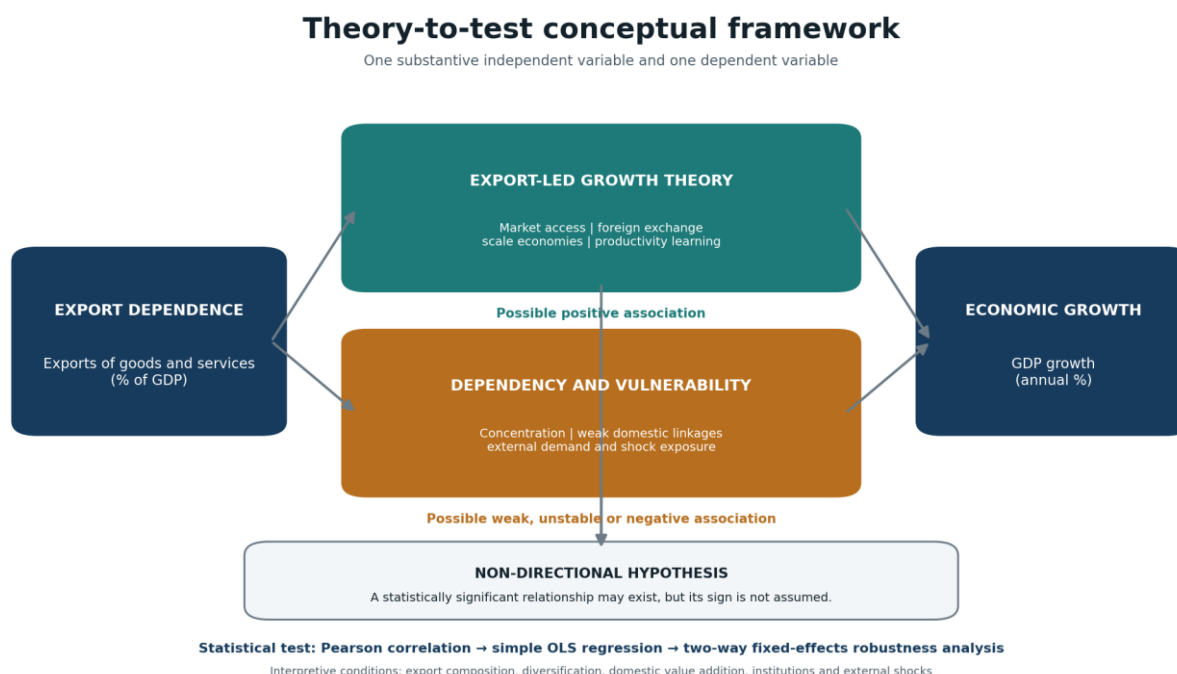


Figure 2.1. Theory-to-test conceptual framework for export dependence and economic growth

Source: developed from Medina-Smith (2001), Dos Santos (1970), Hausmann, Hwang and Rodrik (2007) and UNCTAD (2023).

2.3. Conceptualising export dependence and economic growth

Export dependence is defined as exports of goods and services as a percentage of GDP. According to World Bank (2026b), exports consist of goods and market services (excluding factor income and current transfers) supplied to the rest of the world, including merchandise, transport, travel, insurance and royalties, and other services. This indicator is appropriate as it reflects the proportion of trade with the rest of country's economies in the economy, it is therefore comparable across countries of different size. This also caters to the diversified export basket of South Asian countries such as manufactured exports, business services, tourism and exports of power.

Nevertheless, export dependence affects exports but it does not constitute a measure of export capability. While a high ratio could be a sign of a high level and diversity of export productivity, it could also indicate a small economy relying on a small number of exports. The growth value of exports is correlated with sophistication and composition (Hausmann,

Hwang and Rodrik 2007) and diversification is the key component to resilience (UNCTAD 2023). Therefore, the export share of GDP needs to be considered in the context of export quality, export concentration, level of export value capture, and domestic value addition. Though the following conditions will not be incorporated into the regression model, they will be used as a basis to discuss country and period differences.

Economic growth is defined as GDP growth (at market prices) in constant local prices per year (World Bank, 2026c). It measures year-to-year fluctuations in the total real output and has found a wide range of application in the literature on export growth. Investment, consumption, government expenditure, imports, inflation, exchange rates, population shocks and policy shocks do have an impact, however, on GDP growth. Hemat et al. (2026) include exchange rate and population in their south Asian panel model and Sein and Sah (2025) analyze exports along with Exchange Rate Volatility & Inflation. The present model does not attempt to account for all determinants which affect growth. For a more narrow purpose, it aims for isolating the statistical relation between export dependence and GDP growth prior to consideration of the broader structural context for interpretation.

Table 2.1. Core variables and conceptual boundaries

Element	Definition or measurement	Literature support	Role in the study
Export dependence	Exports of goods and services as % of GDP	Medina-Smith (2001); Adelakun, Ojo and Mpungose (2025); World Bank (2026b)	Independent variable
Economic growth	GDP growth, annual %	Giles and Williams (2000); Sein and Sah (2025); World Bank (2026c)	Dependent variable

Element	Definition or measurement	Literature support	Role in the study
Interpretive conditions	Export quality, diversification, domestic value addition, productivity, institutions and shocks	Hausmann, Hwang and Rodrik (2007); Dos Santos (1970); UNCTAD (2023)	Used to interpret findings, not entered as extra variables
Period context	2015-2019 and 2020-2024	World Bank (2025); World Bank (2026a)	Pre-pandemic and pandemic/post-pandemic comparison

2.4. Empirical evidence on exports and economic growth

The empirical literature validates the relevance of exports to growth, but there is systematic disagreement. Among other things, there are different conclusions depending on the choice of country, the time covered by the study, the definition of variables and the econometric method used by Giles and Williams (2000); and Medina-Smith (2001) indicates that the export-led growth hypothesis should be tested in a developing economy's productive structure. The overall message is that lessons learned in one area or at one time cannot be simply applied to the seven countries in South Asia.

A positive association is continued support: a first pattern. Adelakun, Ojo and Mpungose (2025), Kumar, Nargis and Begam (2020) and Sein and Sah (2025) show positive export-growth relationship in various developing country contexts. But their models, samples and time periods vary; some models incorporate imports, exchange-rate volatility, inflation or foreign direct investment while some estimate long-run relationships instead of the short time span of the panel used here. While their agreement is for renewed testing, it is not to assume that the same magnitude or sign will hold true for all South Asia.

The second pattern is that, the export structures and method determine the result. Sophistication has been found to affect export's growth value by Hausmann, Hwang and Rodrik (2007) and Li, Adam and Deng (2025). Hye and Lau (2015) also show that the conclusions are sensitive to the measurement of the exposure to trade. These studies help to understand why it is important to have an aggregate export-dependence ratio to identify a relationship but is not enough to explain the strength of the relationship without composition and productive capacity.

The third pattern is mixed or a reverse causality. Panta, Devkota and Banjade (2022) do not indicate any strong relationship between export-led and growth-led exports in Nepal and Orhan (2022) demonstrates that export-led and growth-led export might not happen simultaneously. Malhotra and Kumari (2016) also find intra-country differences in South Asia. These conflicting results offer the best argument for a non-directional hypothesis and understanding pooled estimates in the context of country structure, period effects, and sensitivity analyses.

Table 2.2. Synthesis of key empirical literature

Study	Context	Method or focus	Main conclusion	Analytical relevance
Giles and Williams (2000)	Global literature	Survey of export-growth studies	Results vary by method and context	Supports cautious interpretation
Medina-Smith (2001)	Developing country evidence	ELGH and production-function logic	Exports may enhance growth but require contextual testing	Supports main theory

Study	Context	Method or focus	Main conclusion	Analytical relevance
Hausmann, Hwang and Rodrik (2007)	Cross-country	Export sophistication and growth	What countries export predicts future growth	Supports composition-based interpretation
Shirazi and Manap (2005)	South Asia	Cointegration and causality	Evidence of long-run export-output links	Provides regional foundation
Malhotra and Kumari (2016)	Bangladesh, India, Pakistan and Sri Lanka	Multivariate time-series analysis	Findings differ across countries	Supports country-sensitive analysis
Hye and Lau (2015)	India	Trade-openness index and growth	Results depend on measurement and dynamics	Supports measurement caution
Kumar, Nargis and Begam (2020)	Selected South Asian countries	Panel ARDL and ECM	Exports positively influence GDP growth	Direct support for the model
Panta, Devkota and Banjade (2022)	Nepal	VECM and causality	No strong export-led growth evidence	Provides a regional counterpoint

Study	Context	Method or focus	Main conclusion	Analytical relevance
Ahmadi, Rabin and Qadamshahi (2025)	South Asia	Trade openness, cointegration and VECM	Positive long-run trade-growth relationship	Uses broader trade openness
Hemat et al. (2026)	Four South Asian countries	Panel OLS, fixed and random effects	International trade influences growth	Uses wider variables and limited coverage
Sein and Sah (2025)	Asia-Pacific	Exports, exchange-rate volatility and inflation	Robust long-run export-GDP links	Wider region and multivariable model

2.5. South Asian evidence and regional diversity

However, South Asian evidence confirms the relevance of the topic and there is significant heterogeneity in the evidence. Based on the comparison of five countries, Shirazi and Manap (2005) identify different export-output relationships in the long run while Malhotra and Kumari (2016) determine different results for the four countries, Bangladesh, India, Pakistan and Sri Lanka. Hye & Lau (2015) argue that in the Indian case, low measurement and dynamics affect the Indian trade-growth relationship. In sum, all of these studies show that a regional average is useful only in the context of the varying export system and econometric design across countries.

The direct support is provided by Kumar, Nargis and Begam (2020) who report the positive export-growth relationship in the selected south Asian economies in the period of 1991 to 2017, albeit in a context where import dependence is also present besides export dependence, the effect of export dependence is not clearly discernible. The state

of export-led growth in the Himalayan region in Nepal is exactly the opposite in the sense of Panta, Devkota and Banjade (2022). The contrast indicates that the region specified in the updated evidence ought to be defined by the respective regional association – along with the possibility that specific countries/unique years might be overrepresented/underrepresented in the region.

The differences in structures are quite evident from one country to another, in the seven countries chosen here. The sector in which the manufacturing exports of Bangladesh stand strong is in ready-made garment (RMG) which generates employment and foreign exchange potential but also poses the risk of demand concentration and market power. India had a diversified set of goods exports and a significant level of business/service exports. Pakistan's export performance is more vulnerable to the macro-economic and foreign exchange rate instability. Sri Lanka is a combination of manufacturing, services and tourism and the Maldives is very much reliant on tourism and other externally oriented services. The exports base in Nepal is small and Bhutan's exports are heavily dependent on hydropower and few types of activities. The World Bank (2026a) spells out these differences, ranging from the reliance on Bangladesh's tourism sector, which is focused on garments, to the activities dependent on services in India and the Maldives, tourism in smaller economies and hydropower in Bhutan and Nepal.

The distinctions suggest that knowledge of both theory and context are needed in the process of interpretation. Export-Led Growth Theory is most convincing if there are strong domestic production, learning and value-added linkages in the export sector, which might be achieved in manufacturing and advanced services. The issue of dependency is more relevant in the case where exports are undiversified geographically with a narrow product, market or service that is very much subject to external influences. Its country structure thus does not account for any additional variables in the model, but rather give an explanation as to why the association estimates may differ across the seven economies for signs, strength and stability.

The field of study is an open analytical space as a result of recent studies. Ahmadi, Rabin and Qadamshahi (2025) analyse South Asia based on the trade openness, Hemat et al. (2026) use a total trade variable with exchange rate and population for four countries

while Sein and Sah (2025) draw attention to India's role in the broader Asia-Pacific sample. These studies provide answers to broader questions, but do not break down exports of goods and services as a share of GDP for the same set of seven countries over a common time period (2015-2024).

2.6. Pre-pandemic and pandemic/post-pandemic context

The comparison of the 2015-2019 period with the 2020-2024 period is analytically important because it could be that the relationship between exports and growth has been affected by the pandemic but that the relationship has not been changed. The impact of fluctuations in global demand, transport, production networks/labour markets, and travel on countries and sectors varied. Thus, 2020 is considered as a potential turning point, and pre-pandemic (2019) is contrasted with the pandemic and recovery (2020 and 2021) without making any inferences about the magnitude and/or significance of any difference.

This is a conservative stance which is substantiated by the regional evidence. However, World Bank (2025) has not only identified recent growth challenges in South Asia, particularly in the field of trade and employment and technological change but also covered the lessons learnt from the collapse and revival of tourism in World Bank (2026a), which has been ongoing despite the fragmented situation related to services, manufacturing, trade tariffs, energy costs and financial vulnerability across the region. Similarly, Adelakun, Ojo and Mpungose (2025) and Sein and Sah (2025) reveal that changes in structure of the economy, or macroeconomic instability are relevant in order to interpret export-growth linkages. The chosen time period thus allows for a comparison of the two that is relatively recent, but also allows the question of whether any changed relationship exists to be left to empirical testing.

2.7. Synthesis of the literature gap

From the literature four gaps are emerging that are connected. Firstly, there is a gap of measurement. Recent South Asian studies often deal with trade openness, and total trade, (both exports and imports), then with the ratio of exports of goods and services to GDP. Ahmadi, Rabin and Qadamshahi (2025) provide an analysis of trade openness and Hemat et al. (2026) provide the analysis of total trade, exchange rate and population.

These designs try to address more general questions and not separately export dependence.

Secondly, there is a time discontinuity. These are major regional studies that end at long historical periods, which are prior to the pandemic or to when recovery was apparent. Malhotra and Kumari (2016) and Kumar, Nargis and Begam (2020) and Shirazi (2005) give significant evidence but their studies are not in the present comparison throughout the duration of 2015 to 2024. Third, there is a gap with regards to coverage. Some studies only cover a sample of the South Asian countries, and some studies involve India in a larger sample of countries in Asia Pacific. It is therefore not possible to deal in a consistent way with a common recent data set relating to the same seven countries.

Fourthly, there is an analytical gap between the main and the secondary sections. The research literature has very often used several factors, such as imports, foreign direct investment, population, inflation and exchange rates, as possible causal factors. These models can be useful for discussing a number of growth factors, but do less to highlight the link between export dependence and growth in GDP. The present study aims to fill this gap, by isolating that relation using open data from the World Bank, although structural conditions that may not have been accounted for in the present study mitigate interpretations of causality. Its importance is not in being an indicator of growth exclusively but its value is that it is a recent participation, focused and consistent regionally.”

Table 2.3. Literature gaps and dissertation response

Gap identified in the literature	Supporting studies	Dissertation response
Measurement: trade openness and total trade receive more attention than export dependence alone.	Ahmadi, Rabin and Qadamshahi (2025); Hemat et al. (2026)	Uses exports of goods and services as % of GDP as the single independent variable.

Gap identified in the literature	Supporting studies	Dissertation response
Time period: major regional studies do not cover the full pandemic and recovery period.	Shirazi and Manap (2005); Malhotra and Kumari (2016); Kumar, Nargis and Begam (2020)	Uses 2015-2024 data and compares 2015-2019 with 2020-2024.
Coverage: country samples are often limited or combined with wider Asian regions.	Sein and Sah (2025); Hemat et al. (2026)	Uses a consistent sample of seven South Asian countries.
Analytical isolation: multivariable models make the specific export dependence-GDP growth association difficult to identify.	Kumar, Nargis and Begam (2020); Sein and Sah (2025); Hemat et al. (2026)	Applies correlation and a simple bivariate regression, with cautious non-causal interpretation.

2.8. Conceptual framework, hypotheses and testing logic

The conceptual framework still has one independent variable and one dependent variable. Export dependence may be linked to GDP growth via market access and external funding in the form of foreign exchange, scale and productivity channels, or a weak, unstable or negative link may be observed between export dependence and GDP growth as indicated by the Dependency Theory. The hypothesis is non-directional since literature reveals positive, insignificant, mixed and bidirectional results. Results are explained by export composition and export diversification, institutions, productivity and shocks instead of being added as additional variables.

- **H0:** There is no statistically significant relationship between export dependence and economic growth in the seven selected South Asian countries from 2015 to 2024.
- **H1:** There is a statistically significant relationship between export dependence and economic growth in the seven selected South Asian countries from 2015 to 2024.

Hypotheses will be tested based on the annual observations made by the World Bank for the period between 2015 and 2024 for Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, resulting in a maximum of 70 country-year observations which are subject to completeness. Descriptive statistics and trend graphs will be used to create a distribution and argument of both indicators. Simple pooled regression will be used to assess the direction and strength of the linear association by Pearson correlation and the main test of the approved 2-variable model $GDP\ growth_{it} = \beta_0 + \beta_1(Export\ dependence_{it}) + \epsilon_{it}$.

The 5 per cent two-sided significance level of β_1 will be used to determine what to conclude about H0. A stable association over time will then be tested for in a two-way fixed-effects model that adjusts for shocks common to specific years and stable country characteristics. Explanatory separate estimates during the time periods 2015-2019 and 2020-2024 will be performed if data allows, with descriptive analysis done between the two time periods. As one of the key determinants of growth is being ignored in this design, all findings will be reported as association and not definite causal effects.

2.9. Chapter summary

Literature permits a reasonable conditional analysis of export dependence-GDP growth. Export-Led Growth Theory shows positive market, foreign exchange, scale and productivity channels while Dependency Theory explains ways concentration and "external exposure" can make it weak. The empirical divergence is due to differences in countries, time, measure and method and the three, South Asian economies, export the very different mix and are differently vulnerable. These patterns argue for a recent, non-directional test with correlation and simple regression and a consideration/interpretation of robustness with the help of fixed effects and country context.

Chapter 3. Research Methodology

3.1. Introduction

The methodology adopted for exploring the relationship between export dependence and economic growth of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka during 2015-2024 is explained in this chapter. It matches the research philosophy, approach, strategy, design, data source, variable measurement and statistical procedures with the research aim, research questions and non-directional hypothesis formulated in Chapters 1 and 2. The percentage of exports of goods and services to GDP is used to measure export dependence and the annual percentage growth of GDP is used to measure economic growth. The chapter explores data preparation, the quality of the research, ethics, data management and methodological limitations.

3.2. Research philosophy

The study belongs to the positivist approach where it explores the country-level indicators that are evident, sets measures for theory that can be measured and tests a statistical hypothesis by using repeatable processes (Saunders, Lewis and Thornhill, 2019). Interpretivism (qualitative evidence) would be more suited to understanding the subjective meanings and lived experience, but positivism is more suitable. An unobserved structural mechanism in explaining trade and growth can be recognised by a critical realist approach, but the current design is not directly on going and/or modeling these mechanisms. It is more limited in scope, in that it is designed to test the hypothesis that the GDP growth of countries and years is statistically dependent on export dependence.

World Bank indicators are not theory-free representations of reality, but rather are based on national accounts and official statistics. However, they have standard definitions allowing for comparison of data across countries. The use of positivism is subsequently applied with clear limitations and it is noted that the study treats the indicators as similar empirical measurements, it recognizes the limits of the indicators and it does not interpret the statistical association as the definite cause and effect (Creswell and Creswell, 2022).

3.3. Research approach

The study is deductive type of research. The approaches to deduction start with existing theory, deduce a testable proposition, transform the key concepts into an operational level and test the proposition against empirical evidence (Saunders, Lewis and Thornhill, 2019). Induction would be more suited to emerging observations to build up theory, but is less appropriate as the dissertation already has already developed theory, variables and a hypothesis. Export-Led Growth Theory establishes positive mechanisms like market access, foreign exchange, scale and productivity of export processes, and Dependency Theory wants to understand why there are negative mechanisms like concentration and exposure to the outside world in the relations between the two.

The evidence reviewed (positive, insignificant, mixed and bidirectional) is presented. It would therefore be an overstatement to claim that there is a theoretical consensus in the field of direction of energy. The alternative hypothesis is non-directional and it is used to determine if there is a statistically significant relationship, but it does not specify the direction of the relationship (positive or negative). The deductive sequence is therefore clear in terms of its steps; theory, hypothesis (non-directional), operationalised indicators, observations made by the World Bank, statistical tests, and theory-based interpretation.

3.4. Research strategy and design

This type of research is quantitative secondary-data analysis. The design is longitudinal since the same countries were studied for a decade annually, cross-country since the seven national economies were studied, and non-experimental because the study was conducted without experimental manipulation of the variables. In the limited use of the term, it is explanatory in that it predicts the direction and size of an association, and correlational in that other factors that influence GDP growth are not included in the approved two-variable conceptual model (Creswell and Creswell, 2022).

The design yields a short (annual repeated) country-level panel data set. The value of panel methods lies in being able to differentiate between changes in the within country components and the across country components, which are stable (Baltagi 2021; Wooldridge 2010). With 10 years of observation from 7 countries (and data availability to

limit the number of country-year observations), the maximum number of country-year observations is 70. Incomplete records will be an unbalanced panel - missing values will not be interpolated/replaced.

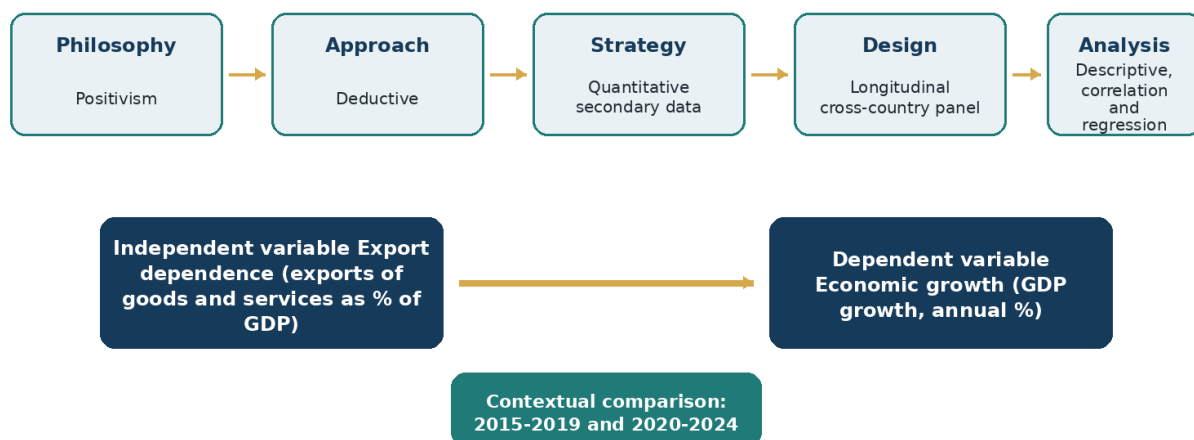


Figure 3.1. Research design and analytical alignment

Table 3.1. Alignment of research questions, evidence and analysis

Research question	Required evidence	Planned analysis
What patterns are evident in export dependence and GDP growth from 2015 to 2024?	Country-year values for both indicators	Descriptive statistics, line charts and country comparisons
How do the patterns compare between 2015-2019 and 2020-2024?	Period-specific observations	Means, medians, ranges and period-specific visual comparison
Is export dependence significantly related to economic growth?	Matched country-year observations	Pearson correlation, baseline simple regression and panel robustness analysis
How do the findings relate to Export-Led Growth Theory and dependency perspectives?	Statistical results and country context	Theory-based interpretation in the discussion chapter

3.5. Data source, study scope and selection criteria

World Bank World Development Indicators (WDI) database has been used since it is an official data source which is open, accessible and internationally comparable in terms of macroeconomic series. By using one source, inconsistencies in definitions, revisions and reporting periods that may occur when indicators are combined from multiple databases are avoided. The export indicator is available under the open data conditions of the World Bank (World Bank, 2018) as is GDP growth indicator (World Bank, 2026b; World Bank, 2026c). WDI is thus suitable for a cross-country study, which is transparent and replicable, but comparability is still subject to the quality of the underlying national statistics.

The geographical area is Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. Afghanistan is not included as it is not possible to make comparable observations in recent years that are consistent with the approved seven-country period. Also, regional aggregates are not included as the country-year is the unit of analysis. There are five observations made before the pandemic (2015-2024) and five observations made during the pandemic and recovery (2020-2024), so that one can compare observations from the recent past without implying that 2020 necessarily created a structural change.

Table 3.2. Inclusion and exclusion criteria

Dimension	Inclusion criteria	Exclusion criteria
Source	World Bank World Development Indicators	Other databases, estimates copied from news or secondary websites
Countries	Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka	Countries outside the approved seven-country scope and regional aggregates
Years	2015 to 2024 inclusive	Years before 2015 or after 2024
Indicators	NE.EXP.GNFS.ZS and NY.GDP.MKTP.KD.ZG	Alternative export, trade-openness or GDP measures

Dimension	Inclusion criteria	Exclusion criteria
Record quality	Valid numeric country-year value	Missing, duplicated or non-country observations
Missing data	Available observations retained in an unbalanced panel	No interpolation, forecasting or invented replacement values

3.6. Variable operationalisation and hypotheses

The indicator used to measure export dependence is 'Exports of goods and services (% of GDP)' (NE.EXP.GNFS.ZS) from the WDI. Exposure is measured by exports as a share of GDP, which allows for a comparison of exposure across economies of varying sizes and includes both merchandise and internationally traded services (World Bank, 2026b). It is the most appropriate proxy for the concept of the study as it reflects the relative importance of foreign sales to national output. It is not a comprehensive indicator of export capacity: it does not reflect sophistication, product or market diversification, domestic value added, profitability or resilience. These boundaries will be used to interpret the statistical model, but will not change it.

Economic growth is defined as 'GDP growth (annual %)' (NY.GDP.MKTP.KD.ZG) which represents the annual growth rate of real aggregate output at market prices (World Bank, 2026c). It is appropriate because it is similar over country-years and is commonly used in export-growth studies. But GDP growth does not reflect the distribution of income, the quality of jobs, welfare, environmental sustainability or sectoral performance. Country and year are used as panel identifiers, and the 2015-2019 classification is only used for contextual comparison, as is the 2020-2024 classification.

Table 3.3. Variable operationalisation

Variable	Role	Operational measure	Scale/source
Export dependence	Independent variable	Exports of goods and services as % of GDP	Continuous ratio; World Bank WDI code NE.EXP.GNFS.ZS

Variable	Role	Operational measure	Scale/source
Economic growth	Dependent variable	GDP growth, annual %	Continuous rate; World Bank WDI code NY.GDP.MKTP.KD.ZG
Country	Panel identifier	Seven selected South Asian countries	Nominal identifier
Year	Time identifier	2015 to 2024	Annual identifier
Period	Contextual comparison	2015-2019 and 2020-2024	Constructed categorical field; not part of the main IV-DV model

The statistical hypotheses are stated as follows:

- H0: There is no statistically significant relationship between export dependence and economic growth in the seven selected South Asian countries from 2015 to 2024.
- H1: There is a statistically significant relationship between export dependence and economic growth in the seven selected South Asian countries from 2015 to 2024.

The alternative hypothesis is deliberately non-directional because the literature reports positive, insignificant, mixed, negative and bidirectional relationships. A two-sided test is therefore methodologically more defensible than assuming a positive coefficient. The hypotheses refer to a relationship rather than a causal effect because the observational model excludes several determinants of growth and cannot eliminate reverse causality.

3.7. Data collection and preparation

The two indicators will be downloaded directly from WDI, in spreadsheet or CSV format. The raw files will be kept in their original form. Country records will be based on country name and ISO code and will be limited to the 7 countries selected and be filtered for the years 2015-2024. Then the export and GDP growth files will be merged based on country code and year as key. The final file will have one line for each country/year.

Checks for duplicated country-year keys, non-numeric values, missing observations and inconsistent country labels will be made when preparing the data. The data set will also

be cross-checked with data on the official indicator pages to detect clear data extraction errors. Wherever values are missing, this will be indicated by country and year. They will not be interpolated since the replacement of a macro-economic observation may lead to false precision and impact on the regression result. In the absence of 2024 data for one or more countries, the main analysis will be based on all available observations (unbalanced panel) and a sensitivity analysis will be performed for the common balanced period 2015-2023.

All transformations, indicator codes, filters, missing values and source links will be documented in a data-management log, including the date of download. All files will be saved as separate files: raw dataset, cleaned dataset, R script and exported results. This is to make the analysis repeatable and to avoid unintentional changes to the original data.



Figure 3.2. Secondary data collection, preparation and analysis process

3.8. Data analysis methods

Analysis will be conducted in R, a free environment for statistical computing and graphics (R Core Team, 2025). The plm package supports pooled and fixed-effects estimation for balanced and unbalanced panel data within a reproducible script (Croissant and Millo, 2008). Excel may be used for visual inspection of downloaded files, but all reported calculations, tables and figures will be generated from the documented R workflow.

3.8.1. Data completeness and descriptive analysis

The analysis will start with a completeness matrix, which displays the expected and available observations per country. The means, medians, standard deviations, minima, maxima and valid observation counts will then describe both variables for the entire sample, for each country and for each period. Annual movement will be illustrated on line charts and differences in scale and volatility will be illustrated on country comparison charts. These procedures are used to address the descriptive research questions and to set the stage for the subsequent inference.

3.8.2. Correlation analysis

Both variables are continuous, so the Pearson's correlation coefficient will be used to estimate the direction and strength of the linear association. Before interpreting a scatter plot and fitted line, the relationship will be examined to determine if the relationship is reasonably linear and if there are a few observations that are dominating the relationship. If there are influential values or non-normality, Spearman's rank correlation will be reported as a sensitivity check. The coefficients will not be interpreted as causal.

3.8.3. Regression analysis

The primary hypothesis test will use a baseline simple linear regression that preserves the approved two-variable model:

$$\text{GDPGrowth}_{it} = \beta_0 + \beta_1 \text{ExportDependence}_{it} + \varepsilon_{it}$$

Coefficient beta1, the 95 per cent confidence interval, p-value and R-squared will be provided. Simple OLS is used due to the fact that the approved one IV and one DV conceptual model is directly tested. A two sided 5 per cent significance level is equivalent to the non-directional hypothesis. Heteroskedasticity-consistent standard errors will be used since macroeconomic observations might have unequal error variance.

A two-way fixed-effects model will be estimated as a robustness analysis:

$$\text{GDPGrowth}_{it} = \beta_0 + \beta_1 \text{ExportDependence}_{it} + \alpha_i + \lambda_t + \varepsilon_{it}$$

The country effects (α_i) capture time-invariant country characteristics, like geography and long-term economic structure, and the year effects (λ_t) capture

shocks that affect all countries. This model does not represent a different conceptual framework, but is a robustness analysis, with export dependence being the only substantive independent variable. Fixed effects are suitable if there are stable unobserved country characteristics that are correlated with export dependence (Baltagi, 2021; Wooldridge, 2010). Due to the limited number of countries (7) and years (10) results will be interpreted with caution (Stock and Watson, 2008).

3.8.4. Period comparison and sensitivity checks

The 2015-2019 period will be descriptively compared to the 2020-2024 period. Correlations and simple regression coefficients can be presented as exploratory evidence, but will not be considered definitive tests of structural change since there are no more than 35 observations per period. A balanced analysis of 2015-2023 data will be performed to determine if there is any material impact of the incomplete 2024 data on the results of the analysis. Pearson and Spearman correlations, pooled and fixed-effects estimates and results with and without any obviously influential observation will be compared. All exclusions will be documented and explained, and both versions reported.

3.8.5. Diagnostic models and reporting

Linearity and unequal variance will be checked by scatter plot and residual-versus-fitted plot. A normal probability plot will help with the evaluation of the distribution of the residuals and Cook's distance will identify observations that have a large influence in the baseline model. Leave-one-country-out checks will indicate if the main conclusion is driven by one country. Reporting will include substantive and theoretical interpretation, as well as statistical significance, through the use of coefficients, confidence intervals and p-values, and the explanatory power of the results.

Table 3.4. Statistical analysis plan

Stage	Technique	Purpose/output
1. Data audit	Completeness matrix and missing-value log	Establish final sample size and whether the panel is balanced

Stage	Technique	Purpose/output
2. Description	Mean, median, SD, minimum, maximum and charts	Describe country, annual and period patterns
3. Bivariate analysis	Scatter plot and Pearson correlation	Estimate the direction and strength of the linear association
4. Baseline model	Simple OLS with robust standard errors	Test the approved one-IV and one-DV hypothesis directly
5. Panel robustness	Country and year fixed effects	Check whether the association persists after stable country and common year effects
6. Sensitivity	Spearman correlation, balanced period and influence checks	Assess whether conclusions depend on assumptions, missing years or influential observations
7. Interpretation	Coefficient, CI, p-value, R-squared and theory comparison	Answer the research questions without overstating causality

3.9. Research quality and rigour

Construct validity, internal validity, external validity, measurement consistency and procedural reliability are used to evaluate the quality of research. Construct validity is related to the question of whether the indicators are appropriate for the concepts. The relative export exposure is measured by exports of goods and services as a percentage of GDP, and changes in aggregate output are measured by annual real GDP growth. The measures are appropriate for the research question but export dependence is a proxy and does not reflect export quality, export diversification or domestic value added.

Omitted variables, reverse causality and the non-experimental design restrict the internal validity. The fixed-effects robustness model is used to mitigate the effects of stable country characteristics and common annual shocks, but it cannot be used to determine a causal effect. The results are limited to the seven countries and the time frame 2015-

2024. Consistency of measurements is enhanced by using the same WDI definitions for all observations.

To ensure procedural reliability and reproducibility, the raw downloads, the record of all cleaning decisions, the indicator codes and access dates, and the reported analysis from a saved R script are retained. The number of samples will be reported on each table and significant, insignificant and contradictory results will be reported. These procedures enhance the audit trail and the other validity constraints are discussed in the limitations section.

3.10. Ethical considerations and data management

The study is based on publicly available national data, which has been aggregated, and does not include human subjects, personal data, consent processes or confidential organisational data. Thus, the ethical responsibility is focused on the lawful use of data, the correct attribution, the transparent processing and the honest reporting. World Bank datasets are available on open data terms and conditions, which require proper attribution (World Bank, 2018). The source of the indicator, the code and the access link will be referenced in the dissertation and in all tables that are based on the data set.

No values will be made up, altered or hidden. Countries, years or results will not be excluded from the analysis simply because they do not support the hypothesis. Working copies of raw data, cleaned data, scripts, tables and decision logs will be stored in the university OneDrive or another approved secure location and will be backed up and clearly versioned. Access will be restricted to the student, supervisor and authorised University personnel as necessary. Research records will be kept for the duration of the University requirements and approved ethics application.

Table 3.5. Ethical and data-management safeguards

Area	Safeguard
Data source	Use only official World Bank WDI downloads and record access details
Attribution	Cite the World Bank indicators, definitions and licence conditions

Area	Safeguard
Integrity	Do not fabricate, interpolate or selectively remove inconvenient observations
Transparency	Report missing values, exclusions, sensitivity results and model limitations
Storage	Keep raw, cleaned and output files separately in approved secure storage
Reproducibility	Retain the R script, codebook and data-cleaning log
Confidentiality	No personal or confidential data are collected

3.11. Methodological limitations

The quality procedures enhance transparency and reproducibility, but do not eliminate methodological limitations of the study. Only seven countries are represented in the sample and were observed for 10 years, which means that the statistical power is low and estimates for a particular period may be volatile. The panel may also be unbalanced if there are no observations for 2024. Moreover, the one substantive independent variable does not account for investment, inflation, exchange rates, imports, institutions or other factors that affect GDP growth, which means that there is a risk of omitted-variable bias.

Reverse causality can occur as greater growth can lead to greater export capacity. The export measure is also GDP-based and GDP growth is the result, which is a mechanical relationship and needs to be interpreted with care. Furthermore, the same export shares may be made up of very different export products, such as garments, tourism, technology services, agriculture or hydropower. The proxy thus captures exposure but it does not account for the variations in the growth outcome of comparable export dependence levels.

Pandemic years are exceptional and may contain influential observations due to the restrictions and policy responses and base effects. While it is helpful to compare 2015-2019 to 2020-2024, this does not demonstrate that there is a difference due to Covid-19.

WDI values can also be updated as national accounts are updated, and the date of the download and the version of the data will be noted. These restrictions will be extended to the interpretation of Chapters 4 and 5 and will be the scope of inference.

3.12. Chapter summary

The study adopts a positivist, deductive and quantitative secondary-data methodology. A longitudinal panel of seven South Asian countries from 2015 to 2024 will be constructed from two World Bank indicators. Descriptive analysis, Pearson correlation and simple OLS will provide the main evidence, while fixed effects, balanced-period checks and influence diagnostics will assess robustness. The design is transparent and achievable, but its proxy measures, observational structure and limited sample require cautious non-causal interpretation. The next chapter will present the dataset and results.

Chapter 4. Findings / Results, Analysis and Discussion

4.1. Introduction

This chapter presents the empirical results for the relationship between export dependence and economic growth in Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka over 2015-2024. The analysis follows the methodology specified in Chapter Three. It begins with data completeness and descriptive statistics, then examines country and period trends, bivariate association, the baseline regression model, model diagnostics and sensitivity analyses. The primary hypothesis decision is based on the pooled ordinary least squares model with HC3 heteroskedasticity-consistent standard errors. The two-way fixed-effects model is retained as a robustness analysis rather than as the primary hypothesis test. Results are reported as statistical associations and are not interpreted as definitive causal effects.

The empirical results show a clear, but specification dependent pattern. However, the pooled sample shows a positive relationship between export dependence and the growth of GDP, although it is not statistically significant and has a weak relationship. The two-way fixed-effects model, on the other hand, yields a positive and statistically significant within-country coefficient when some country characteristics and common year effects are controlled for. For this reason, it treats the main pooled effect, and the fixed-effects robustness evidence, separately.

4.2. Dataset Composition and Completeness

The analytical data set includes time series data on both the export dependence (exports of goods and services as a share of GDP) and economic growth (GDP growth, annual %). for Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. Ten years (2015-2024) were available for all countries forgoing 70 matched country-year observations and a fully balanced panel. There was no need to interpolate, forecast or replace any values and analytical values were verified by comparing with original World Bank extracts.

The seven countries had been retained as they make up the South Asian study sample as stipulated in Chapter Three and for the total observation period for both indicators

(2015-2024), the World Bank has not reported for any other country. They also introduce some interesting regional differences in the relative importance of exports, as required by the comparative design. Afghanistan was not included as there was no comparable data across the entire analysis period and consistent panel since most recent. In this chapter, export dependence only indicates exports of goods and services as a proportion of GDP and not export quality, nor export diversification or domestic value added.

Table 4.1. Dataset completeness by country

Country	Expected N	Paired N	Missing	Status
Bangladesh	10	10	0	Complete
Bhutan	10	10	0	Complete
India	10	10	0	Complete
Maldives	10	10	0	Complete
Nepal	10	10	0	Complete
Pakistan	10	10	0	Complete
Sri Lanka	10	10	0	Complete

Source: World Bank World Development Indicators; author's analysis.

Differences between 2015-2019 and 2020-2024 are for equal number of country-years. It also mitigates the methodological limitation of the main results of treating the missing 2024 measurement values. The 2015-2023 sensitivity analysis that had been contemplated was also kept because the study sought to see if adding the most up-to-date year would alter the overall take-away.

4.3. Descriptive Statistics

The average, median and standard deviation of export dependence across all 70 observations over 24.26, 18.97 and 20.70 percentage points of GDP, respectively. The higher mean value compared to the median value shows that the majority of the distribution is positively skewed which is largely due to the much higher exports share of value of Maldives. The interquartile range was 17.43 percentage points which indicated that there is still huge dispersion despite the fact that the extreme points are given less

weight. Growth on GDP was on an average of 4,44% a year, the median of 5,13% was accompanied by a standard deviation of 7,21%, which is quite large. Its 25th–75th percentile range was 3.54 percentage points, but its unabbreviated range was from -32.91% to 37.51%. This contrast illustrates that the growth of GDP is represented more by extreme tail values than by high dispersion values throughout the central part of the distribution, at least in the pandemic period.

Table 4.2. Full-sample descriptive statistics

Variable	N	Mean	Median	SD	Min.	Max.
Export dependence	70	24.26	18.97	20.70	5.12	82.67
GDP growth	70	4.44	5.13	7.21	-32.91	37.51

Source: World Bank World Development Indicators; author's analysis.

Table 4.3. Descriptive statistics by country

Country	Export mean	Export SD	GDP growth mean	GDP growth SD
Bangladesh	12.75	2.05	6.29	1.42
Bhutan	29.04	2.00	3.80	5.27
India	20.49	1.87	5.92	4.37
Maldives	70.83	9.58	5.97	16.96
Nepal	7.50	1.30	4.14	3.43
Pakistan	9.47	0.84	3.66	2.74
Sri Lanka	19.75	2.05	1.30	4.66

Source: World Bank World Development Indicators; author's analysis.

Evidence of a great deal of variation comes from country-level statistics. Maldives had the highest mean export dependence (70.83% of GDP) and the largest standard deviation of GDP growth (16.96 percentage point). Nepal and Pakistan had the lowest average export dependence of 7.50% and 9.47% respectively, while Bhutan had the second

highest average export dependence of 29.04%. On the other hand, over the period of last ten years, Bangladesh has achieved the highest average growth rate in GDP at 6.29%, followed by Maldives at 5.97% and India at 5.92% while that of Sri Lanka was at the bottom of the league at 1.30%. These cross country averages do not test causality or that export dependency differences caused the growth outcomes.

4.4. Trends in Export Dependence

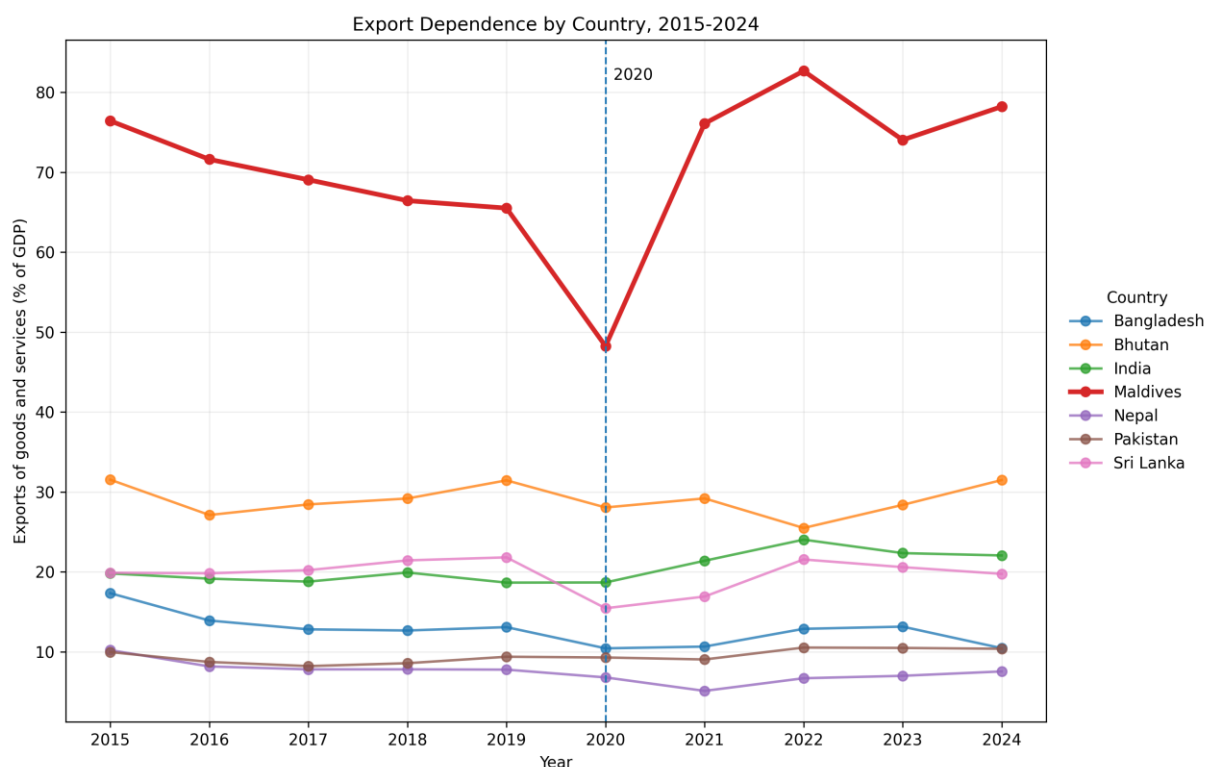


Figure 4.1. Export dependence by country, 2015-2024

As can be seen in Figure 4.1, export dependence is highly variable and has been steady across countries. Maldives is clearly distinguished from the rest of the sample and is highlighted as its export share is much higher and more volatile. The vertical line at 2020 is used to differentiate the pre-pandemic period from the pandemic and recovery period. Maldives declined from 76.43% in 2015 to 65.51% in 2019, fell to 48.24% in 2020 and then rebounded sharply. The visual thus reveals that there are significant variations in exposure across the regions and that 2020 was a year with a particularly high exposure change in the most export-dependent economy.

Bhutan continued to have a relatively high but stable export share, followed by an intermediate share for India and Sri Lanka, and a relatively low share for Bangladesh, Nepal and Pakistan. The regional mean export share fell from 23.96% in 2019 to 19.57% in 2020 before recovering above 24% from 2021. The figure thus makes two points pertinent to the subsequent regression analysis: export dependence is not uniform across countries and that the changes around 2020 were not uniform across the region.

4.5. Trends in Economic Growth

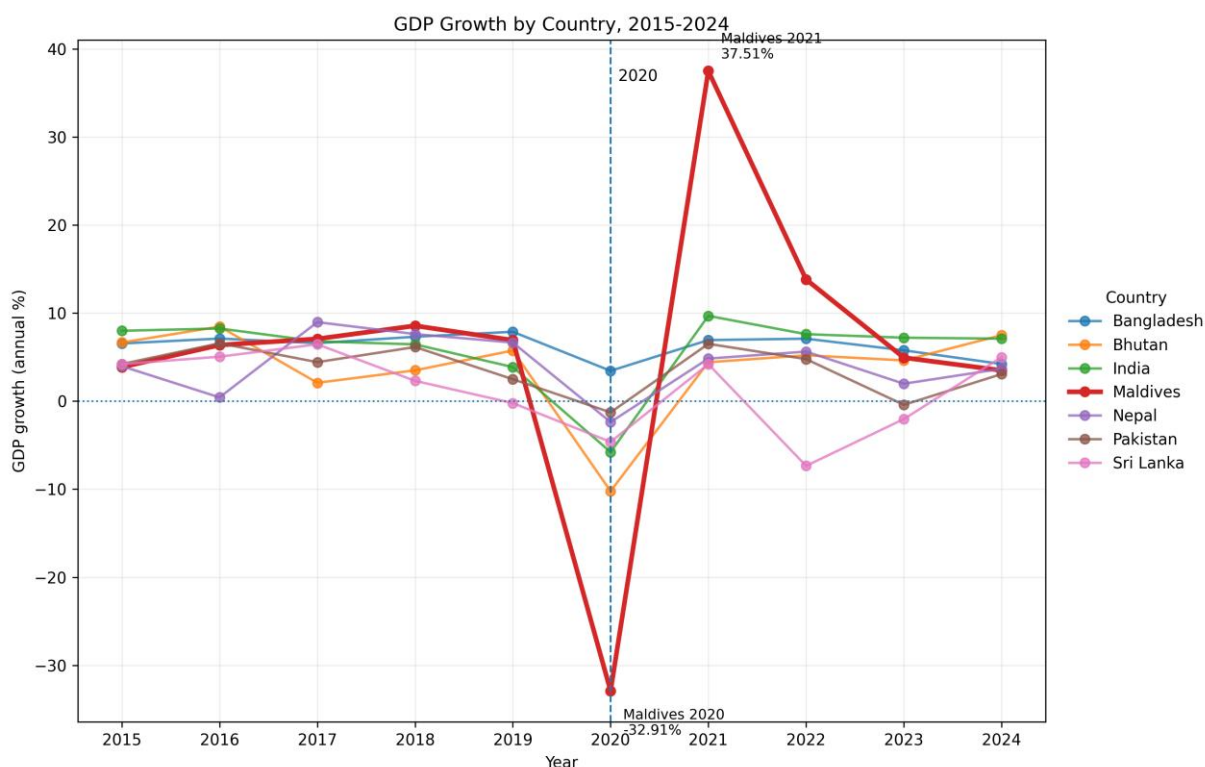


Figure 4.2. GDP growth by country, 2015-2024

The export-dependency fluctuated significantly less than GDP growth. Prior to 2020 the majority of countries have growth (ranging from positive to negative). The regional mean was 5.35% in 2015, remained close to 6% during 2016-2018 and moderated to 4.77% in 2019. The regional mean temperature in 2020 decreased to -7.68% following contraction in Bhutan (-3.29%), India (-8.13%), Maldives (-5.31), Nepal (-6.23), Pakistan (-15.84) and Sri Lanka (-2.10) while in Bangladesh it was positive – 3.45%. This timing of the regional disruption is explicit in the 2020 reference line in Figure 4.2.

This was the case for Maldives, with GDP experiencing the biggest decrease in 2020 (32.91%) and the largest increase in 2021 (37.51%). These two observations are singled out at this stage as possibly influential since their size is much greater than the rest of the observations. India recorder its contraction in 2020 by 5.78% and its growth was 9.69% in 2021, Bhutan in 2021 suffered a contraction of 10.22% followed by positive growth. The different patterns between GDP growth and export dependence in 2020-2021 will later prove relevant to regression diagnostics as large variations in both can have an undue effect on the regression. Formal consideration of the impact of the Maldives observations comes in Section 4.9.

4.6. Pre-Pandemic and Pandemic/Recovery Comparison

Table 4.4. Period comparison of the core variables

Period	N	Export mean	Export SD	GDP growth mean	GDP growth SD
2015-2019: Pre-pandemic	35	24.37	20.13	5.64	2.30
2020-2024: Pandemic and recovery	35	24.15	21.55	3.24	9.86

Source: World Bank World Development Indicators; author's analysis.

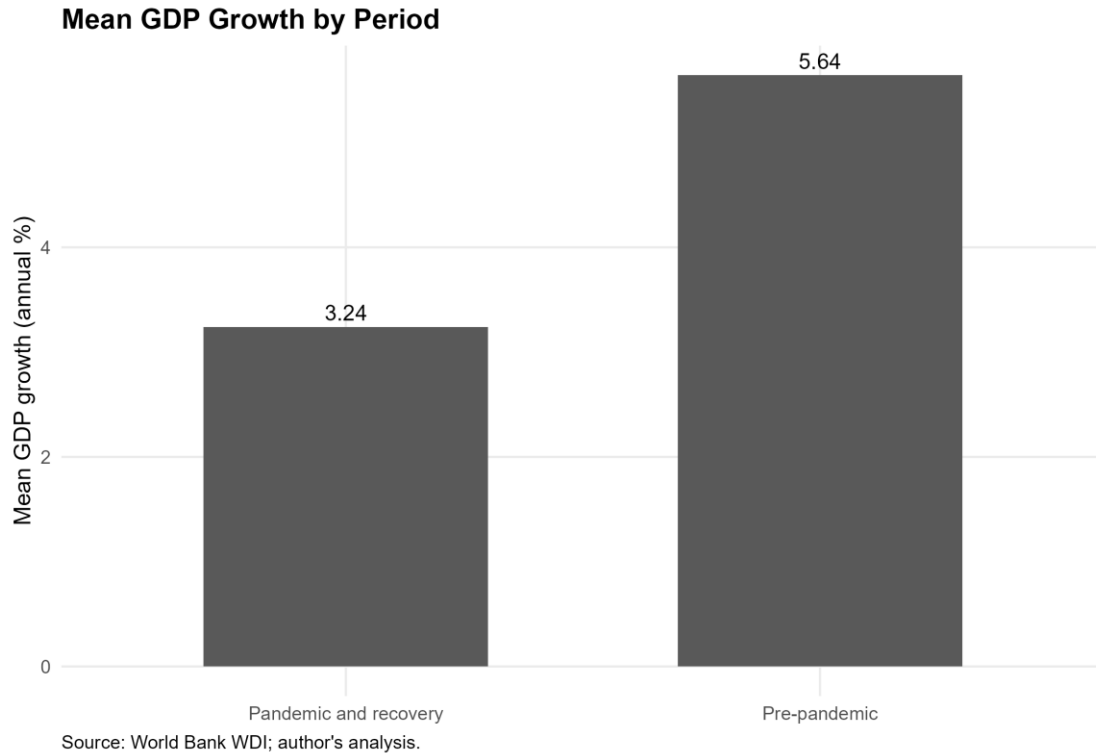


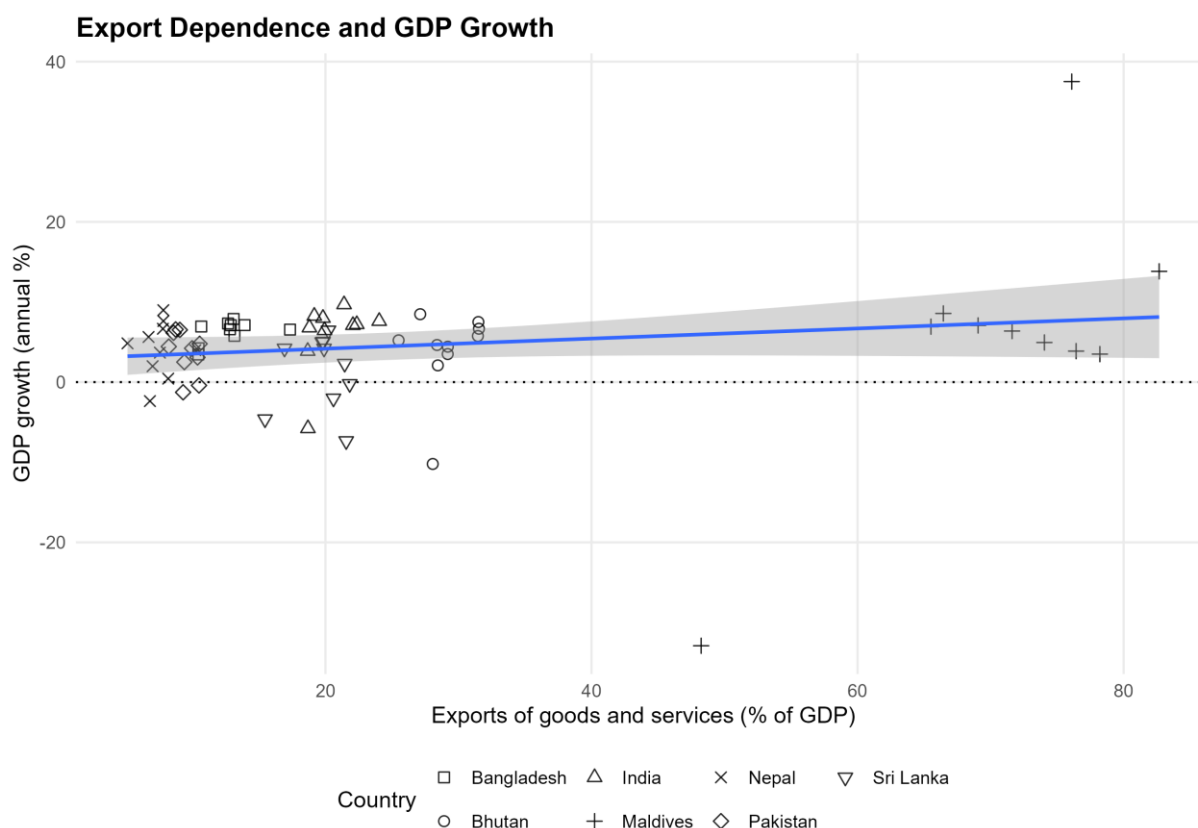
Figure 4.3. Mean GDP growth by analytical period

Average export dependence was almost unchanged between the two periods, declining only from 24.37% in 2015-2019 to 24.15% in 2020-2024. The difference in mean export dependence was therefore only -0.22 percentage points. GDP growth changed much more clearly. Mean growth declined from 5.64% before the pandemic to 3.24% during 2020-2024, a difference of -2.40 percentage points. More importantly, GDP-growth volatility increased sharply: the standard deviation rose from 2.30 to 9.86 percentage points. The post-2020 period therefore differs more in the volatility and level of growth than in the regional average export share.

Period-specific correlations were positive but statistically insignificant. The pre-pandemic Pearson correlation was $r = 0.107$ ($p = .539$), while the 2020-2024 pandemic and recovery correlation was $r = 0.233$ ($p = .177$). Separate exploratory regressions also remained insignificant: the export-dependence coefficient was 0.012 in 2015-2019 ($p = .509$) and 0.107 in 2020-2024 ($p = .448$). The numerical difference between the two regression coefficients was not itself subjected to a formal interaction or structural-break test. It therefore cannot be interpreted as evidence that the export-growth relationship became

stronger after 2020. The subperiod estimates are descriptive and exploratory because each period contains only 35 observations.

4.7. Correlation Analysis



Source: World Bank WDI; author's analysis.

Figure 4.4. Scatter plot of export dependence and GDP growth

The Pearson correlation for the full sample of export dependence and GDP growth was $r = 0.181$, which is a weak positive linear association. The relationship was not statistically significant ($p = 0.133$; 95% CI $[-0.056, 0.399]$) and the confidence interval includes zero. A sensitivity check was performed using Spearman's rank correlation as the scatter plot and descriptive statistics indicate that there are extreme observations that could influence a Pearson correlation based on the raw values. The rank-based result was similar ($\rho = 0.156$, $p = 0.198$), suggesting that the main result was not sensitive to the actual magnitudes or assumptions of the rank ordering in the Pearson analysis.

There is also significant clustering of the lower-export economies and a distinct cluster of high-export observations from Maldives on the scatter plot. Within this high-export group, the extreme negative and positive growth outcomes around 2020 and 2021 are apparent. This visual pattern can be used to help identify regression diagnostics and robust standard errors, and not just the fitted line.

4.8. Baseline Regression and Hypothesis Test

The primary hypothesis was tested using the baseline pooled ordinary least squares model specified in Chapter Three. HC3 heteroskedasticity-consistent standard errors were used because the Breusch-Pagan diagnostic indicated unequal error variance. The fitted model can be written as:

$$\text{Predicted GDP growth} = 2.910 + 0.063(\text{Export dependence})$$

Table 4.5. Baseline pooled OLS results with HC3 robust standard errors (N = 70).

Term	Coefficient	HC3 SE	t	p-value	95% CI
Intercept	2.910	1.186	2.455	0.017	[0.544, 5.276]
Export dependence	0.063	0.070	0.902	0.371	[-0.077, 0.203]

Source: author's analysis of World Bank World Development Indicators.

The export-dependence coefficient was positive at 0.063. A one-percentage-point increase in export dependence was associated with an estimated 0.063 percentage-point increase in annual GDP growth in the pooled model. For context, a ten-percentage-point increase would correspond mechanically to about 0.63 percentage points of predicted growth if the fitted coefficient were stable. However, the estimate was statistically insignificant ($t = 0.902$, $p = 0.371$; 95% CI [-0.077, 0.203]), so this magnitude should not be treated as a reliable causal or policy effect. The model explained only 3.3% of the variation in GDP growth ($R\text{-squared} = 0.033$; adjusted $R\text{-squared} = 0.019$). Because GDP growth is influenced by investment, inflation, exchange rates, imports, policy conditions and other omitted factors, the coefficient may also be affected by omitted-variable bias.

At the 5% significance level, the null hypothesis was therefore not rejected. The primary analysis provides insufficient evidence of a statistically significant association between export dependence and GDP growth across the seven countries over 2015-2024. This decision applies to the pre-specified baseline model and does not imply that exports have no economic relevance; it means that the direct pooled relationship was not estimated precisely enough to distinguish it from zero in this sample.

4.9. Model Diagnostics and Robustness Analysis

The Breusch-Pagan test was statistically significant (chi-square = 5.258, $p = 0.022$), providing evidence of heteroskedasticity. This supports the use of HC3 robust standard errors in the baseline regression. The residual-versus-fitted and normal Q-Q plots also showed departures associated with the extreme pandemic-era observations, especially at the tails of the distribution. Consequently, statistical significance was interpreted together with influence diagnostics and alternative specifications.

Table 4.6. Flagged influential observations in the baseline model

Observation	Export dep.	GDP growth	Studentized residual	Cook distance
MDV-2021	76.10	37.51	5.181	1.143
MDV-2020	48.24	-32.91	-7.412	0.535
BTN-2020	28.07	-10.22	-2.157	0.033

Source: author's analysis.

Maldives 2020 and Maldives 2021 exceeded the Cook-distance threshold and also had large studentized residuals. Bhutan 2020 was flagged because its absolute studentized residual exceeded two. These observations are substantively plausible rather than data-entry errors, so they were retained in the main analysis. Their presence nevertheless confirms that pandemic-era shocks created unusually influential country-year outcomes.

Table 4.7. Model and sensitivity comparison

Model	Coefficient	Robust SE	p-value	R-squared	N
Pooled OLS HC3	0.063	0.070	.371	.033	70
2015-2023 OLS	0.072	0.080	.370	.038	63
Two-way fixed effects	1.004	0.182	< .001	.372	70

Source: author's analysis.

The sensitivity regression for the 2015-2023 period yielded a coefficient of 0.072 ($p = .370$) which was very similar to the full-sample pooled coefficient and not statistically significant. Leaving out one country at a time pooled regressions also were insignificant. The most significant sensitivity finding was Maldives which was not included meaning that pooled coefficient changed from +0.063 to -0.014 ($p = .842$). Although the overall conclusion on non-significance remains unaffected, the sign reversal demonstrates that the small positive pooled coefficient is not a consistent regional pattern and is heavily affected by the Maldives observations that are characterized by high levels of exports.

There was a material difference in the two-way country and year fixed-effects model. Pooled OLS incorporates both differences across countries as well as changes over time within countries. Year fixed effects eliminate shocks common to all countries in a given year while country fixed effects eliminate shocks common to all years in a given country. The fixed-effects coefficient is, therefore, identified based on deviations from within country levels of export dependence after removing common year effects. With this specification the coefficient rose to 1.004, with a robust standard error clustered at the country level that was 0.182, with $p < .001$ between 0.647 and 1.361 for the within-model R-squared. This deviation from the pooled OLS results thus indicates that countries could be very different so that a positive within-country correlation may be hidden.

Though in an analytical context such a finding is important, care must be taken when interpreting this finding. The number of countries in the panel is small (just seven) and, accordingly, the number of country clusters is small. However, due to the small number

of clusters, the results for the conventional cluster-robust inference may not be as reliable as the same p-value for a large panel. The observations of the influential Maldives 2020 and Maldives 2021 are another cause for concern. Even the fixed-effects result (i.e., the hypothesis test of the pre-specified pooled model) is kept as a powerful specification-dependency result and not to replace the pre-specified pooled hypothesis test.

4.10. Answers to the Research Questions and Hypothesis

RQ1: What patterns are evident in export dependence and GDP growth from 2015 to 2024?

Answer: The level of export dependence varied somewhat across countries; Maldives was consistently significantly higher than the rest of the countries, and India and Sri Lanka were in the middle range, while Bhutan, Bangladesh, Nepal and Pakistan had lower levels of export dependence. GDP growth had been more volatile and experienced a more marked deceleration in 2020, and then was variable.

RQ2: How do the patterns compare between 2015-2019 and 2020-2024?

Answer: On average, the export dependence did not change significantly between the periods, while the GDP growth and its standard deviation decreased from 5.64% to 3.24% and 2.30 to 9.86 percentage points, respectively. Main contrast in the periods was thus not so much a change in the average reliance on exports, but the level and variations in growth. Formal tests were not performed on the difference between the subperiod regression coefficients.

RQ3: Is export dependence significantly related to economic growth?

Answer: The pooled analysis in this primary study showed a weak, but statistically non-significant, positive relationship; and thus, H_0 was not rejected. This was corroborated through the 2015-2023, Spearman, subperiod and leave-one-country-out checks. The two-way fixed effects model was positive and significant indicating that the estimated relationship is positive once stable country differences and common year effects are accounted for.

RQ4: How do the findings relate to Export-Led Growth Theory and dependency perspectives?

Answer: Results are mixed in terms of the statistical evidence provided in different specifications. The pooled result doesn't suggest a common relationship between export growth and regional level, but fixed-effects result suggests positive within-country association. Section 4.11 discusses the tension in the context of Export-Led Growth Theory, Dependency Theory and the structural differences found in the literature.

4.11. Discussion of Results

4.11.1. Main Export-Growth Relationship and Empirical Literature

In the overall pooled analysis, there are no consistent relationships between export dependence and the level of annual GDP growth for the seven countries. The Pearson correlation was low and positive ($r = 0.181$, $p = 0.133$) and the pooled regression coefficient was 0.063 with a p-value of 0.371 which was not statistically significant. This is converse to the result obtained by Kumar et al. (2020), Shirazi and Manap (2005), Adelakun et al. (2025) and Sein and Sah (2025) who find favour to the export-led growth in their sample periods and sample survey. This discrepancy is reasonable based on the variations in the country groups, larger time spans, wider trade definitions or other macroeconomic measures included in the studies. The present finding is more aligned with the findings of Giles and Williams (2000), Malhotra and Kumari (2016) and Panta, Devkota and Banjade (2022) who reveal that the export growth evidence is method sensitive and country-specific.

The country averages are descriptive evidence of heterogeneity, and are not a causal test. The dependence of exports was greatest in Maldives whereas the GDP growth was the biggest in Bangladesh, which at the same time had a much lower export dependence. Sri Lanka had the lowest average export growth, and was one of the more intermediate exposure levels. While these disparities apparently did not capture the sophistication of exports (although that was not directly measured in this data set), the result is nonetheless consistent with the argument that export composition can matter by Hausmann, Hwang and Rodrik (2007). The pooled result should thus not be seen as proof of the limited explanatory power of export dependence, as such, for structurally different economies.

4.11.2. Interpretation Through the Theoretical Framework

The Export-Led Growth Theory suggests that exports can stimulate output in a number of ways, such as increased markets, foreign exchange earnings, economies of scale and learning and productivity (Medina-Smith, 2001). The lack of significance for the pooled result does not discount those mechanisms as export value is measured against GDP and not against value added at home, technology transfer or productivity. The positive two-way fixed-effects coefficient is theoretically significant as it suggests a positive within-country association that remains after removing stable differences in the national level and common year shocks. This can accommodate mechanisms of export-based in specific national settings, but does not describe the mechanism which led to the association and the causality remains unclear.

There is an alternative interpretation of Dependency Theory. It is not only the riskiness of exports that is its main issue—it is that the relationship between the economy and foreign economies is asymmetric, that a concentration of sectors may make the economy vulnerable, that upgrading is limited and dependent on economies abroad or that demand is limited and external. Concentration, in turn, is associated with lower resilience in UNCTAD (2023). The various export structures of the selected South Asian economies have been discussed in Chapter Two. The Maldives contraction and bounce-back is an extreme example of the way high exposure can occur together with volatility but is not an example of export dependence that brought these changes. Theories in totality can be interpreted as a conditional relationship and not a universal positive or negative relationship.

4.11.3. South Asian Heterogeneity and Pandemic/Recovery Context

Results from the seven countries point to the significance of national structure. As explained in Chapter Two, Maldives is a very high exposure to services, Bhutan is a relatively specialised exposure to external services, India has a more diversified export base in terms of goods and services, Bangladesh is manufacturing-oriented and Nepal and Pakistan have a lower export dependence. Thus, a one-percentage-point increase in export dependence may correspond to an export process, which is different in each country. This may account for the findings of the weakness of the regional pooled slope

and the divergent results of the broader studies conducted across South Asia using the trade openness, and other measures as independent variables (Ahmadi, Rabin and Qadamshahi, 2025; Hemat et al., 2026).

In the comparison of the two periods, it can be seen that the 2020-2024 period had significantly higher GDP-growth volatility and the average change in the dependence on exports was very small. Neither the pre-pandemic nor pandemic/recovery regression coefficient was statistically significant and the difference in this regression was not formally tested. Thus, evidence reveals that the export-growth relationship has been altered by the pandemic and recovery period and that the strength of volatility since the onset of the pandemic has been different than before the pandemic.

4.11.4. Pooled OLS, Fixed Effects and Specification Sensitivity

The main result in the central analysis is that there is a difference between the pooled OLS and 2-way fixed effects. Pooled OLS not only accounted for between-country variation, but also for within-country variation as well, and gave an insignificant coefficient. The positive pooled slope is not a stable regional pattern as the coefficient turned negative when the Maldives were excluded (-0.014 instead of +0.063). The fixed-effects coefficient is 1.004 and thus reflects changes within countries after a common year shock and country time-invariant within-country characteristics are removed. That contrast could mean that there is a positive within country association – but that persistent country structural differences overwhelm it.

This interpretation is still preliminary as the panel consist of only 7 country clusters and the observations for Maldives 2020 and 2021 are very influential within the panel. However, with such few clusters, conventional cluster-robust inference also may be unreliable, and the fixed-effects p-value should not be interpreted as having the same evidential value as a large-panel p-value. The most conservative implication is thus that the export-growth relationship is specification-dependent in that the pooled cross-country evidence is weak, but that the robustness result for within countries is positive. This pattern is directly related to the literature that focuses on context, structural heterogeneity and econometric specification.

4.12. Chapter Summary

Chapter Four analysed 70 country-year observations for seven South Asian economies over 2015-2024. The pooled correlation and OLS results were weak, positive and statistically insignificant, so H_0 was not rejected. Sensitivity checks supported that conclusion, although excluding Maldives reversed the pooled coefficient's sign. The two-way fixed-effects model produced a positive within-country association after country and year effects were removed, but this result is interpreted cautiously because only seven country clusters are available and pandemic observations are influential. Overall, the export-growth relationship is specification-sensitive. Chapter Five presents the final conclusions, recommendations, limitations and priorities for future research.

Chapter 5. Conclusions and Recommendations

5.1. Introduction

This chapter presents the conclusions and recommendations arising from the findings and discussion in Chapter Four. It summarises the main empirical results, answers the research questions, sets out practical and theoretical recommendations, identifies the principal limitations and proposes priorities for future research.

5.2. Summary of Main Findings

A total of 70 country-year observations were finalized for the seven countries of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka (from 2015 to 2024). The extent of export dependence was highly variable among countries and GDP growth was highly volatile in 2020 and 2021. On average, GDP growth in the 2020-2024 period decreased and the dispersion grew significantly, while the mean export dependence remained unchanged from the previous period (2015-2019). This primary Pearson correlation and pooled OLS model found a weak positive, but statistically insignificant association and therefore H_0 was not rejected. The results of the Spearman, balanced-period, subperiod and leave-one-country-out pooled checks were the same. But the coefficient for the two-way fixed-effects model was positive, meaning that the estimated relationship is different depending on whether it's the between-country or the within-country variation that's being analyzed.

5.3. Conclusions Based on the Research Questions

5.3.1. RQ1: Patterns in Export Dependence and GDP Growth

The cross-country variation in export dependence was rather constant and no regional pattern emerged. Maldives continued to be significantly more export dependent than any other economy, whereas Bangladesh, Nepal and Pakistan were on the lower end. Growth in GDP was not as consistent and experienced significant declines and rebounds during the pandemic. The first conclusion is thus that in South Asia, the picture of export exposure and growth performance is a mosaic and that country context is crucial for interpreting regional averages.

5.3.2. RQ2: Pre-Pandemic and Pandemic/Recovery Comparison

The average export dependence actually did not change between the two analytical periods while average GDP growth decreased from 5.64% to 3.24% and its standard deviation rose from 2.30 to 9.86 percentage points. The evidence points towards a higher growth volatility in the 2020-2024 period of the pandemic and recovery. It does not necessarily conclude that the export-growth relationship was structurally affected by the pandemic as the coefficient difference for the subperiods was not formally tested.

5.3.3. RQ3: Statistical Relationship Between Export Dependence and Growth

The pooled analysis as a whole did not find a statistically significant association between export dependence and GDP growth. Based on this, H0 was not rejected. It is important to note that the fixed-effects robustness result shows a positive within-country association after the stable country differences and common year effects are removed. The overall conclusion must, therefore, be specification dependent (rather than being simply positive or negative): the pooled relationship across countries is weak, while the within-country changes may involve a positive association which cannot be interpreted with caution.

5.3.4. RQ4: Theoretical Conclusion

The results do not completely support or refute either of the theoretical views. Export-Led Growth Theory offers possible explanations for the positive within-country effect such as the market expansion, foreign exchange and productivity channels. Dependency Theory can be used to explain why high exposure to the outside world does not necessarily result in a homogeneous growth advantage across countries and why highly exposed economies can have large fluctuations in growth. The theoretical conclusion is conditional as export composition, export diversification, export productivity and domestic value addition were not measured.

5.4. Recommendations: Practical and Theoretical

Practical recommendations should be directed towards the quality and sustainability of export activity and not just the export to GDP ratio. Governments need to diversify destination markets, limit overreliance on limited product/service lines and facilitate transition to higher value activities. Bangladesh must continue to enhance its local

supplier network, local value addition, labor and technology in export manufacturing. Maldives needs to increase its resilience to concentration in the tourism market and create other exportable services and contingency plans to external shocks on tourism. India needs to continue to upgrade and diversify its manufacturing and services sector, while Nepal and Pakistan need to build export capacity, and productive infrastructure, technology and domestic linkages. Such recommendations are in line with the heterogeneity observed and, in the literature, but the regression does not imply that diversification per se leads to higher growth.

The theoretical recommendation is that the export-led growth should not be treated as a rule of thumb for the region. Future use of Export-Led Growth Theory in South Asia needs to differentiate between export exposure and the mechanisms which transform exports into domestic productivity, value addition and learning. Dependency theories, too, need to concentrate on the focus of dependency, the asymmetry of external markets, and the lack of domestic upgrading and not on the assumption that all exports lead to dependency. It can be seen that the pooled and fixed-effects estimates differ, suggesting that theory should be examined at both the cross-country and within-country levels, if and when it is possible.

5.5. Limitations of the Research

Omitted-variable bias and reverse causality are possible in the study as it has one substantive independent variable and an observational design. The time span of 10 years is limited when it comes to studying a structural export-growth relationship and the number of country clusters is limited to seven in the fixed-effects model. The observations Maldives 2020 and 2021 have a strong influence. Export dependence is also a proxy for exposure not for export concentration, sophistication, domestic value added or destination-market diversity. The results are thus limited to the seven countries and period selected and cannot be automatically extended to other areas and does not imply causality.

5.6. Recommendations for Future Work

Future studies could include an even longer time window and consider if the within-country fixed-effects result is robust to a larger panel. More sophisticated models might include an export concentration index, export sophistication, manufacturing and services export shares, domestic value-added exports and destination-market concentration. Other macroeconomic variables may be: Foreign direct investment, imports, exchange rates, investment, human capital and productivity. Analysis for specific countries or sectors would also be useful for determining if there are certain export structures that can explain the regional heterogeneity that this dissertation found.

5.7. Final Conclusion

This dissertation finds that for the seven selected countries of South Asia; export dependence is not linearly related with economic growth. The overall evidence is weak and not statistically significant; however, the fixed-effects result suggests that change within countries may be correlated with growth controlling for stable country and common year effects. The safest speculation is thus that it is a specification-sensitive, structurally contingent relationship. Export dependence is part of growth performance and it should be analysed along with productive structure of the country, internal connections and vulnerability to external shocks.

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