Trade Openness, Financial Sector Development, and Economic Growth in South Africa, Algeria, Nigeria, and Egypt

Victoria Olutofunmi OGUNDAIRO
LCU/PG/001865

Being a PhD Thesis Submitted to the Department of Economics & Development Studies, Faculty of Management & Social Sciences, Lead City University, Ibadan, Oyo State, Nigeria

In Partial Fulfilment of the Requirements for the Award of Doctor of Philosophy Degree (PhD) in Economics

2025

Lead City University Ibadan DO NOT COPY

Certification

This is to certify that this thesis titled "Trade Openness, Financial Sector Development, and Economic Growth in South Africa, Algeria, Nigeria, and Egypt" was carried out by Victoria Olutofunmi OGUNDAIRO with Matriculation number of LCU/PG/001865 in the Department of Economics, Faculty of Management and Social Sciences, Lead City University, Ibadan, under my supervision and that this work has not been previously submitted.

……. …….

Dr. Olorunfemi Y. Alimi Date

Supervisor

……. …….

Dr. Tolulope Ogunro Date

Head of Department

Lead City University Ibadan DO NOT COPY

Dedication

This research is dedicated to almighty God, by whose grace and mercies I have come so far.

Lead City University Ibadan DO NOT COPY

Acknowledgement

Appreciation is extended to the Management of Lead City University for the opportunity given to me to pursue my Postgraduate Studies with the laudable university. My profound gratitude goes to the school library and the Postgraduate College for the necessary corrections and guidance.

I am grateful for the help I received from my supervisor, Dr. Olorunfemi Y. Alimi, who found time in his busy schedule to carefully review, advise, and mentor me while I worked on my research. I would also like to thank all the other supporting personnel who assisted me with information and materials that were essential and vital, without which I would not have been able to perform efficiently on this thesis. My profound gratitude goes to the Dean, Faculty of Management and Social Sciences, Professor Omolara Campbell and the Head of Department, Dr. T. Ogunro. I sincerely thank all other lecturers in the department of economics, Prof. Akerele W.O., Dr. Oyaromade R., Dr. Ogunjinmi O.O., Dr. Adesina O.O., Dr. Aderinto E., Dr. Emiola T.O., Mrs. Oduyoye-Ejumedia A., and Mrs. Ayodeji-Famuti F.V. for their commitment and handwork. I also appreciate all the non-academic staff in the Department. My immeasurable thanks go to my husband and children; you are indeed my goodly heritage. I sincerely appreciate my friends and brothers, Mr. Ayoola Olawale and Mr. Owoeye Olumide for their contributions towards the accomplishment of this thesis. Thank you all for your support and encouragement.

Even though the above-mentioned institutions and persons have assisted in the process of this research work, I alone stand responsible for my errors, if any, found in this work.

Lead City University Ibadan DO NOT COPY

Abstract

South Africa, Algeria, Nigeria, and Egypt (SANE) struggle with overreliance on volatile commodity exports, like oil and gas in Nigeria and Algeria, leading to boom-bust cycles and limited industrial diversification. Underdeveloped financial sectors, shallow capital markets, and poor credit access constrain investment in innovation and SMEs, hindering economic growth despite South Africa's relatively advanced banking system. Also, structural issues, including South Africa's deindustrialization and Egypt's stagnant low-tech manufacturing, combined with weak domestic policies, reduce resilience to external shocks and undermine sustainable economic growth and long-term productivity. The ARDL estimator was used after verifying stationarity at levels and first differences and cointegration validation. Findings show that, in the short run, financial sector development contributes positively to trade openness in Egypt and Nigeria, while it hinders trade openness in Algeria. In the long run, financial sector development promotes trade openness in Algeria and Egypt, but its influence is not statistically significant in Nigeria and South Africa. The long-run effect is particularly positive in Algeria and Egypt, though certain components such as domestic credit to the private sector may exert a dampening effect. Conversely, broad indicators of financial development enhance trade openness in Egypt but appear to constrain it in Algeria. Regarding economic growth, financial sector development improves short-run growth in South Africa but hinders it in Algeria and Egypt. In the long run, it supports growth in Algeria and South Africa, while its effect in Egypt remains negative. The growth-enhancing role of financial sector development in Algeria is particularly evident over time. Trade openness fosters growth in South Africa in both the short and long term but harms short-run growth in Nigeria and Egypt. It promotes long-run growth in Algeria. The interaction between trade openness and financial development generally benefits growth especially in Algeria but has mixed effects elsewhere, including a short-run negative impact in Nigeria and a long-run negative effect in South Africa.Government should expand access to domestic credit for the private sector and deepening stock markets, while implementing targeted trade policies that support industrial diversification and buffer short-run volatility to enhance economic growth in the region.

Keywords: Domestic Credit to Private Sector, Broad Money Supply, Stock Market Capitalization, Trade Openness, Economic Growth.

Word Count: 320

Lead City University Ibadan DO NOT COPY

Table of Contents

Content		Page
Title Page		i
Certification		ii
Dedication		iii
Acknowledgement		iv
Abstract		v
Table of Contents		vi
List of Tables		ix
Lit of Figures		xi
Chapter One: Introduction		
1.1	Background to the Study	1
1.2	Statement of the Problem	4
1.3	Research Questions	9
1.4	Aim and Objectives of the Study	9
1.5	Hypotheses	10
1.6	Significance of the Study	10
1.7	Scope of the Study	13
1.8	Limitation of the Study	14
1.9	Operational Definition of Terms	15
	Endnotes	17
Chapter Two: Literature Review		
2.1	Conceptual Review	21

Lead City University Ibadan DO NOT COPY

2.2 Theoretical Review 47

2.3 Review of Empirical Studies 67

2.4 Conceptual Model 107

2.5 Theoretical Framework 110

2.6 Summary of Gaps in Literature Reviewed 114

Endnotes 118

Chapter Three: Methodology

3.1 Model Specification 135

3.2 Theoretical Expectation 143

3.3 Data Description, Sources and Measurement 144

3.4 Estimation Techniques 145

Endnotes 148

Chapter Four: Results and Discussion of Findings

4.1 Preliminary Analysis 149

4.1.1. Descriptive and Trend Analysis 149

4.1.2. Correlation Analysis 160

4.2 Test of Objectives 164

4.2.1. Analysis of the First Objective 164

4.2.2 Analysis of the Second Objective 176

4.2.3 Analysis of the Third Objective 188

4.2.4 Analysis of the Fourth Objective 199

4.3 Discussion of the Findings 217

Endnotes 221

Lead City University Ibadan DO NOT COPY

Chapter Five: Conclusion

5.1	Summary of Findings	224
5.2	Conclusion	227
5.3	Recommendations	228
5.4	Contribution to Knowledge	229
5.5	Suggestions for Further Studies	230
	Bibliography	232
	Appendix	252
	Biodata	323
	The University Compliance Certification	326

Lead City University Ibadan DO NOT COPY

List of Tables

Table	Title	Page
2.1	De-facto Trade Openness Measures	37
2.2	De-jure Trade Openness Measures	39
3.1	Description and Measures of Variables	145
4.1	Descriptive Statistics	150
4.2	Correlation Matrix of S.A.N.E. Countries	162
4.3	Unit Root Test (ADF, PP and Zivot-Andrew)	165
4.4	Cointegration Test Results using ARDL Bound Test	168
4.5	Short-run Estimates of Financial Development and Trade Openness in S.A.N.E Countries	170
4.6	Long-run Estimates of Financial Development and Trade Openness in S.A.N.E Countries	172
4.7	Diagnostic and Structural Stability Tests of the Estimated Model	175
4.8	Unit Root Test (ADF, PP and Zivot-Andrew)	177
4.9	Cointegration Test Results using ARDL Bound Test	179
4.10	Short-run Estimates of Financial Development and Economic Growth in S.A.N.E Countries	181
4.11	Long-run Estimates of Financial Development and Economic Growth in S.A.N.E. Countries	183
4.12	Diagnostic and Structural Stability Tests of the Estimated Model	188
4.13	Unit Root Tests (ADF, PP and Zivot-Andrew)	189
4.14	Cointegration Test Results using ARDL Bound Test	191
4.15	Short-run Estimates of Trade Openness and Economic Growth in S.A.N.E Countries	194
4.16	Long-run Estimates of Trade Openness and Economic Growth in S.A.N.E. Countries	196
4.17	Diagnostic and Structural Stability Tests of the Estimated Model	199

Lead City University Ibadan DO NOT COPY

4.18	Unit Root Test (ADF, PP and Zivot-Andrew)	201
4.19	Cointegration Test Results using ARDL Bound Test	204
4.20	Short-run Estimates of the Role of Financial Development in the Relationship between Trade Openness and Economic Growth in S.A.N.E Countries	206
4.21	Long-run Estimates of the role of Financial Development in the Relationship between Trade Openness and Economic Growth in S.A.N.E. Countries	211
4.22	Diagnostic and Structural Stability Tests of the Estimated Models	216

Lead City University Ibadan DO NOT COPY

List of Figures

Figure	Title	Page
2.1	Conceptual Model	109
4.1a	Trend Analysis of Variables in South Africa	154
4.1b	Trend Analysis of Variables in Algeria	155
4.1c	Trend Analysis of Variables in Nigeria	156
4.1d	Trend Analysis of Variables in Egypt	157
4.2a	Trend Analysis of GDP Growth Rate in S.A.N.E. Countries	159
4.2b	Trend Analysis of Trade Openness in S.A.N.E. Countries	159
4.2c	Trend Analysis of Domestic Credit to Private Sector in S.A.N.E. Countries	159
4.2d	Trend Analysis of Broad Money Supply in S.A.N.E. Countries	159
4.2e	Trend Analysis of Stock Market Capitalization in S.A.N.E. Countries	160

Lead City University Ibadan DO NOT COPY

Chapter One

Introduction

1.1 Background to the Study

The global economy currently faces series of persistent challenges that have become the focal points of policymakers, trade spectators, financial analysts, and development economists. Several factors have persistently exacerbated these growing concerns. One prominent concern is the ongoing geopolitical conflicts (e.g., Russia-Ukraine, Middle East crises) and tension between US-China that have disrupted trade, supply chains, and investment flows. These situations contribute to global economic uncertainty such as resource shortages, energy price volatility, food insecurity, and disintegrated economic blocs. For example, business executives presently identify geopolitical risk as one of the top threats to global growth, second only to changes in trade policy[1,2].

Another significant issue is the rise of protectionist measures and trade wars, which have transformed the global dynamics. New trade barriers in 2024 were five times above average from 2010-2019 and undermined the growth in emerging economies[3]. Studies have recognized trade policy shifts as an imperative risk driver, especially in the case of North America and Greater China, where a shift in global production and logistics strategies are underway[1,2]. For instance, a renowned economist, Joseph Stiglitz, has recently condemned recent trade policy, specifically, the tariff on imports by the United States, on the grounds that such policies create an atmosphere of uncertainty, deter investment, and may even cause stagflation[4].

Yet, another major concern is that many emerging and developing economies find themselves trapped by low per capita income growth, exacerbated by debt burdens, poor financial infrastructure, high level of inequality, and insufficient investment. The income convergence of

Lead City University Ibadan DO NOT COPY

emerging and developing economies excluding China and India with high-income economies has stagnanted since the 2010s[3]. The World Bank accentuated that the world's poorest countries experience the worst economic downturn in two decades, with the condition possible to further deteriorate owing to the new global pressures[5].

Besides, the growth effect of trade openness has been extensively investigated for decades since there is a well-established and clear relationship between growth and trade openness. In its 2020 report, the World Bank highlighted that trade openness spurs growth through enhanced market access but requires stabilizing policies to offset external shocks in developing economies[6]. It also reported that open trade benefits lower-income households by providing more affordable goods and services, while integrating local market with the global economy through trade and global value chains drives economic growth and reduces poverty both locally and globally[7].

Similarly, the International Monetary Fund has observed in World Economic Outlook reports that open trade policies are needed to ensure sustainable economic growth and poverty reduction in emerging economies[8]. The research of the World Trade Organization further supports trade openness benefits by asserting that it translates into improved productivity and effectiveness in member countries through reduced trade barriers and enhanced ideas and technology exchange[9]. Furthermore, a coordinated trade integration geared towards diversification of trade partners and export products mitigate trade risks while fostering sustainable growth. When nations adopt outward-oriented policies that reduce barriers and ensure healthy competition, trade openness becomes a risk-sharing and economic upgrading tool that consolidates domestic financial systems and raises overall economic growth[10]. However, without appropriate implementation, trade openness can make economies vulnerable to volatility, underutilize physical and human capital and increase inequality[11,12]. For instance, studies have ascertained that over-reliance on exporting

Lead City University Ibadan DO NOT COPY

commodities and specialisation in low-value industries will erode potential gains from trade, thereby exposing nations to adverse terms of trade shocks[13].

Most SANE countries, in a bid to stimulate growth through trade openness, tend to compromise their trade policies (such as liberalizing markets or reducing tariffs) and clashes with the realities of asymmetrical global trade frameworks, where stringent regulatory policies imposed by affluent nations exacerbate vulnerabilities in local industries. This dynamic follows the infant industry theory, which states that developing economies require temporary protectionist policies to develop domestic industries until they become competitive[14]. Furthermore, the dependency theory finds full application among the SANE nations, asserting that even while integrating with global trade circles, developing nations still depend on affluent countries for market access, capital, and technology. This structure of dependency perpetuate inequality since the liberalization of trade policies largely resulted in the eroding of local industries because of the entry of cheap, subsidized products from developed nations, which inhibits the development of indigenous industries[15]. For example, countries like Nigeria and South Africa have faced significant challenges where heavily subsidized agricultural products from wealthier nations have reduced the competitiveness of their local agricultural sectors, making it difficult for them to diversify their economies and sustain growth[16]. In addition, SANE countries are often subjected to pressure to implement "passive" trade liberalization (such as tariff cuts or deregulation) to participate in global value chains, sometimes at the cost of domestic manufacturing industries. For example, Nigeria's overdependence on oil exports (which represent 90% of foreign exchange earnings) has rendered its manufacturing industry underdeveloped because of exposure to unstable international oil prices and subsidized imports, which has thwarted diversification efforts[14,17].

Lead City University Ibadan DO NOT COPY

Based on the discussions above, this study examines the linkages among trade openness, financial sector development, and economic growth in SANE countries, where unstable financial institutional frameworks and unfavourable trade policies have persistently hindered sustainable growth. While existing research in emerging and developing economies including the SANE countries has predominantly focused on governance channels, assessing whether weak governance and poor institutional quality are responsible for the negative impacts of trade openness on growth, few studies have comprehensively examined the broader dimensions of financial sector development (such as domestic credit to the private sector, broad money supply, and stock market capitalization)[18,19,20,21]. It is imperative to note that simply designing policies that promote favourable trade conditions and support local industries may not bring about the desired growth outcomes if the financial system responsible for implementing and monitoring financial flows, credit, and fintech innovations is faulty. As this disposition seems difficult to disagree with, there is a notable gap in empirical research, to the best of my knowledge, validating or refuting this relationship in the context of SANE countries. Thus, strong financial institutional frameworks are found key to ensure that trade openness translates into tangible improvements in the overall economic growth[22,23,24,25,26,27,28,29,30]. This research gap therefore underscores the need to explore the interplay among trade openness, financial sector development, and economic growth in SANE nations.

Lead City University Ibadan DO NOT COPY

1.2 Statement of the Problem

Over the past two decades, Sub-Saharan Africa (SSA) experienced an era of accelerated economic growth, referred to as "Africa Rising" narrative, with annual GDP growth averaging 4.8% between 1996 and 2014[13]. The scholars argued that this growth was fueled by favourable external conditions (including soaring commodity prices, China's emergence as a key trade partner, and

foreign capital inflows) alongside improved domestic macroeconomic management and robust public investment[13]. However, this growth trajectory has been uneven and fragile, particularly in SANE countries, where structural vulnerabilities persist. Historically reliant on volatile commodity exports and procyclical external borrowing, these nations remain exposed to boom-bust cycles driven by external shocks, such as fluctuating terms of trade and abrupt shifts in global financing[13].

While the "Africa Rising" period emphasized the promise of outward-oriented policies, including trade openness, to broaden market access and mitigate risks through international integration, the long-term sustainability of the model remains uncertain. SANE countries, while being economically powerful in Africa, have inherent challenges that they must address, like Nigeria and Algeria with overwhelming dependence on the exportation of oil and gas, South Africa with deindustrialization and stagnant productivity, and Egypt with macroeconomic instability amidst geopolitical tensions. Although the export-led trade policies opened more markets and foreign capital to the SANE nations, they also subjected local industries to harsh global competition and strict regulatory systems imposed by affluent trading partners. This has resulted in idle physical and human capital, especially economies that specialize excessively in extractive or low-technology sectors. Nigeria and Algeria, for instance, remain substantially reliant on hydrocarbon and other natural resource exports. Algeria's exports earn 95% of their revenue from oil and gas, and trade specialization remains in low-technology, resource-intensive products since the 1970s, which speaks to minimal structural transformation in manufacturing[31,32]. Likewise, the Nigerian economy too is crude oil-dependent, covering 75% of government revenues and more than 90% of export revenues, exposing it to commodity price fluctuations and discouraging diversification into higher value-added industries[31,33]. Egypt and South Africa, though relatively more diversified, are still dominated by low-technology manufacturing. Egypt's primary commodity-dominated

Lead City University Ibadan DO NOT COPY

exports of petroleum and agricultural produce have had minimal space to stimulate economic growth, as revealed by research that uncovered no actual link between exports and GDP growth[34]. South Africa is characterized by deindustrialization trends, even with an advanced industrial sector, as its manufacturing industry becomes more low-technology-oriented like basic metals and agro-processing, as opposed to high-technology exports[31,34]. These structural impediments pose fundamental questions regarding whether trade openness (often perceived as a catalyst for growth) can usher in long-run benefits in economies plagued by highly concentrated industries, weak diversification, and volatile financial markets.

Consequently, these dynamics have caused instability in economic growth of SANE countries through external shocks and volatile commodity prices. For example, Nigeria's GDP growth has been quite volatile with yearly rates fluctuating between around -1.8% at oil price slumps and more than 5% at boom times, as it depends so much on volatile export revenues[35]. After relatively better growth between 2011–2013, Nigeria's per capita GDP growth dipped to -4.05%, -1.71%, -0.59%, -0.26%, and -4.16% during 2016, 2017, 2018, 2019, and 2020, respectively, and rebounded into positive rates again only during 2021–2023[36]. Likewise, South Africa had moderate growth for the beginning of the last decade, dipped into negative during 2014-2016 and came back to that position in 2019 and had a robust -7.11% fall in 2020 but recovered with 3.66% in 2021 before falling to 1.056% and -0.27% in 2022 and 2023 respectively[36]. In Egypt and Algeria, commodity export dependence and terms of trade volatility internationally have assisted in generating cycles of growth that are volatile, with expansions being quickly followed by deep contractions, again indicating the destabilizing influence of trade integration in the absence of complementary domestic policy reforms[37]. Algeria experienced predominantly positive but restrained growth during 2011-2015 but dived into negative growth in 2017-2020, with a sharp -6.63% in 2020, perhaps due to shocks in the global market. Egypt, however, began in 2011-2013 with negative

Lead City University Ibadan DO NOT COPY

growth but gradually improved, showing steady growth from 2016, reaching its peak of 4.93% in 2022[36].

The critical challenges facing the financial sector development in SANE countries further hinder economic growth. Even with the theoretical contribution of financial systems to economic growth through capital mobilization and investment, structural inefficiencies and institutional weaknesses in the countries have halted development. For instance, domestic credit to the private sector in SANE countries often suffer from misallocation due to government crowding-out effects, where excessive public borrowing distorts financial resources away from profitable private enterprises[38,39]. This is compounded by underdeveloped non-bank financial institutions, such that private companies become dependent on limited bank credit, which favours established industry over new or small-scale ventures, thus discouraging diversification and productivity gains[42]. South Africa consistently has the highest percentages of domestic credit to the private sector, standing at 63.27% in 2010 and closely around 60% in the subsequent years, which is a sign of a more penetrative and developed banking system[36]. However, even in South Africa, the relatively modest growth in bank credit to the private sector, along with occasional fluctuations, suggests constraints in expanding access to finance for small and medium scale businesses, which are critical for economic growth. In contrast, Algeria and Nigeria persistently have low credit allocation rates, at 12-19% in former and less than 15% in latter[36]. This restricted bank credit retards economic activity, with investment opportunities in the private sector remaining constrained, especially for non-resource sectors that would have diversification and innovation. Egypt falls in between, reaching a modest 34.13% in 2016 but then experienced a trend of decline in subsequent years, indicating a problem in maintaining financial intermediation despite having a larger monetary base[36].

Lead City University Ibadan DO NOT COPY

Also, the stock markets in the countries are still shallow with inadequate liquidity and limited participation, and hence they diminish their ability to mobilize long-term finance for industrial and infrastructure projects[39]. South Africa has a high market capitalization between 172% and 310% of GDP, indicating a distinct and matured domestic capital markets. On the other hand, Nigeria and Eygpt, though economically more significant, boasts very low percentages of market capitalization, typically ranging from 7.47% to 33.64% and 8.15% to 38.49% in the former and latter respectively, reflecting a relatively underdeveloped stock market and linited access to equity capital for most firms[36]. Algeria reflects comparably modest figures, with market capitalization at 0.059% to 0.229%[36]. These imbalances reflect the underdevelopment of equity markets in Egypt, Nigeria and Algeria, limiting access to capital for firms and curtailing their ability to contribute to economic growth.

The challenges of financial sector development in SANE countries are also evident through their broad money to GDP ratios, highlighting significant imbalances in liquidity and financial intermediation. Algeria and Egypt both have a moderately high percentage of broad money to GDP, peaking in 2020[36]. However, both are afflicted with the problem of deploying this liquidity in productive investment, as reflected in Algeria's narrow credit extension to the private sector and Egypt's volatile credit growth[36]. Conversely, Nigeria has the lowest broad money to GDP ratios among the SANE countries, thus suggesting that the financial system is not liquid enough to finance economic activities, especially those of SMEs and other private sector investments[40]. Notwithstanding this, South Africa has a more even growth trend in broad money, but its dependence on a highly capitalized but possibly unstable stock market as opposed to bank sector credit is such that small business and home industries still face financial constraint, thereby limiting overall growth in conjunction with large-scale investment[41].

Lead City University Ibadan DO NOT COPY

1.3 Research Questions

This study addresses the following research questions:

i. What is the role of financial sector development in trade openness in South Africa, Algeria, Nigeria, and Egypt?

ii. How has financial sector development affected the economic growth in South Africa, Algeria, Nigeria, and Egypt?

iii. What is the effect of trade openness on economic growth in South Africa, Algeria, Nigeria, and Egypt?

iv. What is the mediating role of financial sector development in the links between trade openness and economic growth in South Africa, Algeria, Nigeria, and Egypt?

1.4 Aim and Objectives of the Study

The main objective of this study is to examine the relationships among financial sector development, trade openness, and economic growth in the economies of South Africa, Algeria, Nigeria, and Egypt. The specific objectives are to:

1. investigate the role of financial sector development in expanding trade openness in South Africa, Algeria, Nigeria, and Egypt.

2. analyse how financial sector development affected the economic growth in South Africa, Algeria, Nigeria, and Egypt.

3. determine the effect of trade openness on economic growth in South Africa, Algeria, Nigeria, and Egypt.

Lead City University Ibadan DO NOT COPY

4. examine the mediating role of financial sector development in the relationship between trade openness and economic growth in South Africa, Algeria, Nigeria, and Egypt.

1.5 Hypotheses

The null hypotheses for this study are stated as follows:

$H_0$1: There is no significant relationship between financial sector development and trade openness in South Africa, Algeria, Nigeria, and Egypt.

$H_0$2: Financial sector development has no significant effect on the economic growth in South Africa, Algeria, Nigeria, and Egypt.

$H_0$3: There is an insignificant relationship between trade openness and economic growth in South Africa, Algeria, Nigeria, and Egypt.

$H_0$4: Financial sector development plays no significant mediating role in the nexus between trade openness and economic growth in South Africa, Algeria, Nigeria, and Egypt.

1.6 Significance of the Study

The benefits from a well-developed financial sector and healthy trade partnerships have attracted research interest regarding the determinants of economic growth, particularly in developing nations like the SANE economies. From the literature, it is evident that there exist vast amounts of research exploring the nexus between financial sector development and economic growth, and between financial sector development and trade openness[42,43,44,45,46,47]. In addition, literature on the links between trade openness and economic growth has been extensively documented[48,49,50]. However, despite the extensive literature on these variables, there is a gap in assessing whether financial sector development is a mitigating or exacerbating factor in the relationship between

Lead City University Ibadan DO NOT COPY

trade openness and economic growth for the SANE countries. Since both finance and trade are crucial to the growth processes of SANE countries, it is important to analyze the tripartite relationship to understand how economic growth, trade openness, and financial development interact within these emerging nations.

Unbundling financial sector development into its constituent indicators (domestic credit to the private sector by banks, stock market capitalization, and broad money supply) is essential because each one of these indicators reflects different facets of the financial system that in turn affect the trade-growth nexus differently. Domestic credit to the private sector reflects the ability of banks to finance productive investments, which is essential for trade-related expansion and economic diversification. Broad money supply serves as an indicator of overall liquidity in the economy, facilitating smooth transaction flows and supporting trade finance. In contrast, stock market capitalization represents the depth and vibrancy of the equity market, offering firms alternative avenues for raising capital and enhancing investor confidence. By disaggregating these financial factors, this research identifies the specific channels through which each aspect of financial development interacts with trade openness to affect economic growth of SANE nations. Through the examination of these factors, policymakers can identify strengths, weaknesses, and opportunities for enhancing domestic credit to the private sector, trade outputs, and economic growth of SANE nations.

Another significance of the study is that it points out structural financial system gaps and trade policy gaps hindering the progress toward the Sustainable Development Goals (SDGs). By strengthening domestic credit channels, ensuring financial system efficiency, and liberalizing trade policies, this study offers actionable insights to align national strategies with SDG targets, particularly SDG 8 (Decent Work and Economic Growth), and SDG 9 (Industry, Innovation, and

Lead City University Ibadan DO NOT COPY

Infrastructure). Financial sector development enables access to credit for SMEs and innovation-driven industries, fostering job creation and infrastructure investment. For instance, deepening stock markets can mobilize long-term capital for sustainable infrastructure projects, such as renewable energy systems, which are vital for industrial growth and decarbonization[51,52]. However, SANE countries face challenges like shallow capital markets and credit misallocation, where public borrowing crowds out private investment, issues that undermine productivity gains and SDG-aligned industrialization. It also aligns with SDG 10 (Reduced Inequalities) because pairing trade openness with inclusive financial policies can reduce inequality by integrating marginalized sectors into global value chains. However, in SANE nations, weak regulatory frameworks often skew credit distribution toward established industries, exacerbating regional and income disparities. Additionally, improved financial and trade policies can support SDG 1 (No Poverty) by creating new economic opportunities and SDG 17 (Partnerships for the Goals) through enhanced international cooperation and integration into global markets.

Also, this study is timely given the legacy of the Millennium Development Goals (MDGs) in the SANE countries which, despite notable progress, still face significant challenges. These countries made concerted efforts to achieve the MDGs, focusing on poverty reduction, improved health and education, and infrastructure development. However, weak financial institutions, limited access to credit, and persistent trade barriers hindered their progress and underscored the need for more robust policy frameworks. By examining the interplay between trade openness, financial sector development, and economic growth, this research aims to identify strategic interventions that can overcome these challenges and set the stage for sustained development, thus ensuring that the gains made under the MDGs are not only preserved but also enhanced under the broader SDG agenda.

Lead City University Ibadan DO NOT COPY

1.7 Scope of the Study

This study employs time series data from 1986 to 2022, sourced from the 2024 World Bank's database (World Development Indicators), to examine the interrelationship among financial sector development, trade openness, and economic growth. The chosen period, spanning the eras of the MDGs and the SDGs, enables the capture of various development phases experienced by the selected countries, ranging from early structural reforms to more recent efforts at achieving sustainable growth. The focus on SANE countries is particularly justified given their substantial role in Africa's overall economic landscape. Specifically, they include: (a) collectively, these nations account for over 40% of sub-Saharan Africa's GDP, making them critical drivers of regional growth[36]. (b) these economies have undergone diverse reform trajectories and faced unique challenges in financial sector development and trade integration, which provide a rich context for exploring how such factors influence broader economic performance. (c) their experience with economic liberalization and ongoing efforts to modernize financial markets and trade policies make them ideal case studies for understanding the dynamics that underpin sustainable development in emerging economies. (d) under Dr. de Kock's leadership, South Africa adopted a monetary targeting policy that became a cornerstone of its monetary framework. Concurrently, Algeria, guided by IMF loan conditionalities, implemented economic reforms including trade liberalization to mitigate the reverse oil shock of 1986, and on August 19, 1986, undertook a major overhaul of its banking industry to establish core public bank values and harmonize regulatory laws. In the same period, the Egyptian government reduced tariffs by 50% across the board and eliminated import licensing to further integrate its economy. Similarly, Nigeria implemented the Structural Adjustment Programme within its financial sector as part of a broader strategy to reform its economy.

Lead City University Ibadan DO NOT COPY

1.8 Limitation of the Study

While this study provides valuable insights into the relationships among trade openness, financial sector development, and economic growth in South Africa, Algeria, Nigeria, and Egypt, it is not without limitations. One of the primary limitations lies in its country-specific focus. Although the selected SANE countries represent a mix of African economies, the findings may not be generalizable to other regions or countries with different institutional structures, economic characteristics, or development levels. The context-specific nature of the results implies that the conclusions drawn may not be directly applicable to other emerging or developing economies, particularly those outside Africa.

Additionally, the study relies on secondary macroeconomic data spanning from 1986 to 2022. While this long timeframe allows for the analysis of long-run relationships, it also introduces potential issues related to data quality, measurement errors, and inconsistencies, particularly in countries with less transparent or less reliable statistical systems. The proxies used for key variables, such as domestic credit to the private sector, broad money supply, and stock market capitalization to represent financial sector development, may not capture the full spectrum of financial activity, especially in economies where informal financial systems play a significant role.

Furthermore, the study focuses on the existence and magnitude of long-run relationships but does not delve into the issue of causality. While correlations are established, the direction of influence, whether financial development drives growth or vice versa, is not rigorously tested. The absence of techniques such as Granger causality tests or vector error correction models limits the ability to infer policy-relevant cause-and-effect dynamics.

Lead City University Ibadan DO NOT COPY

Another important limitation is the study's use of aggregate economic indicators such as GDP growth, which may mask variations across different economic sectors or population groups. By not examining sectoral effects or distributional outcomes, the study overlooks how financial development and trade openness might differentially impact agriculture, industry, or services, or how they affect income inequality, employment, and poverty reduction.

The study also identifies divergent short-run and long-run effects in some countries but does not analyze the transitional processes that lead from short-term disruptions to long-term outcomes. Understanding the lag effects and adjustment mechanisms would have provided more comprehensive insights for policy implementation, especially in managing trade liberalization and financial reforms.

Finally, the uniform application of financial development indicators across all countries assumes comparability in their economic meaning and relevance. However, financial structures vary widely among the SANE countries. For example, the role and influence of stock market capitalization may be more pronounced in South Africa than in Nigeria, where capital markets are relatively underdeveloped. This heterogeneity could affect the comparability and interpretation of the results.

Recognizing these limitations is crucial for contextualizing the study's findings. Future research should consider exploring causality and sector-specific effects, and expanding the analysis to other regions for broader generalizability. Such efforts would deepen the understanding of the trade-finance-growth nexus and provide more targeted policy recommendations.

1.9 Operational Definition of Terms

Trade: Trade refers to the exchange of goods and services within a nation (internal trade) or between nations (international or foreign trade).

Lead City University Ibadan DO NOT COPY

Trade Liberalization: Trade liberalization is the process of reducing or eliminating trade barriers such as tariffs, quotas, and subsidies to foster a more open and competitive international market.

Trade Openness: Trade openness is an indicator of how integrated an economy is with the global market, typically measured by the ratio of total trade (exports plus imports) to GDP.

Financial Sector Development: Financial sector development refers to the enhancement of financial institutions and markets in terms of accessibility, efficiency, and stability, which facilitates improved capital mobilization and economic growth.

Financial Repression: Financial repression comprises government policies that restrict the efficiency of financial markets, including measures like interest rate ceilings and directed credit that inhibit optimal capital allocation.

Domestic Credit to Private Sector: Domestic credit to the private sector, expressed as a percentage of GDP, measures the extent of credit provided by financial institutions to private enterprises, reflecting the level of financial intermediation in an economy.

Broad Money Supply: Broad money supply represents the total amount of money in circulation, including cash, deposits, and other liquid assets, as a share of GDP, indicating the overall liquidity available in the economy.

Stock Market Capitalization: Stock market capitalization is the total market value of all publicly traded companies in a country, expressed as a percentage of GDP, which serves as an indicator of the development and depth of the equity market

Economic Growth: Economic growth is the sustained increase in an economy's output of goods and services, typically measured by the growth rate of real GDP over time.

Lead City University Ibadan DO NOT COPY

Endnotes

1. McKinsey & Company. *Economic Conditions Outlook 2024* (McKinsey & Company, 2024). Available at https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/economic-conditions-outlook-2024#/

2. Deloitte. *Global Economic Outlook 2024* (Deloitte Insights 2024). Available at https://www2.deloitte.com/us/en/insights/economy/global-economic-outlook-2024.html

3. P. Selcuk & G. Vasishtha. *The global economy in five charts: the outlook for 2025–26*. World Bank 2025. Available at https://blogs.worldbank.org/en/developmenttalk/the-global-economy-in-five-charts--the-outlook-for-2025-26

4. The Guardian. *Trump policies make US 'scary place to invest' and risk stagflation, says Stiglitz*. The Guardian 2025.

5. M. John. *Brace! risks stack up for the global economy in 2025*. Thomson Reuters 2024. Available at https://www.thedailystar.net/business/global-economy/news/brace-risks-stack-global-economy-2025-3784031

6. World Bank. *World development report 2020*: trading for development in the age of global value chains. World Bank 2020. Available at https://www.worldbank.org/en/publication/wdr2020

7. World Bank. *Stronger open trade policies enable economic growth for all*. World Bank, 2018. Available at https://www.worldbank.org/en/results/2018/04/03/stronger-open-trade-policies-enables-economic-growth-for-all

8. International Monetary Fund. *World economic outlook: challenges to steady growth*. 2018. Available at https://www.imf.org/-/media/Files/Publications/WEO/2018/October/English/main-report/Text.ashx

9. World Trade Organization. *World trade report 2015*. Available at https://www.wto.org/english/res_e/booksp_e/world_trade_report15_e.pdf

10. African Development Bank. *African economic outlook: macroeconomic developments in Africa*. African Development Bank 2020. Available at https://www.afdb.org/sites/default/files/documents/publications/afdb20-04_aeo_supplement_full_report_for_web_0705.pdf

11. International Monetary Fund. *World economic outlook: a long and difficult ascent*. 2020. Available at https://www.imf.org/en/Publications/WEO

12. World Bank. *Global economic prospects: slow growth, rising inequality*. World Bank 2021. Available at https://www.worldbank.org/en/publication/global-economic-prospects

13. C. Calderón & C. Cantú. *Trade integration and growth evidence from Sub-Saharan Africa*. World Bank Group Policy Research Working Paper 8859, 2019. Available at

https://documents1.worldbank.org/curated/en/229231558366737099/pdf/Trade-Integration-and-Growth-Evidence-from-Sub-Saharan-Africa.pdf

14. S. Silajdzic, & E. Mehic. *Trade openness and economic growth: empirical evidence from transition economies*. In Trade and global market. IntechOpen 2018.

15. B. N. Ghosh. *Dependency theory revisited*. London: Routledge, 2019.

16. S. Abendin, & P. Duan. *International trade and economic growth in Africa: the role of the digital economy*. **Cogent Economics & Finance**, 9(1), 2021, 1911767.

17. United Nations Conference on Trade and Development. *Africa's $3.4 trillion opportunity: turning vulnerabilities into resilience*. UNCTAD, (10th February, 2025). Available at https://unctad.org/news/africas-34-trillion-opportunity-turning-vulnerabilities-resilience

18. T. Akinlo, & C. O. Okunlola. *Trade openness, institutions and economic growth in Sub-Saharan Africa*. **Jurnal Perspektif Pembiayaan Dan Pembangunan Daerah**, 8(6), 2021, 541-560.

19. E. Duodu, & S. T. Baidoo. *How does quality of institutions affect the impact of trade openness on economic growth of Ghana*? **Cogent Economics & Finance**, 8(1), 2020, 1812258.

20. M. A. Sheikh, & M. A. Malik. *The nexus of trade openness, institutions and economic growth: An empirical investigation of BRICS countries*. **Foreign Trade Review**, 56(2), 2021, 206-215.

21. L. A. Asamoah, E. K. Mensah, & E. A. Bondzie. *Trade openness, FDI and economic growth in sub-Saharan Africa: do institutions matter*? **Transnational Corporations Review**, 11(1), 2019, 65-79.

22. J. Afolabi. *Financial development, trade openness, and economic growth in Nigeria*. **Iranian Economic Review**, 26(1), 2022, 237-254.

23. I. Mohamed Sghaier. *Trade openness, financial development and economic growth in North African countries*. **International Journal of Finance & Economics**, 28(2), 2023, 1729-1740.

24. N. R. Ramírez-Rondán, M. E. Terrones, & A. Vilchez. *Does financial sector development affect the growth gains from trade openness*? **Review of World Economics**, 156(3), 2020, 475-515.

25. C. H. Ho, N. N. Pham, & K. T. Nguyen. *Economic growth, financial development, and trade openness of leading countries in ASEAN*. **The Journal of Asian Finance, Economics and Business**, 8(3), 2021, 191-199.

26. W. Belazreg, & K. Mtar. *Modelling the causal linkages between trade openness, innovation, financial development and economic growth in OECD countries*. Applied Economics Letters, 27(1), 2020, 5-8.

27. R. Radmehr, E. B. Ali, S. Shayanmehr, S. Saghaian, E. Darbandi, E. Agbozo, & S. A. Sarkodie. *Assessing the global drivers of sustained economic development: the role of trade openness, financial development, and FDI*. **Sustainability**, 14(21), 2022, 14023.

28. K. Mtar, & W. Belazreg. *On the nexus of innovation, trade openness, financial development and economic growth in European countries: new perspective from a GMM panel VAR approach*. **International Journal of Finance & Economics**, 28(1), 2023, 766-791.

29. I. M. Sghaier. *Does financial development affect the economic growth gains from trade openness*. **Economic Alternatives**, 4, 2020, 666-682.

30. R. Rani, & N. Kumar. *Panel data analysis of financial development, trade openness, and economic growth: Evidence from BRICS countries*. **Emerging Economy Studies**, 4(1), 2018, 1-18.

31. M. yndrini & M. Batuo. *The trade specialization of SANE: evidence from manufacturing industries*. **European Journal of Comparative Economics**, 7(1), 2010, 145-178.

32. M. Alessandrini & M. Enowbi Batuo. T*he trade specialization of SANE: evidence from manufacturing industries*. MPRA (2008). Available at https://mpra.ub.uni-muenchen.de/13216/1/MPRA_paper_13216.pdf

33. C. Juma. *How Africa can transition from extractive industries to learning economies*. Harvard Kennedy School: Belfer Center for Science and International Affairs (May 5th, 2016). Available at https://www.belfercenter.org/publication/how-africa-can-transition-extractive-industries-learning-economies

34. P. Siyan. *Empirical investigation of exports and economic growth: evidence from SANE countries, 1980-2016*. **Asian Development Policy Review**, 7(4), 2019, 318-354.

35. International Monetary Fund. *World economic outlook: a long and difficult ascent*. 2020 https://www.imf.org/en/Publications/WEO

36. World Bank. *World development indicators*. World Bank 2024.

37. African Development Bank Group. *African Economic Outlook 2020: Macroeconomic developments in Africa*. African Development Bank Group, 2020. https://www.afdb.org/en/knowledge/publications/african-economic-outlook

38. M. B. Ogunniyi, O. Iwegbu, & K. I. Adekoya. *A comparative analysis of the impact of current account balances on economic growth of SANE countries*. **International Journal of Development and Sustainability**, 7(3), 2018, 1220 – 1237.

39. United Nations Economic Commission for Africa. *Effective financial markets, key to sustainable development in Africa*. UNECA (24th October, 2024). Available at https://www.uneca.org/stories/effective-financial-markets%2C-key-to-sustainable-development-in-africa-0

40. International Monetary Fund. Global Financial Stability Report. International Monetary Fund, 2022. Available at https://www.imf.org/en/Publications/GFSR

41. African Development Bank. African Economic Outlook 2020. African Development Bank, 2020. Available at https://www.afdb.org/en/knowledge/publications/african-economic-outlook

42. R. M. Adeel-Farooq, N. A. A. Bakar, & J. O. Raji. *Financial sector development and economic growth: a co-integration analysis for ASEAN countries*. **International Journal of Economic Policy in Emerging Economies**, 13(3), 2020, 195-208.

43. M. Maciejewski, & A. Głodowska. *Economic development versus the growing importance of the financial sector: Global insight*. **International Entrepreneurship Review**, 6(3), 2020, 77-90.

44. A. A. Akintola, I. Oji-Okoro, & I. A. Itodo. *Financial sector development and economic growth in Nigeria: An empirical re-examination*. **Economic and Financial Review**, 58(3), 2020, 59-84.

45. N. R. Ramírez-Rondán, M. E. Terrones, & A. Vilchez. *Does financial sector development affect the growth gains from trade openness*? **Review of World Economics**, 156(3), 2020, 475-515.

46. S. K. Gnangnon. *Trade openness and diversification of external financial flows for development: an empirical analysis*. **South Asian Journal of Macroeconomics and Public Finance**, 9(1), 2020, 22-57.

47. C. H. Ho, N. N. Pham, & K. T. Nguyen. *Economic growth, financial development, and trade openness of leading countries in ASEAN*. **The Journal of Asian Finance, Economics and Business**, 8(3), 2021, 191-199.

48. C. Raghutla. *The effect of trade openness on economic growth: some empirical evidence from emerging market economies*. **Journal of Public Affairs**, 20(3), 2020, e2081.

49. M. R. Malefane. *Trade openness and economic growth in Botswana: evidence from cointegration and error-correction modelling*. **Cogent Economics & Finance**, 8(1), 2020, 1783878.

50. A. Jalil, & A. Rauf. *Revisiting the link between trade openness and economic growth using panel methods*. **The Journal of International Trade & Economic Development**, 30(8), 2021, 1168-1187.

51. Centre for International Governance Innovation. *The financial sector and the SDGs: interconnections and future directions*. Centre for International Governance Innovation paper no. 201 (27th November, 2018). Available at https://www.cigionline.org/publications/financial-sector-and-sdgs-interconnections-and-future-directions/

52. United Nations. *Financing and funding the SDGs: challenges vs. solutions*. United Nation (December 7, 2022). Available at https://www.un.org/en/academic-impact/financing-and-funding-sdgs-challenges-vs-solutions

Chapter Two

Literature Review

This chapter provides a review of related concepts, theories and empirical studies on financial sector development, trade openness, and economic growth. The first section reviews the concepts of financial development, trade openness, and economic growth, along with the available measurement tools, and outlines how these variables interact. The second section entails the theoretical review of related studies. The third section is dedicated to reviewing extant empirical studies related to this study. The conceptual framework and theoretical framework are discussed in the fourth and fifth sections. Finally, the gaps in literature reviewed are presented in the last section.

2.1 Conceptual Review

The study of financial development, trade openness, and economic growth will be beneficial as it gives insight into many interesting issues. This section consists of definitions that are given for explanation; then some clarification is made on measurement issues; and finally, the functions of the financial sector and openness to trade and its impact on economic growth.

2.1.1 Financial Sector Development

The financial system is a sector of the economy made up of financial markets and institutions that provide financial instruments to their customers[1,2]. The financial system is the structure of legally binding contracts, institutions, and both formally recognised and unrecognised economic actors that work to facilitate the smooth flow of capital for use in financing trade and investment[3]. The

Lead City University Ibadan DO NOT COPY

financial system is a medium that first aggregates and then divides public savings into the various economic sectors that make up the economy[4].

The financial system of a nation consists of its financial markets (for example, stocks, bonds, and financial derivatives), financial institutions (such as banks, insurance companies, and other nonbank financial institutions), and financial infrastructure (for example, credit information-sharing systems and payments and settlement systems)[5,6]. Financial institutions are organisations that offer financial services to consumers, businesses, and other firms. Examples of such organisations include commercial banks, credit unions, insurance companies, investment funds, finance companies, microfinance institutions, stock brokerage firms, and asset management firms[6].

Financial markets, such as bond markets, equity markets, and money markets, are places where people and businesses can trade securities, including equities, currencies, bonds, and derivatives. Generally, the financial market is divided into the money market and the capital market. The money market is the market where money is invested for periods of up to one-year maturity[7]. The capital market is a market where borrowing and lending of medium- and long-term instruments takes place involving both debt and equity, like shares, debentures, bonds, etc. The capital market includes the stock market (equity securities) and the bond market (debt). It is a market that mobilises and makes use of a long-term loan for sustained economic growth, which is the main goal of any economy[8,9]. A financial instrument is any asset that holds capital and can be traded in the market, such as cheques, shares, stocks, bonds, and securities, among others[8].

Financial development is the process of bringing in more financial sector assets or securities to the economy. The aim of lowering the costs of assessing information, enforcing contracts, and carrying out transactions is to make financial contracts, markets, and intermediaries emerge[10].

Lead City University Ibadan DO NOT COPY

The definition of financial development is grounded in the theory of transaction costs and is regarded as a decrease in transaction costs associated with changing illiquid to liquid assets. However, to lower transaction costs, the volume of transactions must increase because both the lender and the borrower will benefit. This is caused by market equilibrium, where buyers benefit when prices rise, and sellers gain due to a fall in price[11]. Financial development can be defined as improvements in the depth, efficiency, and access of financial institutions and markets, primarily as viewed from the standpoint of the banking system and stock market[12].

Some studies argue that stability is inclusive of the characteristics of the financial system (depth, efficiency, and access). Therefore, such researchers defined financial development as the expansion of the size, efficiency, access, and stability of the financial sector. It entails the development of institutions, markets, and instruments that promote investment and growth[5]. In another view, financial development refers to financial widening and financial deepening[13]. The first term entails the expansion of financial services to boost institutional growth, while the second term is an increase in the proportion of financial services consumed per capita, which is reflected in the financial assets to income ratio[14]. Financial development is also referred to as financial liberalization. In other words, financial development is defined as the process of reducing financial system distortions. For instance, since prices set by national authorities frequently fall into one of two categories underpriced or overpriced, they should be left up to the market mechanism for financial services provided by financial institutions. The ability of financial markets to operate effectively is hampered by incorrect price setting. The development of the financial sector is unquestionably hampered by these distortions. Market distortions like these lead to a decline in savings and capital accumulation. The allocation of resources is directly harmed by this, and it is not done effectively. These problems imply that financial liberalisation will enhance market exchanges in the financial sector[15].

Lead City University Ibadan DO NOT COPY

Financial development is the process of lowering the costs associated with gathering knowledge, upholding agreements, and carrying out transactions[6]. In other words, it refers to the degree of innovation and development of both conventional and unconventional financial services[16]. Financial development refers to the ability of the financial institution to effectively and efficiently distribute savings for investment purposes[17].

1) Functions of Financial Systems

The literature identifies capital accumulation and total factor productivity as two distinct pathways through which the development of the financial system may promote economic growth. The capital accumulation channel is concerned with how effectively the financial system can mobilise savings to solve any indivisibility. As a result of these savings being invested in profitable businesses, there is an increase in growth rate and the accumulation of physical capital. The total factor productivity channel, on the other hand, is concerned with technical advancements and how they can reduce the informational asymmetry that leads to an inefficient distribution of the resources that are available[12]. These outcomes are directly related to the core operations of a financial system, which form the cornerstone of any comprehension of the link between financial development and economic expansion. A financial system can perform the following five tasks[18].

a) Provision of Information about Investment Opportunities: Mostly, there is an information asymmetry where lenders have less information about the investment than the borrowers, thereby making savers reluctant to invest in projects with little information. If individuals are to evaluate businesses, managers, and market conditions by themselves, it could be time- and money-consuming. Individual savers might not have the time, resources, or ability to gather and analyse data on a variety of businesses, managers, and economic conditions[19]. The high cost of information disrupts the free flow of capital to its maximum value. The financial system may lower the cost of

Lead City University Ibadan DO NOT COPY

accessing information, which may cause an efficient allocation of resources[20]. Easy and affordable access to information on the economic conditions of investment can stimulate economic growth as funds are allocated effectively[12].

b) Corporate Governance: Corporate governance is the system of rules, policies, and processes by which companies are directed and controlled. The level to which capital providers of a firm monitor the usage of funds influences the savings rate and resource allocation. Therefore, financial intermediaries monitor borrowers after disbursing loans to ensure that they use the funds as promised, and savers must receive their money at the speculated time. Contrarily, if the company does not have a concrete financial intermediary, it may result in poor allocation of funds for profitable investments and also hinder the mobilisation of savings from agents[21]. For example, capital may move from countries with low levels of capital to those with high levels, but the latter have strong financial intermediaries who can exercise corporate control. Therefore, insufficient financial intermediation will lead to a less-than-ideal distribution of capital[20].

c) Facilitating Trading, Diversification, and Management of Risk: Generally, investment is risky due to information asymmetry and exogenous events. There are three categories of risk: cross-sectional risk diversification, liquidity risk, and inter-temporal risk sharing. Cross-sectional risk refers to hazards associated with projects of individuals, firms, industries, regions, and countries. The financial system can alleviate such risk as it provides means to pool and diversify risk. The capacity of the financial system to offer risk diversification services can modify resource allocation and savings over the long run. The fundamental instinct is simple. Even though savers generally dislike risk, high-return projects are typically riskier than low-return ones. Therefore, financial markets that facilitate risk diversification tend to cause a portfolio shift in favour of investments with higher expected returns[12]. Secondly, there may be liquidity risk. Liquidity

Lead City University Ibadan DO NOT COPY

measures the speed and cost at which agents can transform financial instruments into money at stated prices. The risks involved in converting assets into a medium of exchange cause liquidity risk. Liquidity restrictions and increased liquidity risk may be caused by information asymmetries and transaction costs. These conflicts encourage the development of financial markets and institutions that increase liquidity[22]. The conventional relationship between liquidity and economic growth results from the fact that some high-return projects call for a long-term commitment of capital, but savers dislike giving up control of their savings for an extended period of time. Thus, less investment is likely to be made in high-return projects if the financial system does not increase the liquidity of long-term investments, and vice versa.

d) Savings Mobilisation: The process of mobilising funds from savers to borrowers is cumbersome and expensive. The mobilisation of savings involves two costs. First, the cost of overcoming information asymmetry to enable savers to feel confident to release their savings, which enables the provision of adequate information on investment. The second is the cost of gathering savings from various people. Savings mobilisation can take place through intermediaries, where savers entrust their money to financial intermediaries that borrow from companies for investment. To achieve this, intermediaries must be able to convince savers of the benefits of the investments. Therefore, intermediaries bother about gaining a high reputation to enable savers to entrust their money[23]. Financial systems that are better at maximising individual savings can have a significant impact on economic growth by boosting savings, overcoming investment indivisibilities, and utilising economies of scale. In addition to having a positive direct impact on capital accumulation, better savings mobilisation can also enhance resource allocation and foster technological advancement[23].

Lead City University Ibadan DO NOT COPY

e) Facilitation of Exchange of Goods and Services: As the economy diversifies from a barter system to a currency system, trade is simplified. The financial system also facilitates trade as it supports future payments for commodities purchased, which makes the economy efficient. To aid the mobilisation of savings, any financial arrangements that reduce transaction costs may enhance specialisation, technical advancement, and growth. It is generally argued that a decrease in transaction costs, specialisation, and innovation promotes the output of goods and services[24]. Adam Smith's Wealth of Nations placed a strong emphasis on the connections between stimulating transactions, specialisation, innovation, and economic growth. He claimed that specialisation is the core driver of productivity. Workers are more likely to create better machines or production processes when they are more specialised. He concentrated on the role that money plays in promoting technological innovation, enabling greater specialisation, and reducing transaction costs[24]. The emergence of money, however, may also be driven by information costs. Barter exchange is very expensive because it is expensive to assess the qualities of goods. To facilitate exchange, a readily identifiable medium of exchange may emerge.

2) Measures of Financial Development

Most of the data on financial development at the macro-level is costly and difficult to manage, and consequently, it is derived from international organizations. Most measures of financial development are sourced from the World Bank Development Indicators (WDI) and the International Monetary Fund (IMF). Other sources are the Statistical Bulletins of Central Banks, the World Bank financial development and structure database (FDS), Global Financial Development Indicators (GFDI), International Financial Statistics (IFS), and Stock Exchange Annual Reports, among others.

Lead City University Ibadan DO NOT COPY

Financial development is defined as a combination of depth (size and liquidity of markets), access (ability of individuals and companies to access financial services), efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets), and stability. Due to the diversity of financial services provided by the financial system and the existence of a diverse array of agents and institutions involved in financial intermediation activities, finding an objective major to accommodate every corner is quite a difficult task. However, financial sector development measures can be categorised into banking sector and capital market indicators.

a) Banking Sector Measures

The indicators of the banking sector include private sector credit to GDP, broad money supply to GDP (M2), financial institution assets to GDP, deposits to GDP, gross value added of the financial sector to GDP, percentage of people with a bank account, branches per 100,000 adults, lending-deposit spread, overhead costs, liquidity ratio, etc.

b) Domestic Credit to the Private Sector

Domestic credit to the private sector as a percentage of the gross domestic product is a widespread indicator of financial deepening. "*Domestic credit to the private sector as a proxy for financial development refers to financial resources provided to the private sector by financial corporations, such as loans, purchases of non-equity securities, trade credits, and other accounts receivable, that establish a claim for repayment*"[25]. In other words, it reflects claims by commercial banks against the private sector in relation to economic activities and also reveals the function of financial intermediaries in mobilising savings for private sector investment. The variable is argued to be a better indicator of financial development as the private sector is able to efficiently utilise funds

Lead City University Ibadan DO NOT COPY

relative to the public sector; neglecting credit to the private sector indicates the level of productive resource allocation.

However, domestic private sector credit is a limited indicator of financial development since it only considers the private sector and neglects all other sectors like the public sector and government[26,27]. Extensive literature has documented that a high ratio of domestic credit to the private sector divided by GDP is, in general, associated with higher economic growth[28, 29, 30, 31, 32]. For instance, the financial depth captured by domestic credit to the private sector has a high and stable significant impact on long-term economic growth[33]. In a similar manner, expanding domestic credit to the private sector will boost economic activity and investments, thereby enhancing economic performance[34]. In contrast, some researchers argue that excessive financial development depletes human capital, increases financial instability, and makes an economy more susceptible to economic failure when financial depth is determined by domestic credit to the private sector[35]. However, some studies show an unstable link between financial development and economic growth[36].

c) Broad Money

Broad money as a percentage of GDP: The term "broad money" (M2) refers to a measure of the money supply that includes more than just actual currency and coins (otherwise called narrow money). All demand deposits held at commercial banks and any funds kept in accounts with easy access are typically included[17]. All M2 components are very liquid, and the non-cash components also have a higher level of liquidity. M2 also captures all financial intermediation and financial institutions, such as commercial banks, central banks, and other financial institutions in a country. Diverse researchers have used broad money to measure financial development, but the result of the link with the growth of an economy varies. There is a myriad of evidence for positive influence

Lead City University Ibadan DO NOT COPY

between the variables[28, 37, 38, 39, 40]. Similarly, some studies have established that M2 slows down growth rate[41, 42]. However, M2 may not have substantial impact on growth of economy[43,44].

d) Liquid Liabilities M3

Some studies used the ratio of liquid liabilities to GDP (M3) to show variations and increases in the liquidity of the financial sector over time. This illustrates the significance of financial growth in developing countries as it increases monetization, which is crucial for the integration of financial institutions and subsequent developments. A number of studies used the proxy and reported an interesting outcome[29].

e) Capital Market Measures

Financial market measures are stock market capitalization, stock traded to GDP, ratio of domestic to total debt securities, turnover ratio of the stock market, turnover of bonds on the securities exchange, etc.

f) Market Capitalization

The market capitalization is calculated by multiplying the share price by the number of outstanding shares. This proxy of capital market depth is used to determine the level of capital market development in relation to economic growth[8]. It is the most commonly used indicator for determining the financial development of the stock exchange market[45]. Some studies have utilised the variable, which has resulted in diverse outcome[46,47,48,45,7, 49].

g) Market Turnover Ratio

The market turnover ratio is a measure of financial market efficiency and can be calculated as the ratio of the value of all shares traded to market capitalization. It closely reflects the level of market

Lead City University Ibadan DO NOT COPY

liquidity and the consequences for information, price, and investor confidence[50]. The proxy is commonly used in research and may have a diverse impact on economic growth[48,51,52].

2.1.2 Trade Openness

Conceptually, trade openness is related to trade liberalisation, which is explained by different researchers and institutions. For instance, trade openness is the process of obtaining the phenomenon of rising global trade integration[53]. Trade openness is described as the level of economic orientation of a country towards international trade[54]. In a political sense, trade openness is described as a lack of constraints or a liberal approach to trading. In other words, trade openness refers to how much a home country allows other countries to trade with it[55]. The term "trade openness" refers to the lowering or complete elimination of tariffs on goods and services, as well as the removal of subsidies, import quotas, and other nontariff trade barriers[56]. Likewise, trade openness entails the elimination or reduction of exchange regulations, unrestricted access to the market and market knowledge, decreasing the influence of monopolies and oligopolies, creating free trade zones, and allowing for the free movement of people and goods between countries and within them[57].

1) Benefits of Trade Openness

Below are some of the benefits that can accrue to a nation as it becomes more open to trade:

a) Structural Economic Changes: Trade openness encourages greater interaction between trading nations as information on producing and consuming commodities is shared. For instance, goods and services traded between countries are used to ascertain the behaviour and preferences of consumers. Thus, international trade causes modifications to the production of goods and services in order to satisfy consumer preferences. Consequentially, an increase in interaction

Lead City University Ibadan DO NOT COPY

among countries causes firms to alter their production structure as consumers' preferences and behaviours change. Thus, global trade leads to structural economic changes, which may boost social welfare[58].

b) Technological Improvement: Countries with low levels of technology acquire more technologies as they open up to international trade. When interaction between countries increases, trade helps to discover innovation as knowledge is transferred between countries. Additionally, increased trade openness promotes the discovery of new products and effective processes for producing goods and services. Thus, as trade openness rises, technology can be easily transferred among trading nations[31]. Similarly, the exporter interacts with the importer, and this may help to access the useful information required to develop new technology that will improve the quality of the product[60].

c) Enhanced Competition: Openness to trade increases the market size of a country as more products flow into it. Thus, local firms face greater competition with foreign firms in the domestic market[61]. Increased competition among firms may result in the production of quality products and the development of innovations that may be used to differentiate products from rivalry products, as only efficient firms may survive in the market. This may result in an enhancement of consumer welfare in the trading nations.

d) Lower Costs of Living: The removal of trade restrictions may result in lower costs of living for consumers. For instance, eliminating food tariffs in the United States may aid in lowering the price of agricultural commodities globally. Benefits from this would accrue to nations that import food, such as China[62].

Lead City University Ibadan DO NOT COPY

e) Specialisation: Trade openness enables nations to focus on producing goods and services where they have a comparative advantage. Thus, there is a net improvement in the state of the economy[63].

f) Economies of Scale: With the assumption of perfect competition in all markets and a constant return to scale under classical trade theory, international trade occurs based on comparative advantage. In addition, the assumptions of increasing return to scale in new trade theory enable foreign trade to also occur based on economies of scale that benefit firms, product differentiation, and technical advancements[61]. However, any firm that operates at economies of scale will have a greater level of efficiency and produce at a lower cost. These will enable such firms to produce on a large scale and sell at a lower price, thereby making the market unbearable for other competitors, which may result in the shutting down of the inefficient firms. As a result, as trade opens up to global markets, firms utilise the advantage of economies of scale, and products are sold at a lower price. Thus, trade openness promotes consumer welfare, and only viable firms remain in the market[37]. The benefits of trade openness are summarised as follows: reduction of poverty, accessibility of a larger market, no restriction on the quantity of goods, aid standards to be harmonized, concentrate on globalization, decrease production costs, foster economic growth, compensation for revenue loss, and elimination of import taxes[65].

2) Challenges of Trade Openness

a) Trade Deficit: One of the challenges of trade openness is that developing countries might not be able to predict their export rate, although they can determine their level of openness to importation. Some factors determine the rate of export, such as the price of goods exported recently and the accessibility of infrastructure, labour, and raw materials. The prices of exports of commodities from developing countries have also significantly decreased, which can cause a rise in trade deficits. As a result, there is a shortage of capital, which the nation must fill either by

Lead City University Ibadan DO NOT COPY

borrowing from other countries or permitting other countries to invest in its assets. Although lending and investment from other countries can stimulate economic growth, it may be costly for developing nations. For instance, Malaysia, Indonesia, and Thailand had a large trade deficit in the 1990s, which they complemented by relying on foreign investors[66]. However, the investors backed out during the Asian financial crisis in 1997, which worsened the ripple effect[67].

b) Exploitation of Labour and Resources: Developed nations occasionally sign trade agreements with developing nations to take advantage of poor labour regulations. For example, China has been known to use low-income, exploited workers to produce cheaper goods[68]. Additionally, some developing nations have poorly enforced environmental laws that enable foreign investors from developed nations to import certain resources for production, which endanger the environment. This leads to long-lasting environmental harm as well as violations of human rights[69,70].

c) Structural Unemployment: Trade openness may cause a level of uncertainty for workers, such as unstable jobs, reductions in wages, or outright job losses as the nation depends more on international trade. Older workers may bear higher consequences as they are less educated in relation to younger workers. Workers whose skills are no longer needed face greater unemployment and have a difficult time adjusting to the changing labour market. The challenge of trade openness is highly significant for displaced workers. Generally, losses incurred by the domestic country are significant, while benefits are distributed and may be less obvious. For example, the U.S. trade deficit with China caused a peak loss of 245,000 US jobs in 2018–2019, and more than 75% of those losses were in the manufacturing sector[71,72].

d) Increased Competition: Most efficient firms will access the international market and earn extra income as such firms can compete globally. However, firms producing intermediate products

Lead City University Ibadan DO NOT COPY

may survive but may be limited to local markets as they are not productive enough to compete in the foreign market due to the high cost of production, inadequate raw materials, expensive labour, and strict laws. As a result of increased competition, the least productive firms will eventually be forced to shut down as they begin to lose money in their domestic markets without having access to international markets[73].

e) Low Governmental Revenue: Trade openness is generally expressed as the reduction or elimination of trade barriers such as tariffs. The policy of relaxing trade barriers will reduce government revenue generated through the imposition of tariffs.

f) Potential Increase in Gender or Wage Inequalities Women face greater challenges in terms of trade openness than men, and they also find it harder to take advantage of benefits from foreign trade. This results from gender inequalities in wage distribution, control of resources, and access to key factors of production[74,75]. For instance, in some OECD nations, the gender wage gap is more pronounced among highly skilled workers in exporting firms compared to those that only operate on the domestic market[73,76]. Thus, increased trade openness has the potential to exacerbate inequality by changing the way wealth is distributed.

3) Measures of Trade Openness

A wide range of trade openness measures have been developed in analogy to these various terms and concepts. These measures described diverse facets of economic integration. Thus, there has been widespread acknowledgement that there is no best way to measure trade openness. As a result, not only the definition but also the measurements of openness have varied significantly over the past three decades[77]. The measures of the level to which foreign countries can participate in the domestic economy can be viewed in two ways: firstly, they aim to measure, and secondly, they

Lead City University Ibadan DO NOT COPY

are based on the sources employed to compose the measure. The sources of the measure can either be a de facto measure, which is the total economic activities, or a de jure measure, regarded as legally established barriers to trade.

De-facto measures are outcome-focused indicators that show how integrated a nation actually is with the global economy. De-jure measures, on the other hand, are based on an assessment of a nation's legal system and reflect that nation's willingness to be open, as demonstrated by the current regulatory environment. Examples of such measures are total exports, total imports, and total trade (relative to GDP). De-jure measures are focused on tariff rates (such as duties and surcharges), knowledge of non-tariff trade restrictions (such as quotas and licencing requirements), or tax receipts resulting from trade-related activities as a ratio of GDP.

Lead City University Ibadan DO NOT COPY

Table 2.1: De-facto trade openness measures

Name	Components	Scale	Type	Time	Countries	Source
Export share	Exports (X)	% of nominal GDP	Co-Ra	1960-2018	199	78
Import share	Imports (M)					
Trade share	TradeVolume = Exports(X) + Imports(M)					
Generalized Trade Openness Index	The Index represents the trade volume as a share of a country's GDP factor, defined by a CES-function of its own GDP and the GDP of the rest of the world.	0 – 100	Co-Int	1960-2016	167	79
Composite Trade Share	Trade Volume (X+M) in% GDP, adjusted by the World Trade Share (WTS)	Arbitrary	Co-Int	1977-2016	231	80
Real trade share	Trade Volume (X + M) in % of GDP at PPP	% of real GDP	Co-Ra	1960-2014	173	81
Adjusted trade share	Imports divided by GDP, adjusted for the nation's share in world production	Arbitrary	Co-Ra	1960-2016	233	82

Notes: In the type column "Co" corresponds to "continuous", "Int" corresponds to "interval", and "Ra" corresponds to "Ratio".

Source: Author's compilation, 2024

The construction of the two kinds of measures described above indicates that they do measure various aspects of openness, which may not be consistent for some countries. For example, China plays a significant role in global trade yet has a strong defensive system, opening up its economy to non-domestic companies. Similarly, a country may have trade-friendly institutions and policies but still not be integrated into global trade, as it could be because of its remote location (such as Canada) or lack of advanced technology (such as Uganda). Therefore, conclusions drawn from de-jure indicators may be very different from those drawn from de-facto indicators because the former are primarily based on a single, yet significant, factor in determining actual economic integration, a country's regulatory environment and the latter are more concerned with overall results. In de

Lead City University Ibadan DO NOT COPY

facto measure, trade volume relative to GDP is the key measure[54]. Table 2.1 shows that all other indicators are variations of trade in terms of GDP.

Trade to GDP is commonly used due to the availability of data. Other indicators like export and import relative to GDP may be worthwhile substitutes if one wants to concentrate outward (export) and inward (import) trade. Despite the popularity of de facto measures among scholars, the variables must be used cautiously. First, since all indicators are expressed relative to GDP, the measure is biased with respect to the size of the economy, as small economies reflect greater trade volume to GDP than large economies[85]. Therefore, the key players in world trade (Japan, Germany, the U.S., and China) are ranked lower in any ranking based on trade/GDP.

Secondly, what trade/GDP intends to measure is unclear. Other replacements for trade openness are proposed, such as the trade openness index, trade dependency ratio, trade ratio, or trade share. Research has investigated the uncertainty of trade/GDP and discovered that it best captures the degree of spatial economic remoteness and the peculiarities in regional production distributions. The findings also conclude that the most variation in the level of trade openness is based on differences in GDP and not trade flow[54]. However, diverse authors have suggested different indicators to address the size-biasedness of trade/GDP (see Table 2.1). The bias is resolved by using the proposed alternatives or by including a control variable for country size. The best de facto measure depends on the intention of the researcher as other alternatives proposed have their drawbacks.

Lead City University Ibadan DO NOT COPY

Table 2.2: De-jure Trade Openness Measures

Name	Components	Scale	Type	Time	Countries	Source
Sachs-Warner index	Binary variable based on Sachs & Warner (1995) criterion (see text for more details)	0-1	Di-Bi	1960-2010	118	84
IMF Tariff Rates (Tariff_RES)	100–Average of the effective rate (= tariff revenue/import value) and the average unweighted tariff rates	0-100	Co-Int	1980-2005	136	85
Trade Freedom (HF_trade)	Trade-weighted average tariff rate–Non tariff trade barriers (NTBs)	0-100	Di-Int	1995-2019	182	86
Freedom to Trade Internationally (FTI_Index)	1. Tariffs: -Revenue from trade taxes (% of trade sector) - Meantariffrate - Standard deviation of tariff rates 2. Regulatory trade barriers: - Non-tariff trade barriers - Compliance costs of importing and exporting	0-10	Co-Int	5-year measure: 1970-2000 Yearly data: 2000-2017	161	87
Additional variable with improved coverage						
WITS Tariff Rates (Tariff_WITS)	100 – Mean of Effectively Applied (AHS) and Most-Favored Nation (MFN) weighted average tariff rates	0-100	Co-Int	1988-2018	159	88

Notes: In the type column "Co" corresponds to "continuous", "Di" corresponds to "discrete", "Bi" corresponds to "binary", "Int" corresponds to "interval", and "Ra" corresponds to "Ratio".
Source: Author's compilation, 2024

On the other hand, de-jure measures are based on tariff rates and other trade barriers (see Table 2.2). One of the most common measures of trade openness is the Sachs and Warner index. It describes a country as having a closed economy if it meets a minimum of one of the five requirements related to tariff rates, non-tariff trade barriers, socialist governance in trade relations,

Lead City University Ibadan DO NOT COPY

and the gap between official exchange rates and unofficial exchange rates. The index shows a positive relationship with economic growth[89]. Nevertheless, it has drawn criticism for its ambiguous criteria and dichotomous output dimension, which categorises countries as either "open" or "closed" and, as a result, precludes a more nuanced analysis[90]. In a paper, the Sach-Warner index was replaced with a continuous index named the *IMF Tariff Rate Index,* which is based on the proportion of tariff revenue to import value and average unweighted tariff rates. Thus, the variable directly captures changes in the existing regulations of nations[85].

However, the *IMF Tariff Rate Index* was also criticised for the availability of data, as the author sourced data from the internal database of the IMF; thus, extending the dataset in subsequent research is a non-trivial task. In a quest to develop a better measure that permits a free market, two alternative measures emerged: the *Trade Freedom Index* and the *Freedom to Trade Internationally Index,* both derived from the *Economic Freedom Index* and the *Economic Freedom of the World Index,* respectively. The measures are composite indices derived from merging tariff and non-tariff variables. The indices are later criticised because the origin of the index, source of data, and method of merging the various indicators to form the index are unclear[53].

Aiming to have a good measure, a tariff rate index is developed based on the World Integrated Trade Solution (WITS) database following the methodological approach of the IMF Tariff Rate Index (named WITS tariff rates). Therefore, it is easy to extend the coverage of the dataset in subsequent research as the data employed are publicly available[53]. The index is calculated as 100 less the weighted average of the tariff rates for the most favourable countries and 100 less the average of the tariff rates that are actually being applied. The resulting index is highly correlated with the IMF Tariff Rate Index measure and maintains the methodological benefits of the original indicator while also addressing its coverage and replication issues[53].

Lead City University Ibadan DO NOT COPY

2.1.3 Economic Growth

Various researchers have described economic growth in diverse ways. For instance, economic growth refers to an increase in the inflation-adjusted market value of goods and services produced by an economy over time. Economic growth can be described as the steady way in which the productivity of an economy increases over time, resulting in rising levels of national output[91]. Economic growth is defined as a rise in national income that is typically captured by a rise in GDP[92]. Economic growth is defined as a rise in GDP or GNP, irrespective of whether the rise is higher or lower than the population growth rate and regardless of whether there has been improvement in the institutional framework and economic structure[93]. The term "economic growth" refers to an increase in real national income or real national income per capita[94]. Economic growth is the sustained increase in the ability to meet demand for goods and services due to expanded production size and enhanced productivity[95]. It is the process by which a country's degree of material prosperity and its economic output grow over time to result in increased levels of national output and income[96]. Economic growth is an increase in the ability of a country to produce goods and services relative to the baseline[97]. Recently, economic growth has been described as a rise in the capacity of an economy to produce more goods and services compared to another period of time[98].

Some authors argued that economic growth should not be simply described as a rise in the total volume of goods and services produced in an economy but should consider the impact of such a rise in products on the quality of life of citizens. Therefore, economic growth is defined as the steady rise in the standard of living in a country, along with continual changes in the economic structure, literacy, public health, and demography, as well as the income distribution within that economy. In the long run, as economic performance increases, societies undergo significant and

Lead City University Ibadan DO NOT COPY

multifaceted transformation[95]. Economic growth is one of the government's macroeconomic goals because it helps governments reduce unemployment, boost output, and better use their industrial capacity[99]. Economic growth is a key policy to attain viable and equitable growth that will raise the standard of living of the citizenry[100].

1) Types of Economic Growth

Different concepts of economic growth describe both quantitative and qualitative characteristics. Quantitative characteristics reflect variation in the level of goods and services produced, which indicates the dynamics of these variations, while qualitative characteristics show how the economic system can accommodate the expanding needs of society. Based on the dynamics of economic growth, it has numerical indices (macroeconomic indicators) like gross domestic product, gross national product, national income, and others. While the qualitative characteristic is described by measures of quality of life and standard of living. The quality-of-life points to the skills of labour and leisure activities, the size of labour and their life comfort, the operations of social institutions, the environment, etc. The standard of living is assessed using a variety of factors, including the consumer basket, GDP structure by use, cost of living, the level of service development (such as the number of teachers per 1,000 students), the condition of the labour force (such as the average life expectancy, educational attainment, and the share of education spending in GDP), and others[101].

The type of economic growth expresses aspects of the process in detail. Economic literature distinguishes a number of important points of view regarding the different types of economic growth. The first point of view, known as the factorial approach, provides us with an overview of the many types of economic growth from the standpoint of changes in the quantitative or qualitative characteristics of production elements. Economic theory distinguishes between two

Lead City University Ibadan DO NOT COPY

types of economic growth: intensive and extensive. Additionally, an innovative type of economic growth is included in the intensive category. Extensive growth is estimated by quantitative changes in factors of production. Thus, there are subtypes of extensive economic growth related to capital, labour, and other resources. The intense, or qualitative, form of economic growth is when there is a qualitative increase in the factors of production, such as the usage of extremely precise modern equipment in product production, cost-effective non-waste technologies, and a more competent workforce. Here, it is important to note that these two forms of growth are interconnected and should not be contrasted with one another[101].

The second viewpoint is influenced by the demands and potentials, as well as by the population growth rates of society. The works of British economist Roy Harrod, who popularised the idea of true, natural sorts of economic growth, embody the essence of this strategy. Natural economic growth primarily evolved from an increase in population, a rise in the requirements of that population, and the willingness of each person to fully meet their material needs while taking advantage of all available chances for economic growth. Guaranteed economic growth is described as a projected course of increase on which business owners are inclined and satisfied with their work. Actual growth is the level of economic growth that actually occurs as a result of both guaranteed and natural growth[102].

The third point of view looks at economic growth from the standpoint that it is influenced by productive forces, machinery, and technology for production. In this scenario, economists differentiate between pre-industrial (period of traditional society), industrial, and post-industrial types of economic growth. In national economies where agriculture dominates and accounts for over 50% of GDP, pre-industrial growth occurs. While some of the economically underdeveloped nations are still in the pre-industrial stage of agricultural growth today, it was completed in

Lead City University Ibadan DO NOT COPY

developed capitalist countries in the 19th century. Pre-industrial economic growth is typically characterised by extremely slow rates of growth. Industrial expansion is accompanied by a shift in production materials; as a result, industry overtakes agriculture as the dominant sector of the economy and starts to exert significant influence on the whole country. The modern industrialised countries can be traced to the early 19th century, when the economic boom led to major quantitative and qualitative shifts in the national economies of these nations. Currently, no economy in the world is at the post-industrial stage of economic growth, and there are certain prerequisites for a post-industrial economy. Economists like Pestel propose that man and his quality of life will once again take the central place in the economy, but at a higher level than in traditional society. A high level of industry will also result in an overall high degree of social welfare, as new needs and demands will be supplied rather rapidly. There will be a reduction in the use of risky technology, and the environment will be kept in good condition[103].

Due to the degree of economic criminality, there are legal and shadow types of economic growth. They both naturally occur in developing economic systems and frequently coexist there. Shadow growth is an outcome of the operation of the so-called shadow economy sector, where management, business, and resource use take on distorted forms and grow outside of regulations. In other words, any economy in which unlawful activities take place out of sight of the government is considered a shadow economy[104]. It is also called the underground economy, black economy, or informal economy. Numerous estimates describe the level of the shadow economy in Russia as between 20 and 50% of GDP. This informal sector of the country employs about 10 million people, and the service sector accounts for a major share of its revenue. In Japan, shadow growth only contributes about 4.5% of GDP[105].

Lead City University Ibadan DO NOT COPY

There are distinct import-substitution and export-oriented types of economic growth when viewed from the perspective of national economic engagement with the global economy. These diverse types of growth demonstrate the various ways that external forces affect the national economy and the extent of the impact. However, these types of economic growth do not exist in reality, but only theoretically. Typically, when determining the type of growth in a nation, one may see the characteristics shared by several types of economic growth.

2) Factors of Economic Growth

Identifying the factors plays a crucial role in the economic growth process. Economic growth factors form the basis of the growth process, which ascertains the degree and dynamics of change, directly influences the level of growth in real output, boosts its productivity, and results in various types of growth. The processes and facts that govern the capacity to raise real output and hence the efficiency and quality of growth are referred to as the factors of economic growth in economic theory.

It is clear that labour and reproductive factors are the primary determinants of economic growth in both developed and developing countries. These factors, which include capital, territory, labour, scientific and technological advancement, productivity and innovation, the effectiveness of the productive unit, and others, are mostly of a reproductive nature. The variables can have an impact on growth rates and quality both directly and indirectly, beneficially and harmfully. A crucial distinction needs to be made: typically, only a specific set of known and existing growth drivers affect the economy at a given time and location. As a result, a sample of the key variables that significantly impact economic growth is analysed.

Lead City University Ibadan DO NOT COPY

The majority of the growth factors described in economic literature fall into the following categories: factors of demand, supply, and distribution; direct and indirect; controllable and uncontrollable; intensive and extensive; economic and non-economic; and substituted and complemented. The different perspectives of scholars on issues with economic growth can be linked to the wide range of factors sorting[101].

3) Measures of Economic Growth

Gross Domestic Product (GDP): GDP is used to measure the market worth of goods, services, and structures generated in an economy over a specific time period. It is the most widely used measure of the economic growth of any nation. It is calculated as the sum of personal consumption expenditure, government consumption expenditure, gross private domestic investment, gross investment, and net exports of goods and services[106]. Although the gross domestic product (GDP) is often employed as a measure of economic activity, it is not a reliable indication of wellbeing because it does not take poverty, literacy, or crime rates into consideration. The following are to be noted when using GDP as a measure of growth:

a) GDP includes market and non-market production: GDP consists of goods and services that are made available for sale in the market and those not sold in the market. Examples of goods and services that are not sold in the market are health care, education, and defence services provided by non-profit organisations, among others.
b) GDP is valued at market price: GDP focuses on the market value of goods and services by using prices set by forces of demand and supply. This strategy uses the dollar as a standard unit of measurement, which makes it easier to compare the numerous items that make up economic activity.

Lead City University Ibadan DO NOT COPY

The use of market value also aids in analysing the certainty of events, such as the impact of government policies on the economy. However, in certain situations, market prices do not accurately reflect the worth of a good or service but can consist of some services for which an actual transaction has not taken place.

a) GDP as a measure of recent production and not sales: GDP as a measure of output indicates that goods and services produced in an economy in a specific period, irrespective of when the output will be sold. For example, an automotive industry produced a car in one period but later sold it in another. In the first period, it is recorded in GDP as an addition to the inventories, but in the period sold, it is regarded as both a consumer expenditure and a withdrawal from the inventories. The value of the GDP remains unaltered as no new production is recorded.
b) GDP is measured as the value of goods and services for 'end' users: GDP measures the value of products that are consumed and not those used as intermediate products.
c) GDP is a 'gross measure: GDP shows production in a specific period without considering if the production is for consumption, investment, inventories, or to replace fixed assets that have depreciated. Economic depreciation refers to the total amount that needs to be reserved for the cost of physical depreciation, the expected breakdown, and unforeseen damage to existing fixed assets. When the economic depreciation is deducted from GDP, it gives the 'net domestic product', which is an indicator of current production that does not cover the investment required to replace depreciated fixed assets[106].

2.2 Theoretical Review

This section presents various theories relating to trade, financial development, and economic growth. There have been different views as to whether there is a link among the variables or not. The financial development theories are supply-leading hypothesis, demand-following hypothesis,

Lead City University Ibadan DO NOT COPY

stage of development theory, financial repression theory, financial liberalisation theory, and finance-growth hypothesis. There are a number of theories on trade openness and economic growth that date back to the sixteenth century. This study exposes six theories of trade, namely, the mercantilist theory, the theory of absolute advantage, the theory of comparative advantage, the Heckscher-Ohlin theory, the Stolper-Samuelson theory, and the new trade theory. The growth theories are: classical growth theory, Harrod-Domar growth theory, neoclassical growth theory, and endogenous growth theory.

2.2.1 Theoretical link between Financial Development and Economic Growth

There are some theoretical justifications for the connection between financial development and economic growth in the literature on financial development. The general consensus is that long-term growth can be enhanced by financial development. The theories that link financial development to economic growth are covered in this section.

2.2.1.1 Supply-Leading Hypothesis

The supply-leading hypothesis postulates that growth is accelerated by financial development. A higher level of saving and investing is brought about by the existence and growth of the financial markets, which also improve the effectiveness of capital accumulation. According to this hypothesis, effectively operating financial institutions can boost overall economic efficiency, generate and increase liquidity, mobilise savings, increase capital accumulation, transfer resources from traditional (non-growth) sectors to more modern, growth-inducing sectors, and also encourage a skilled entrepreneur response in these modern sectors of the economy. The availability of finance is crucial before any growth can be realised or technological advancements made,

Lead City University Ibadan DO NOT COPY

according to various economists who also suggest that finance may increase growth by promoting technological innovation.

2.2.1.2 Demand-Following Hypothesis

The hypothesis asserted that finance does not only impact growth. Rather, financial development follows economic growth due to higher demand for financial services. Different researchers also state that the interaction theory on the influence of growth on finance shows that as the real sector enlarges, there will be higher demand for financial services, which results in financial sector development[107]. Robinson believes that where enterprises lead, finance follows. Also, financial markets start to expand as the economy approaches the intermediate stage of growth and then continue to expand once the economy reaches maturity[108]. According to the argument, the financial market effectively adapts to these demands and changes because of high economic growth, which creates demand for certain types of financial instruments and arrangements.

2.2.1.3 Stage of Development Theory of Financial Development

Hugh Patrick's stage of development hypothesis of financial development, which contends that the causal relationship between financial development and economic growth shifts over the course of development, forms the theoretical cornerstone of this theory[109]. During the commencement of development, there is a clear supply-leading impetus, but as the economy experiences real growth, there will be an increase in demand for financial services. According to this theory, financial and economic developments have a demand-following relationship. High economic growth generates demand for contemporary financial institutions' services, assets, and arrangements from savers and investors in the real economy. The financial market, in turn, responds to such demand. However, authors of various studies have pointed out a number of critics. One of the main issues with the

Lead City University Ibadan DO NOT COPY

hypothesis is "the difficulty in calculating the average yield of the capital in real terms" [110]. As a result, it is suggested that the investment-to-income ratio is likely to change in the same direction as the average real rate of return changes[15].

2.2.1.4 Financial Repression Theory

Economists have commonly argued that financial repression prevents the efficient allocation of capital and thereby impairs economic growth[111]. Some researchers proposed that financial repression impede economic growth as it hinders the free flow of funds. Financial repression occurs when the government intervenes in the financial sector through interest rate ceilings, selective credit allocation programmes, credit controls, high bank reserve requirements, restrictions on market entry into the financial sector, and government ownership or dominance of banks for the purpose of diversifying funds for themselves. The government implements a financial repression policy when they are unable to raise the revenue required for economic management in order to offset the budget deficit. They argued that the detrimental effect of financial repression surpasses the benefit; therefore, the government should reduce or eliminate financial repression[15, 112]. Furthermore, they claimed that establishing interest rate ceilings results in a decline in capital accumulation and savings, both of which are essential for growth.

Mckinnon affirmed that financial repression can lead to financial dualism, which is a situation where the sector favoured by the policy invests in capital-intensive technology and the sector unfavourable invests in high-yielding projects that have a short maturity only. When the government uses selective credit allocation to control finance, this policy is advantageous to state-owned enterprises with low-return projects but causes inadequate capital availability for high-return projects, which affects economic growth in the long run. Based on the negative impact of government intervention, they suggest financial liberalization[15, 112].

Lead City University Ibadan DO NOT COPY

2.2.1.5 Financial Liberalization Theory

This hypothesis, as postulated by Mckinnon and Shaw in 1973, sees government intervention in the financial markets as a major constraint to savings mobilisation, investment, and growth. Therefore, they proposed a liberalised financial sector. The main critique of financial liberalisation theory emanates from the imperfect information paradigm. According to this theory, government intervention in the financial markets is a barrier to saving, investment, and growth. Therefore, the proponents proposed a liberalised financial sector [113]. However, in a similar vein with other theories, the theory was also criticised by some authors. It was criticised based on the issue of financial development in the context of information asymmetry and high costs, which leads to credit rationing. The major fault in the theory is the asymmetric information that causes moral hazard and adverse selection. Consequently, the information asymmetry of a higher interest rate due to financial liberalisation aggravates risk-taking and, as a result, threatens financial stability. If not properly curtailed, it may resolve financial crises[21].

2.2.1.6 Finance-Growth Hypothesis

According to major theoretical hypotheses, there are four distinct but not mutually exclusive effects of financial development on overall economic growth. Firstly, it provides a cheap and trustworthy payment method. Secondly, the provision of volume and allocation effect occurs when financial activity raises the availability of resources meant for investment and improves resource allocation. Thirdly, it enables risk management that allows for the financing of riskier but more successful investments and innovations by assisting in the diversification of liquidity risks[12,114]. Fourthly, the information effect, whereby ex ante information on the availability of capital and investment is provided, helps reduce the effect of asymmetric information[115]. A theoretical review of the various analytical approaches employed in the finance literature found compelling evidence

Lead City University Ibadan DO NOT COPY

that the development of the financial sector is crucial to growth. This is so that policymakers will prioritise financial sector policies and pay attention to the factors that influence financial development as a mechanism for fostering growth[116].

2.2.2 Theoretical Relationship between Trade and Economic Growth

2.2.2.1 Merchantilist Theory

When referring to the classical school of thought, Jean-Baptiste Colbert was one of the forerunners of theories relating to international trade. The term "mercantilism" was first used by Jean-Baptiste Colbert in the 16th century and is derived from the Latin word "mercari," which means "to run a trade"[117]. The mercantilists argued that the government should take all feasible measures to increase exports and decrease imports[118]. Imports were thus discouraged to have an export surplus, while exports were promoted in order to ensure economic growth. For mercantilists, achieving a surplus in the balance of payments was the goal of international trade. As a result, they called for either an inflow of gold or the granting of credit to foreign nations, which is capital exports, in order to achieve a high trade surplus, which the mercantilists defined as an excess of exports both visible and invisible over imports[124]. By encouraging the overproduction of goods with high opportunity costs and by encouraging producers to focus on products and services that do not take advantage of comparative advantage, mercantilism stunts economic growth.

To achieve the theoretical foundations of their ideology, mercantilists promoted strict government control of all economic activity and economic nationalism because they believed that trade is a zero-sum game and that a nation could only benefit from trade by harming other nations[119]. As we can see from the aforementioned, protectionism was a significant aspect of the mercantilism philosophy of trade. It took the form of fiscal policy and other controlling laws like the Navigation

Lead City University Ibadan DO NOT COPY

Acts of 1951, which forbade foreign vessels from operating close to the British coast. Each country sought to avoid a trade deficit, but they are determined to have a trade surplus[120].

Why mercantilism thrived can be better understood by taking a closer look at world history from the 1500s to the late 1800s. The 1500s saw the emergence of new nation-states whose leaders sought to fortify their countries by erecting more robust armed forces and national institutions. These kings were able to gather more gold and wealth for their nations by boosting exports and trade. Import restriction is one method used by many of these new countries to promote exports. This strategy is called protectionism and is still used today[121]. Some countries still use policies that support exports and discourage imports through a form of neo-mercantilism that combines protectionist policies/restrictions and domestic industry subsidies. Almost all nations have at some point implemented protectionist measures to safeguard important sectors of their economies[120].

About two centuries after it was established, the Mercantilist economic system was criticised for having a static view of the world's resources. The idea that powerful nations would keep accumulating wealth was also criticised. David Hume made the claim that a rise in the nominal money supply was necessary to support a rise in the stock of precious metals in his 1752 book "Political Discourses," which was titled as such[122]. Thus, inflation would increase. The stand of Hume is clear when viewed in the context of the famous line from Friedman that "inflation is always and everywhere a monetary phenomenon" [123].

Another renowned economist publicly attacked the Mercantilist school of thought by pointing out that nations could not continue "selling" without "buying." [24] He propounded the theory of the invisible hand'' and stated that the government must remove tariff and non-tariff barriers in order to follow the principles of the free market. He asserted that free trade and specialisation in accordance with one's absolute advantage would result in gains for all nations simultaneously,

Lead City University Ibadan DO NOT COPY

rather than mercantilism, which he claimed is impossible because one nation's export is another nation's import. Smith added that, rather than a country's gold reserves, a country's wealth is determined by the goods and services that are available to its citizens. The main criticism was that liberalised trade was believed to benefit economies (consumers included) more because it increased economic growth and the variety of goods available for consumers to choose from[124].

2.2.2.2 Adam Smith's Absolute Advantage Theory

The first trade theory to support free trade was the absolute advantage theory of international trade. The proponent states that "if a foreign country can deliver us goods cheaper than we would produce, it is better to buy them from that country with a part of the product of our activity, using them in a way that can bring us benefit". Basically, it was claimed that a country has an absolute advantage in the production of commodities when it is more effective than any other country in producing the commodities[24]. The theory assumed that only two commodities were traded between two countries under free trade agreements, with labour representing the only cost. In addition, labour is assumed to be mobile only within a country, and trade between countries occurs on the basis of an absolute lower cost of production.

According to the theory of absolute advantage, free trade results in a country specialising in the production of goods being more competent at producing and importing goods than being unable to do so. This specialisation in factors of production is the key element in the theory, which could increase the world's output[125]. We observe components of "division of labour" being introduced through international specialisation. It can be concluded from a comparison of the aforementioned theories that Adam Smith's free trade system was better for economic growth than Jean-Baptiste Colbert's mercantilism trade theory.

Lead City University Ibadan DO NOT COPY

Adam Smith's theory also faces some criticism. First, according to this theory, each exporting nation has a distinct competitive advantage in the production of a particular good. This presumption might not be accurate if a nation lacks a particular production sector in which it is unquestionably superior. Ellsworth states in this context, "Smith's argument is not very convincing as it assumed without argument that international trade required a producer of exports to have an absolute advantage, i.e., an exporting country must be able to produce with a given amount of capital and labour a greater output than any rival. What happens, though, if a nation lacks any clearly superior production sectors."

Secondly, the theory of absolute advantage was critiqued because it focused solely on one factor of production and its cost under its assumptions. In contrast, international trade involves other costs such as transportation and the cost of capital[126].

Thirdly, the assumption of bilateral trade between countries and the exchange of only two commodities is criticised. Adam Smith neglects the case where the needs of countries rise. The theory additionally presupposed that nations could engage in free trade; however, it ignored the possibility of a nation imposing protectionist measures[127].

2.2.2.3 Ricardian Comparative Advantage Theory

David Ricardo, a different classical economist who lived from 1772 to 1823, offered an alternative to the theory of absolute advantage by formulating the theory of comparative advantage. When one country has an absolute cost advantage in the production of all goods, the theory of comparative advantage demonstrates the certainty of beneficial trade. As long as the country with the absolute cost disadvantage (relatively less inefficient) specialised and exported the good in which its absolute cost disadvantage was the least, the basis for a mutually beneficial trade still

Lead City University Ibadan DO NOT COPY

existed, even if one country has an absolute cost advantage in the production of both goods (less inefficient).

The theory of comparative advantage is developed based on the following assumptions: two countries producing two goods, where labour is considered the only factor of production; each country has a fixed supply of uniform labour that is all employed; only the existence of free labour movement within a single nation; no cross-border movement of labour; each nation uses the same production method for each good because both possess the same level of technology; constant costs that are proportional to the amount of labour used in the production of a good; perfect competition exists in all markets; existence of free trade as a result of no restriction on trade; no transportation cost; the goal of businesses is to maximise profits, whereas consumers aim to maximise utility through their production and consumption choices; absence of any financial illusion; and trade is balanced. The comparative advantage theory of free trade is criticised for being a static model that only considers one variable (labour cost) and complete specialisation when attempting to show the benefits of trade.

2.2.2.4 Heckscher-Ohlin Theory

The two Swedish economists Eli Heckscher and Bertil Ohlin formulated the Heckscher-Ohlin theory, also referred to as the Factor Endowment Theory. The economists developed a model based on the following assumptions: two countries, two homogenous goods, two factors of production, labour and capital, under the presumption of perfectly competitive markets; identical production functions with freely accessible technologies across countries; constant returns to scale; perfect production mobility within a country but immobility between countries; different factor intensities; a general equilibrium condition; no transportation costs; and the absence of trade barriers.

Lead City University Ibadan DO NOT COPY

However, these assumptions are unrealistic in a real-world situation because labour and capital are not the only factors of production; functions of production vary across nations; markets are not always fiercely competitive; there are trade restrictions; and moving goods from one location to another incurs a cost. The model demonstrates that an increase in trade increases demand for labour-intensive goods in developing nations with a labour surplus[128]. This is typically interpreted to mean that all markets in the H-O model have macroeconomic equilibrium and continuous full employment. Increased trade will inevitably lead to a sectoral shift towards labour-intensive activities.

According to the theory, differences in relative factor endowments between nations form the foundation of trade. Two questions that the Ricardo theory of comparative advantage largely addressed or attempted to explain are further addressed or explained by the Heckscher-Ohlin (H-O) theory, which are: what determines comparative advantage, and how does international trade affect the earnings of different production factors within trading nations?

The Heckscher-Ohlin theory developed an explanation for the two problems mentioned above that were drawn from the comparative advantage theory. It comes to the conclusion that trade benefits all nations and raises global output overall. The theory also sheds light on how trade enables nations to secure capital and foreign-produced goods for consumption. With all of this, the theory that trade stimulates economic growth is evident. Economic growth is defined as the gradual process through which the economy's productive capacity is raised over time to result in rising levels of national output and income[129].

The Hecksher-Ohlin theory analyses the effects of economic growth on trade patterns and also indicates how trade affects the structure of national economies and the differences in returns or payments due to different production factors. The theory predicts that since developing nations

Lead City University Ibadan DO NOT COPY

have a large unit of labour, trade openness will enable them to export labour-intensive commodities and import capital-intensive commodities. This process relies on the idea that trade liberalisation will increase the relative cost of goods and services that require a lot of labour, which in turn will increase the demand for labour and, consequently, the amount of employment in an economy.

2.2.2.5 Stolper-Samuelson Theory

The Hecksher-Ohlin theory of comparative advantage is supplemented by the Stolper-Samuelson (SS) theory, which was proposed by Wolfgang Stolper and Paul Samuelson. So, the theorem is also known as the Heckscher-Ohlin-Samuelson Theorem (H-O-S Theorem)[130]. According to the Stolper-Samuelson theory, free trade that is in line with a country's comparative advantage will raise wages once any labour surplus has been eliminated, as well as the demand for unskilled labour in the countries with a labour surplus. In contrast, the need for skilled workers will increase in countries with high levels of capital (and, consequently, skill) investment. Unskilled labour will be in less demand and earn lower wages concurrently. Undoubtedly, a developing nation will benefit from freer trade because it will help the economy's abundant supply of unskilled labour as well as efficiency and growth. However, the positive effects of trade liberalisation on employment, growth, and distribution depend on the existence of constant returns to scale and perfectly competitive markets.

The Hecksher-Ohlin and Stolper-Samuelson trade theories are complementary in that they both use the comparative advantage theory to promote international specialisation among nations. International trade might not be necessary if domestic factor prices were the same since all nations would employ the same production techniques and consequently have the same relative domestic product price ratios and factor productivities. Therefore, both theories depict international trade as a means for a country to take advantage of its abundant resources by increasing the intensity of its

Lead City University Ibadan DO NOT COPY

production, exporting goods that use significant quantities of the abundant resources, and alleviating its shortage by importing goods that use significant quantities of the relatively scarce resources. The H-O-S theory is also criticised based on the assumption of a perfect competitive market, the production of homogenous goods, and diseconomies of scale.

2.2.2.6 New Trade Theory

A neo-Keynesian economist, Paul Krugman, who was the sole recipient of the 2008 Nobel Prize, established the New Trade Theory in the 1970s. The three deviants' economies of scale, imperfect markets, and product differentiation introduced in new trade theory draw attention to the H-O-S model's shortcomings in explaining benefits from international trade[131]. Small economies that cannot achieve scale economies may suffer some losses, but the new trade theory pointed out that they can be made up for by an increase in welfare due to a wider range of consumer goods[132]. Smaller nations can benefit from global economies growing as a result of trade liberalisation. Trade openness is a means for developing nations to increase their economies, overcome domestic market constraints, and distribute product surpluses in other markets[133].

The scale of the global economy provides more opportunities to achieve scale economies and greater success when investing in research and development. Countries can benefit from spillover effects due to affordable and effective cross-border communication[134]. Both trading nations can profit from intra-industry specialisation if there is sufficient product differentiation. In essence, intra-industry trade will prevail over inter-industry trade if countries have similar factor endowments. After trade liberalisation, firms that engage in dominant intra-industry trade will have access to a larger market, which will enable them to counteract any distributional effects. Additionally, trade openness enables nations to direct resources to regions or countries that are more productive, implying benefits for all trading nations due to rising returns on a global scale[135].

Lead City University Ibadan DO NOT COPY

However, all the aforementioned theories, especially with regard to developing nations, do not address the dynamic implications of trade related to growth and development. The theories fall short of explaining changes in consumer preferences, technological advancements, and income distribution[132]. Thus, it is necessary to take into account endogenous models based on knowledge accumulation and technological advancement.

2.2.2.7 Internationalisation Theory

Internationalisation theory is a trade openness theory that basically focuses on the geographical location where commodities can be produced at the least cost. The process commences at the mother company, where the commodity can be produced at the lowest cost. If not, the production is carried out by its overseas affiliates. However, the last resort of the company is to produce wherever it can do so at the lowest possible cost in the world[136]. Countries that adopt a policy of trade openness have a direct benefit from the theory. For instance, China has witnessed rapid growth due to its embrace of trade openness. An example of such goods produced in locations of least cost is the iPhone, which is manufactured in America but assembled in China that has the lowest cost of operations. The theory aids businesses in locating the most cost-effective production locations for their goods in order to boost their profit margins. The internationalisation theory is appropriate for the topic of study because it directly relates to trade openness, which strengthens economic growth.

2.2.3 Growth Theories

The traditional neoclassical growth theories have dominated the study of economic growth and development. The mobilisation of domestic and international savings to produce enough investment to spur economic growth was one of the key development strategies required for any

Lead City University Ibadan DO NOT COPY

takeoff. The Harrod-Domar growth model can be used to explain the economic mechanism by which increased investment results in increased growth[91].

2.2.3.1 Classical Growth Theory

The classical growth theory is propounded by Adams Smith, David Ricardo, and Thomas Malthus. This theory aims to clarify the variables that affect long-term growth. Despite some disagreements, they come to the conclusion that social, political, and economic structures, in addition to land, capital, labour, and technology, also play a significant role in determining growth[137]. They continued by explaining that any economy must invest the excess value from production in order to experience the growth it desires. They make a point of highlighting the fact that not all economic activities result in surplus value[138]. Smith contends that in order to maximise the benefits of production for long-term economic growth, a country must pay attention to the division of labour and international trade[24].

2.2.3.2 Harrod-Domar Growth Model

The Harrod-Domar-Domarh model is based on the postulation that a country's development is greatly influenced by its savings and investments. Money becomes available for investment whenever an economy raises its savings, and the increase in investment raises aggregate demand and national income as well as aggregate supply, which encourages even more investment. It is anticipated that the initial increase in investment will increase output, which will raise income. When the extra money is spent, aggregate demand rises even more. Long-term aggregate demand increases when the multiplier effect is very strong. Economic growth is strongly argued to be dependent on the capital-output ratio and marginal savings rate, and as a result, capital accumulation is a prerequisite for growth. Therefore, they suggested government interventions to

Lead City University Ibadan DO NOT COPY

make up for the capital shortfall as well as macroeconomic environment management to encourage growth[139,140].

2.2.3.3 Neoclassical Growth Theory

American economists Robert Solow and Trevor Swan improved upon the Harrod-Domar formulation by adding a second factor, labour, and a third independent variable, technology, to the growth equation in their 1956 treatise. Solow proposes a continuous production function connecting output to interchangeable capital and labour inputs. Solow's neoclassical growth model showed diminishing returns to labour and capital separately and constant returns to both factors together, in contrast to the fixed-coefficient, constant-return-to-scale assumption of the Harrod-Domar model. Solow assumed that technological advancement was the only remaining factor that could be used to explain long-term growth and that its level was determined exogenously, or apart from other factors[141].

Solow's growth theory is a multi-factor productivity model that only takes into account one good, output overall, whose rate of production is denoted by the letter Y (t). This result can be categorically referred to as the real income of the community. Each output produced at any given time is split between consumption and saving and investing. The rate of saving is sY because the percentage of output that is saved is constant (t). The accumulation of the composite commodity represents the K(t) stock of capital for the nation. The basic identity at each point in time is then simply the rate of growth of this capital stock, denoted by dK/dt or K.

$$K = sY \tag{2.1}$$

Two factors of production labour and capital with the input rate of L(t) are used to generate the output. The production function is described by technical possibilities.

Lead City University Ibadan DO NOT COPY

$$Y = f(K, L) \quad (2.2)$$

After considering capital depreciation, the output is referred to as net output. The production function exhibits a constant return to scale, indicating that it is homogeneous to the first degree. The production function supports Solow's theory of growth and the assumption of a constant return to scale. This is equivalent to presuming that there are no limited, non-augmentable resources, such as land. The model would become more Ricardian in the scarce-land case because capital and labour would experience declining returns to scale[132].

The Solow model is extremely simple. It excludes key elements that the model ignores, such as government, multiple goods, change in employment, natural resources, geography, and social institutions. However, it is because of this simplification that we are able to comprehend the contributions that labour, capital, and knowledge make to our understanding of economic growth.

Predictions of the model: If the Solow model is accurate and growth is basically determined by capital accumulation, then:

a) When a country first starts to accumulate capital, growth will be extremely strong. As the stages of accumulation progress, however, growth will begin to slow down. An example is the case with Japanese growth, which was significantly stronger in the 1950s and 1960s and gradually declined.
b) As countries coincide in output per capita, the standard of living matches that of the developed countries. Countries around the world will have the same standard of living once their steady state is reached.

Undeniably, there is evidence supporting the predictions. However, the following contradictions exist:

Lead City University Ibadan DO NOT COPY

a) In comparison to the 20th century, the US growth rate was lower in the 19th century, on a per capita basis.
b) Stalin's Soviet Union saved a larger portion of its GDP than the US did. It should have matched up very quickly given the higher rate of savings and the lower starting capital level, but the Union could not.
c) With a few exceptions like Taiwan, Korea, Singapore, and Hong Kong, less developed nations are not matching up to more advanced ones. Rather, the gap between the countries widens.

The increase in output per capita can be caused by both an increase in multi-factor productivity and an increase in capital per worker, so these facts do not necessarily prove that Solow's model is incorrect. The free-market claim that increased trade openness attracts more domestic and foreign investment and accelerates the rate of capital accumulation forms the basis of the conventional neoclassical theory of growth. This increases domestic savings, which improves capital-labour ratios and per capita income in developing nations with low levels of capital in terms of GDP growth.

According to the neoclassical growth theory, an increase in output is due to the following elements: increases in capital (through saving and investment), increases in labour quantity and quality (through population growth and education), and technological advancement[91]. All things being equal, closed economies with low savings rates grow more slowly in the short run than those with high savings rates, and they frequently reach lower levels of per capita income. However, as capital flows from wealthy to poor countries with lower capital-labour ratios and a higher return on investment, open economies experience income convergence at higher levels.

Lead City University Ibadan DO NOT COPY

2.2.3.4 Endogenous Growth Theory/New Growth Theory

Endogenous growth theory was developed in the 1980s by an American economist, Paul Romer, who criticised the neoclassical growth theory on the assumption that a country's long-run growth rate is exogenously determined by a rate of technological advancement or a savings rate. Paul Romer stated that the assumption is unrealistic. Research opines the possibility of growth in the neoclassical model, which may be caused by an increase in population size, human capital, or physical capital. However, such growth cannot bring about economic development as the growth is assumed to have a diminishing or constant return to scale[142,143]. The neoclassical model makes the important prediction that, over time, growth rates in different nations will converge[144]. However, research has shown that a significant portion of economic growth cannot be attributed to technical progress, and the empirical studies do not support convergence[145].

Additionally, further empirics revealed that the rate at which countries converge is much slower than that predicted by conventional neoclassical models. The development of models in which long-run growth rates are endogenous to the model, based on specific assumptions about increasing returns, human or physical capital, and technology investment, is another way that endogenous growth theory purports to address some of the issues with neoclassical theory[146]. Endogenous growth theory is categorised into two that predict various increasing returns: the endogenous innovation model and the endogenous broad capital model. Endogenous innovation growth theory is otherwise called Schumpeterian as it focuses on the returns to technical progress emanating from intentional innovation by producers. Endogenous broad capital models can be further separated into two sets: (a) those that reveal how capital investment creates externalities; and (b) those that focus on human capital and link technical progress to 'learning by doing' and 'knowledge spillovers'.

Lead City University Ibadan DO NOT COPY

According to the endogenous growth theory, increased investments in human capital and a faster rate of innovation can both lead to increases in productivity. Additionally, it foresees advantageous spillover effects and positive externalities from the development of a high-value-added knowledge economy that can create and sustain a competitive advantage in the global economy's growth industries. The key ideas of endogenous growth theory are summarised as follows: the pace of technological advancement should not be assumed in a growth model; effective government policies can steadily increase a nation's growth rate, especially if they result in greater market competition and increased innovation; higher levels of capital investment may yield potential increasing returns; the theory states that private R&D investment is the primary driver of technological advancement; the protection of property rights and patents may act as an inducement to involve in R&D; and the development of human capital is a crucial component of growth. Any economy with an initial higher level of K will grow rapidly as human capital causes an increasing return to scale, thereby stimulating capital income growth at a higher level. The type of capital that a nation invests in determines the rate of growth.

In conclusion, this study has reviewed seven international trade theories: merchantilist theory, theory of absolute advantage, theory of comparative advantage, Heckscher-Ohlin theory, Stolper-Samuelson theory, new trade theory, and internalisation trade. Also, six theories of finance have been reviewed, such as the supply-leading hypothesis, the demand-following hypothesis, the stage of development theory, the financial repression theory, the financial liberalisation theory, and the finance-growth theory. Additionally, four economic growth theories have also been considered, which are classical growth theory, Harrod-Domar growth theory, neoclassical growth theory, and endogenous growth theory.

Lead City University Ibadan. DO NOT COPY

Even though the theoretical relationship between financial development and economic growth, trade openness, and economic growth has received extensive argument, numerous ambiguities still surround their actual effects. The debates in favour of foreign trade can be drawn from the school of thought headed by Adam Smith. Also, finance theories support the stimulation of growth. Following that, there was an impressive amount of literature debated about the justification of financial development and trade openness. Numerous empirical justifications will be provided in the sections below.

2.3 Review of Empirical Studies

For simplicity, this section has been divided into three subsections, namely: (i) financial development and economic growth (ii) trade openness and economic growth (iii) financial development, trade openness, and economic growth.

2.3.1 Financial Development and Economic Growth

The link between development in the financial sector and economic growth can either be a positive relationship, a negative relationship, a neutral relationship, or a nonlinear relationship (inverted U shape). When financial sector development and the growth of the economy are positively correlated, it suggests that the economy keeps getting better as the financial sector expands. Additionally, it is possible that as the economy expands, the financial sector gets better. Researchers can say that a negative relationship is evident between financial sector development and economic growth if there is a development of the financial sector but the economy does not grow, and vice versa. The financial sector is viewed as a liability to economic growth because it does not promote growth but instead hinders it. On the other hand, there is a neutral link if advancements in the financial sector have no relevance to economic expansion and if the financial

Lead City University Ibadan DO NOT COPY

sector is unaffected by the strength of the economy. A non-linear relationship (inverted U shape) signifies that the impact of financial development is thought to have a critical threshold point. This means that financial sector development promotes economic growth to a certain level, where growth slows. It is otherwise called the disappearing effect of finance on growth. This shows that too little or too much finance impedes growth. However, the study categorised the empirical data based on African countries and non-African countries.

2.3.1.1 Africa

Nigerian data between 1986Q1 and 2016Q4 is used to study the nexus between financial development and economic growth. Broad money to GDP is used as a proxy for financial development, while real GDP is used to estimate economic growth. The analysis showed no long-run association between the variables using the trace and maximum Eigenvalue tests. The research also uses the structural vector autoregressive (SVAR) model's impulse response function (IRF) and forecast error variance decomposition (FEVD), and the results show that shocks in financial development have a favourable and significant impact on economic growth[37].

A study analysed the impact of financial development on economic growth in the SSA region from 2000 to 2017 using GMM and found that broad money as a percentage of GDP has no effect on growth, while credit to the private sector as a percentage of GDP indicates a weak positive influence. The outcome of the broad-based index has a considerable positive impact on the region's growth, and the study concluded that using a single variable measure of financial development could lead to a false conclusion that financial development has no impact on economic growth or underestimate the basic contribution. Furthermore, the research findings revealed that while financial institution development is inconsequential to the economy, financial market development is critical to the expansion of SSA[43].

Lead City University Ibadan. DO NOT COPY

Similarly, Kenya's economy was studied to assess the asymmetric effect of financial development on economic growth from 1972 to 2017. A newly built financial depth index was employed, which included trade openness, real interest, domestic credit, and broad money. The results of the non-linear auto-regressive-distributive lag (NARDL) technique revealed that positive financial development shocks encourage economic growth in the short and long term, respectively[40].

Economic growth was proxied by real GDP per capita in a panel analysis of three countries from the CEPGL (Economic Community of Great Lakes) region, and financial development is captured by liquidity rate, currency ratio, domestic credit to GDP, and ratio of private credit to GDP. Data was collected from 1976 to 2013. With the exception of the liquidity rate of the countries, all indicators of financial development have a favourable effect on CEPGL economies[147].

Using panel data from the WDI database, fifteen members of the Economic Community of West African States (ECOWAS) were studied from 1990 to 2017. The study identified no conditional convergence among ECOWAS member nations using the FMOLS technique of analysis. In addition, the conditional convergence financial development cutoff level is 22.8 percent. Low-income member states must therefore thrive in order to attract smooth credit from the private sector and maintain convergence with their high-income neighbours[148]

Another study examined ECOWAS countries with quarterly data spanning from 2000 to 2017. Data is sourced from WDI, International Financial Statistics (IFS) and the United Nations Conference on Trade and Development (UNCTAD). The result of fixed-effect regression demonstrated that net domestic credit to the private sector enhances growth in economies as a unit rise in access to domestic credit will promote the performance of the economy by increasing investments in the countries[34].

Lead City University Ibadan DO NOT COPY

Gregory-Hansen-Quandt-Andrews-Muwanga (GHQAM) cointegration procedures based on OLS/FMOLS estimations are used to analyse four East African Community (EAC) countries: Uganda, Kenya, Burundi, and Rwanda. Different sample sizes are investigated based on data availability constraints: 1964–2013 for Burundi; 1961–2013 for Kenya; 1964–2005 for Rwanda; and 1982–2013 for Uganda. The results show that there is a long-run cointegration link between financial development and economic growth, although it is unstable over time. The findings show that financial development has either a positive or no impact on economic growth across countries and regions[36].

Some sets of studies confirmed negative linkages between financial development and economic growth, although with diverse reasons for the inverse relationship. Therefore, such economics researchers are not advocating for financial development. For example, a study examined 39 African countries to determine the relationship between financial development, gross fixed capital formation, and economic growth from 1997 to 2017. The study employed Augmented Mean Group (AMG) and Common Correlated Effects Mean Group (CCEMG) estimation techniques on financial development. Financial development is measured with five indices: broad money to GDP, domestic credit to GDP, bank deposit to GDP, credit to the private sector to GDP, and gross domestic savings. The results revealed that all indicators are insignificant except bank deposits, which significantly has a dampening effect on economic growth[44].

A panel autoregressive (PVAR) approach was used to examine the impact of financial development on regional growth in the Middle East and North Africa (MENA) countries from 1980 to 2015. As indicators of economic growth and financial development, real GDP per capita and domestic lending to the private sector as a percentage of GDP are used, respectively. To

Lead City University Ibadan DO NOT COPY

achieve stationarity in variance, the data series were transformed to logarithmic form. The findings show that MENA countries' financial development is impeding their growth[149].

The Economic Community of West African States (ECOWAS) was studied over the 2005–2016 period to ascertain the relationship between financial development and economic growth. The long-run and short-run relationships between the variables were determined using the pooled mean group estimator on a dynamic panel ARDL model analysis. The findings showed that all financial development methods evaluated in the study stifled ECOWAS countries' progress[150].

Research studied 44 Sub-Saharan African countries from 1990 to 2017 using SYS-GMM. The endogenous growth model forms the basis of the investigation. GDP per capita is used as a dependent variable, while domestic credit to the private sector is used as a proxy for financial development; telecommunications infrastructure is an indicator of telecommunications; government expenditure, population growth, trade openness, gross capital formation, school enrolment, and the inflation rate are independent variables. The findings suggested that too much finance retards economic growth. This idea emphasises that irrelevant financial division expansion will deplete human capital, increase financial instability, and make the whole economy more vulnerable to economic failure[35].

The contribution of financial development to economic growth in Nigeria was analysed using time series over the period 1980–2019. While the real interest rate, the ratio of gross domestic savings to GDP, and the ratio of domestic credit to the private sector to GDP served as explanatory variables, the annual growth rate of gross domestic product was used as the dependent variable. The results showed that two of the variables, real interest rate and gross domestic savings, when combined, are negatively related to the GDP annual growth rate, while domestic credit to the private sector is positively related to the dependent variable, with the coefficient of multiple

Lead City University Ibadan DO NOT COPY

determination indicating that the model is well-fitting, with the variables accounting for approximately 93 percent of GDP[31].

Another study focused on the threshold effect of the real sector on the relationship between financial development and economic growth in sub-Saharan Africa, spanning from 1986 to 2015. Economic growth is measured as real GDP per capita, financial development as domestic credit to the private sector and domestic credit by the banks, and the real sector as industrial value-added, agriculture value-added, and total factor productivity. The study employed a threshold regression approach on an augmented endogenous growth model. Empirical evidence showed that, at a higher level in the real sector, financial development contributes significantly to economic growth[151].

The impact of financial development and savings on economic growth in Nigeria from 1981 to 2015 was examined using kernel quantile regression, ordinary least squares (OLS), and autoregressive distributed lag (ARDL) models. Financial development was captured with domestic credit provided by the financial sector as a percentage of GDP, broad money as a percentage of GDP, and domestic credit to the private sector as a percentage of GDP. Two measures of financial development were shown to have a weakly significant beneficial impact on economic growth. While broad money as a percentage of GDP has a negative but substantial impact, savings have a moderately beneficial impact on economic growth, yielding conflicting results[41].

2.3.1.2 Other Emerging Countries

Annual data from Bangladesh is used to study the causality between financial development and economic growth, spanning from 1987 to 2019. The ARDL bounds testing approach to cointegration was applied. The result showed a unidirectional causality from financial development to the output of Bangladesh in the long run. Findings revealed that private sector

Lead City University Ibadan DO NOT COPY

credit and broad money supply, which are the two proxies adopted, augment growth in the long run. The study concludes that the availability of credit in the private sector helps to increase investment and enhance growth as it serves as a source of additional funds for the financial sector[38].

In a study of South Asian countries such as Pakistan, India, Bangladesh, Nepal, and Sri Lanka, the link between financial development and sustainable economic growth was examined. Financial development is proxied by liquid liabilities (% of GDP), money supply (% of GDP), and domestic private credit to the banking sector (% of GDP). Data was obtained from the World Bank for a period between 2000 and 2018. The study employed Pedroni Kao, Westerlund, and Edgerton tests of cointegration to examine the long-run relationship among the variables. Also, fully modified ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS) models are used in estimating the coefficients of cointegrating vectors. The result demonstrated that there was a long-term relationship among the variables. Also, the study revealed a positive relationship between financial development and green economic growth. The findings conclude that financial development improves the quality of life of individuals and promotes economic sustainability[152].

Furthermore, utilising quarterly data from 1996Q1 to 2018Q3, the relationship between financial development and Indian economic growth is investigated. Economic output and financial development are measured by real GDP and the broad money-to-GDP ratio, respectively. To check for cointegration within the variables, the researchers used the non-linear autoregressive distributed lag (NARDL) bound test. The findings suggest that financial development has a long-term beneficial and considerable impact on economic growth. In addition, the positive and negative effects of finance on the economy are symmetric[153].

Lead City University Ibadan DO NOT COPY

Similarly, the economies of SAARC (Bangladesh, India, Nepal, Pakistan, and Sri Lanka) are investigated using annual data from 1993 to 2016. The ratio of bank credit divided by bank credit plus central bank domestic assets represents the degree to which the central bank versus commercial banks is allocating credit, and the ratio of credit allocated to the private sector to total domestic credit represents the level of financial services. The results of the linear regression analysis revealed that both variables are statistically and positively significant. According to the findings, increasing the size and performance of commercial banks, as well as allocating more credit to the private sector, boosts economic growth[19].

The relationship between financial development and economic growth in six ASEAN countries, including Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam, was investigated using a Bayesian inference approach via the Markov Chain Monte-Carlo (MCMC) sampler on data from 1980 to 2016. The findings reveal that financial development has a significant positive impact on ASEAN countries' economies. According to the findings, a developed financial system will boost economic growth by mobilising and allocating savings capital flows to projects with high productivity or output[154].

In a study of the Pakistani economy, the linkage between financial development and economic growth is examined, spanning from 1980 to 2017. The dependent variables are financial development, trade openness, labour force, inflation rate, government consumption expenditure, and gross fixed capital formation, while the dependent variable is real GDP. Using quantile regression, the result reveals that at a threshold level below 0.151, there is a negative impact of financial development on economic growth and vice versa. Therefore, when Pakistan's financial development exceeds the threshold level, it contributes more to economic growth because a higher level of financial development boosts economic growth more. This finding concludes that

Lead City University Ibadan DO NOT COPY

economic growth responds differently to financial development, and the relationship between the variables is U-shaped[5].

In another study conducted on the Brazilian economy, the autoregressive distributed lag (ARDL) technique is employed on data from thirty years to study the link between the variables. The findings show that private credit has a positive impact and is statistically significant on economic growth both in the short- and long-run. Therefore, the economic growth of Brazil increases with an increase in credit to the private sector[26].

From 1995 to 2016, a study examined the linear and non-linear relationships between financial development and economic growth in 11 Emerging European Countries (EEC): Bulgaria, Slovakia, the Czech Republic, Croatia, Hungary, Lithuania, Poland, Estonia, Romania, Latvia, and Slovenia. To quantify financial development, the researchers employed domestic credit to the private sector as a single variable and a composite index that included depth, access, and efficiency indicators. The linear hypothesis shows that finance has a positive effect on economic activity only in the short run, whereas the hypothesis of non-linearities related to the finance-growth nexus shows a U-shaped relationship, indicating that more finance promotes growth until a certain threshold is reached, beyond which it has a negative impact[155].

Using the NARDL technique, the non-linear asymmetry link between Pakistan's financial development and economic growth is explored from 1971 to 2016. The findings reveal that the variables are cointegrated and that there is bidirectional causality between them. Meanwhile, a negative shock in financial development has a positive asymmetric effect on economic growth[156].

The generalised method of moment (GMM) and panel VAR causality are used to examine 48 Asian nations from 1975 to 2015. The empirical result indicates that domestic credit has a

Lead City University Ibadan DO NOT COPY

detrimental influence on economic growth due to the lower quality of loans allocated to domestic households rather than industrial businesses[157].

The results of Granger causality and VECM on Bangladesh data from 1990 to 2018 demonstrate that finance has a negligible effect on growth in the short term. They discover a negative relationship between the two over time, suggesting the banking sector's fragility and inefficient use of finance[158].

Quarterly data from South Korea spanning from 1983Q1 to 2021Q3 is used to study the relationship between financial development and economic growth by employing a time-varying Granger causality test. The study adopted the Cobb-Douglas production function, and data was collected from the Bank of Korea Economic Statistics System. The variables were proxied by real GDP per capita and broad money divided by GDP. The result of the study showed that economic growth positively granger causes financial development in the early study period, but in the latter period, one-way causality runs from financial development to Korean growth. The findings concluded that the link between the variables differs and is sensitive to the sample period[159].

The Sri Lankan economy was studied between 1990 and 2018 by obtaining data from World Bank open data and the Central Bank of Sri Lanka annual report. The research used gross domestic product as a dependent variable, and independent variables were credit to the private sector, the ratio of gross fixed capital formation to GDP, trade, consumer price index, and labour force. The result of the ARDL model shows that credit to the private sector and the ratio of gross fixed capital formation to GDP show a significantly positive relationship with economic growth[160].

Similarly, data from seven countries of the South Asian Association for Regional Cooperation (SAARC) was used to investigate the impact of financial development on economic growth from

Lead City University Ibadan DO NOT COPY

2006 to 2019. The data was subjected to a Pedron cointegration test, a Pooled Mean Group (PMG) estimate, and the ARDL approach. The results reveal that the variables have cointegrated over time. Furthermore, based on financial development indicators, a mixed result emerged: broad money has a beneficial impact on economic growth, but domestic credit to the private sector has a negative impact[39].

2.3.2 Trade Openness and Economic Growth

2.3.2.1 Africa

Academics and scholars have recently debated and verified the relationship between trade openness and economic growth. Researchers differ on whether openness contributes to increased economic development. Some are sceptical that openness has a good correlation with growth; others do not believe it has any effect on growth at all.

Using POLS, random and fixed effects, and sys-GMM models, the impact of the digital economy and global trade on Africa's economic growth is investigated with data ranging from 2000 to 2018. The results showed that trade had a significant positive impact on economic development, using merchandise trade as a proxy for trade openness[161]

For a group from four West African nations (Côte d'Ivoire, Ghana, Nigeria, and Senegal), research investigated the connection between trade openness, foreign direct investment (FDI), and economic growth between 1998 and 2017. Static panel regression techniques were used to determine the influence of trade openness, FDI, inflation, and investment on GDP. The statistical data reveals that aggregated trade openness does positively and significantly affect economic growth in the four countries[162].

Lead City University Ibadan DO NOT COPY

The trade and investment-led growth hypothesis is revisited in Nigeria by obtaining data from WDI ranging from 1982 to 2017. Economic growth is measured by the annual percentage growth of real GDP and trade openness as the sum of exports and imports divided by GDP; other variables are the net inflow of FDI and the annual percentage growth of exports. All variables incorporated substantially stimulate growth except FDI. The study concludes that trade openness promotes the Nigerian economy[163].

The impact of trade openness on the economic growth of Ghana and Nigeria is examined for the period 1998–2017 with three estimators: pooled OLS, fixed effect, and random effect. The dependent variable is GDP, while trade openness, the inflation rate, investment, and the real exchange rate are the independent variables. The study discovered that trade openness and exchange rates have a significant and positive influence on economic growth[164].

Quarterly data from South Africa is employed to investigate the link between international trade and economic growth from 1960 to 2018. The Johansen co-integration test established a long-run equilibrium relationship between the variables when external shocks such as the exchange rate and global economic sentiment are controlled for. Also, results from the VECM technique show that imports positively impact economic growth, and there is a two-way causality between the variables[165].

The influence of openness and institutions on economic growth measured by per capita real GDP is estimated with ordinary least squares in the Middle East and North Africa (MENA) region over 1994–2018. Data are obtained from the World Development Indicators (WDI) database, the Worldwide Governance Indicators (WGI) database, and the Penn World Table dataset. The study added openness and institutional quality indicators to the neoclassical growth model. The independent variables include the GDP share of total trade as a proxy for openness; gross fixed

Lead City University Ibadan DO NOT COPY

capital formation as a percentage of GDP as a measure of physical capital; gross secondary school enrollment in 1994 as a measure of human capital; and an institution index calculated as the average of six indicators, including rule of law, regulatory quality, voice and accountability, political stability, and control of corruption. The results showed that institutions and trade openness are both statistically significant positive factors. Despite this, high-income countries' real GDP per capita has lagged behind middle-income countries[166].

ECOWAS data from 1994 to 2019 is used to examine the effects of trade openness and FDI on economic growth. GDP per capita was used to capture economic growth, FDI was quantified as a share of FDI in GDP, and trade openness is measured using two indicators: trade share, which only measures domestic trade, and composite trade share, which combines both trade share and world trade share. The long-run relationship between the variables was examined using the Kao and Pedroni co-integration tests, and the results indicate that there is a co-integration and long-run relationship between the variables. The results of the autoregressive distributed lag technique demonstrate that trade share and composite trade share have favourable short-term effects on growth in Benin and Ghana but negative short-term effects in Senegal, Cabo Verde, and Liberia. The study found that while FDI and trade openness have favourable long-term effects on growth, the short-term consequences vary across ECOWAS members. As a result, it is necessary to promote trade openness, increased FDI inflow, and export diversification in order to increase growth[167].

Although the contribution of trade openness to stimulating economic growth cannot be underestimated, there are some studies that conclude that trade openness impedes economic growth. For instance, a study employed multivariate regression analysis to investigate the link between trade openness and economic growth during the period 2005–2017 using the Southern

Lead City University Ibadan DO NOT COPY

African Development Community (SADC) data**.** The authors utilised a stochastic Cobb-Douglas production function. The dependent variable is the real gross domestic product, and the independent variables are classified into two categories: trade-related variables and factors of production variables (control variables). The former are total debt service as a percentage of exports of goods, services, and primary income, trade openness as a share of total trade to real GDP, terms of trade as net barter terms of trade (TOT) index, export of goods and services (EXP), real effective exchange rate (REER) index, and foreign direct investment inflows, while the latter are capital as gross fixed capital formation, labour as total labour force, energy use, and technology. All factors of production are positive and significantly influence growth. Foreign direct investments, terms of trade, and the real effective exchange rate are positive but statistically insignificant. Exports are positively and statistically significant, implying that export expansion enhances SADC countries' real *GDP*. They also provided empirical evidence rejecting the hypothesis that trade openness would promote SADC countries' real GDP[168].

A number of researchers stated that trade openness reflects a non-linear pattern on GDP. For example, in studying 29 sub-Saharan African countries, a composite index is used to proxy trade, and other explanatory variables such as financial development, inflation rate, external debt, human development index, population growth, natural resource rents, military expenditure as a percentage of GDP, and institutional quality are employed. An enhanced version of the neoclassical growth model was used in the study. The result of the system GMM technique applied to data ranging from 1996 to 2018 revealed that the positive impact of trade openness on economic growth is dependent on the quality of the institution[169].

A number of macroeconomic variables, like foreign capital inflow, trade openness, inflation rate, interest rate, and exchange rate, are employed to investigate their impact on output performance

Lead City University Ibadan DO NOT COPY

in Sub-Saharan African countries from 1985 to 2018. Using fixed effect and random effect models, the result revealed that trade openness, inflation rate, and foreign capital inflow demonstrated significant and positive influence on output performance and national productivity[170].

In a study of 40 sub-Saharan African countries, the relationship between trade openness, poverty, and economic growth is investigated. ARDL, VAR, and GMM estimation techniques are employed to analyse data from 1990 to 2017. Following the estimation of data, the study found that trade openness, institutional quality, and foreign direct investment stimulated economic growth significantly in the long run. Furthermore, trade openness increases the level of poverty in the short run, while trade liberalisation, population growth rate, and institutional quality reduce poverty levels in the long run[171].

The link between trade openness and economic growth in Nigeria is examined with time series data from 1987 to 2018. The study utilised the VECM estimation technique, and the findings revealed a positive impact of trade openness on the growth of the Nigerian economy in the long run. Furthermore, trade flow promotes growth and exports declines it[172].

Similarly, West African countries are further examined with a tri-variate Toda-Yamamoto model to study the interaction between energy consumption, trade openness, and economic growth. The variables are stationary at levels using Levin, Lin and Chu (LLC), Augmented Dickey Fuller-Fisher (ADF), and Phillips-Perron (PP) unit root tests. The empirical findings show that there is no causal nexus between trade openness and economic growth. However, the effect of openness to trade is more pronounced in countries with lower levels of economic development[173].

The effect of trade liberalisation on Nigeria's economic growth from 1981 to 2018 is studied using the ARDL bounds test technique. The model adopted is based on endogenous growth theory. The

Lead City University Ibadan DO NOT COPY

dependent variable is GDP per capita, and trade liberalisation is measured by the ratio of total trade to GDP. Other explanatory variables are gross fixed capital formation, inflation rate, and general government final consumption. The findings show that trade liberalisation hampered the growth of the Nigerian economy. Therefore, it was unnecessary for international organisations to urge its implementation in developing nations in the late 1980s and early 1990s[174].

Another study focused on the ECOWAS region and investigated the impact of trade openness on economic growth between 2000 and 2017. The pooled ordinary least square (POLS), generalised least square (GLS), random, and fixed effect model techniques were used as the analysis approach. According to the study, trade openness has a negative and insignificant influence on the region's economic growth. The study came to the conclusion that, despite their efforts to open up their economies, member countries were not at all prepared for the technical aspects of liberalisation, which was the root cause of the unaccountable trade within the region[175].

Using time series data from 1994 to 2019, a study assesses the effects of trade openness and foreign direct investment on economic growth in non-West African Economic Monetary Union (WAEMU) countries. The short- and long-term effects of trade share and foreign direct investment on economic growth were investigated using the auto-regressive distributed lag (ARDL) method; also, the study adopted the Solow growth model. The dependent variables are trade openness measured as trade share and composite trade share, foreign direct investment as FDI net inflow, inflation rate as consumer price index, human capital as life expectancy at birth, population as growth rate of population, and exchange rate as nominal exchange rate. The dependent variable is captured as GDP per capita growth. And the outcome demonstrates that, over time, FDI greatly increases GDP per capita, whereas trade share and composite trade share decrease it. The cointegration test result indicates a long-term dynamic relationship between trade share and

Lead City University Ibadan DO NOT COPY

foreign direct investment and economic growth. The estimation results led to the conclusion that, in non-WAEMU countries over the long term, foreign direct investment favourably and significantly promotes economic growth, whereas trade openness adversely and significantly inhibits it. The study suggested that non-WAEMU countries should minimise imports by increasing investment in domestic manufacturing and agriculture in order to productively limit trade openness[176].

The effect of international trade on the economic growth of East African countries (EAC) is examined. Data from the World Bank database, the World Trade Organisation, and the World Integrated Trade Solution are used in the analysis for the years 1990 to 2017. The GDP rate is used as the dependent variable for measuring economic growth, and four trade-related variables are used to measure international trade: trade openness, represented as the sum of exports and imports divided by GDP; terms of trade, as the ratio of export prices to import prices; and export and import, which are measured as the total annual export and import, respectively. The control variable is the inflation rate, measured as the annual percentage change in the consumer price index (CPI). In the study, VECM, pooled OLS, random effect, and fixed effect models were used. The study based its analysis on Kenya and other EAC members. The empirical findings revealed that the EAC countries' economic growth is only negatively impacted by trade openness. On the other hand, the rate of inflation and openness to international trade have a considerable negative impact on Kenya's economic growth, whereas imports have a favourable impact. The authors came to the conclusion that Kenya's and other EAC countries' economies are growing slower as a result of opening up to international trade[127].

Data from Middle East and North Africa (MENA) countries was used to examine the nexus between trade openness, domestic investment, and economic growth from 2003 to 2017. The

Lead City University Ibadan DO NOT COPY

research used FMOLS and DOLS regression techniques to examine the link. The findings revealed that trade openness impedes economic growth while domestic investment and the size of the labour force enhance growth[177].

From 1998 to 2017, research investigated the relationship between trade openness, inflation, and GDP growth in nine West African economies. The study relies on secondary data sourced from the World Bank Development Indicator (WDI) and the World Governance Indicator (WGI). The dependent variable in this study is gross domestic product growth. As independent variables, real exchange rate, investment, inflation, and trade openness. The regression model is estimated using pooled ordinary least squares (POLS), random effects, and fixed effects. Some of the results varied with the method of estimation; an increase in the inflation rate significantly retards economic growth for POLS and random effects but is insignificant for fixed effects. Trade openness also has a negative and significant relationship with economic growth when POLS is employed as an analytical tool but is insignificant for random effects and fixed effects. However, the real exchange rate has a positive and significant impact, while investment is insignificant for the three analytical methods[178].

For instance, in an investigation to discover whether openness to foreign trade stimulates economic growth using time series data from Nigeria, the Vector Error Correction Model (VECM) is employed as the estimation technique. The findings show that trade openness has no remarkable influence on growth, both in the short run and the long run[179].

The Nigerian economy is investigated from 1981 to 2018 to ascertain the relationship between trade and economic growth using OLS. Data is obtained from the Central Bank of Nigeria's (CBN) statistical bulletin. The study adopted the theories of comparative cost and factor endowment. The

Lead City University Ibadan DO NOT COPY

empirical result indicated that exchange rates, imports, exports, and trade openness have no substantial impact on economic growth. However, free trade policy retards growth in Nigeria[180].

In a study of the Nigerian economy, the linkage between trade openness, foreign direct investment, and exchange rate fluctuations on non-oil gross domestic product (NOG) is analysed. After obtaining time series data from 1986 to 2019, the authors employed ARDL and vector error correction mechanism (VECM) estimation techniques. Data are sourced from the Central Bank of Nigeria (CBN) statistical bulletin, the National Bureau of Statistics (NBA), and the WDI database. NOG is captured by GDP constant 2010 US dollar and trade openness as a ratio of trade to GDP. Findings from the study indicated varying results at different time periods. Firstly, trade openness has a non-linear relationship with NOG in the short run; this implies that a greater level of openness to trade has a negative impact on NOG in the recent year but later has a reverse effect by the end of the first year. On the other hand, short-term exchange rate fluctuations have a negative impact on NOG, while FDI has a positive but statistically insignificant relationship with Nigeria's NOG. Secondly, exchange rate, FDI, and trade openness on Nigeria's non-oil GDP were found to have negligible effects in the long run. The inconsistent and sudden changes in policy, significant fluctuations in the flow of FDI, and the exchange rate could all be used to explain the variables' negligible effects[181].

The Common Market for Eastern and Southern Africa (COMESA) region is used in a dynamic panel model to examine how trade openness and liberalisation affect the growth impact of FDI from 2000 to 2015. The generalised one-step moments-difference estimator is used to estimate the model. The study measured economic growth as GDP per capita, trade openness as measured by the share of total imports and exports to GDP, FDI as measured by the inflow of foreign direct investment, human capital stock as measured by the Human Development Index, domestic

Lead City University Ibadan DO NOT COPY

investment as captured by the share of gross fixed capital formation to GDP, public debt as measured by the share of gross debt liabilities to GDP, and inflation rate as measured by changes in the annual general level of prices. The empirical results demonstrated that while trade openness has no direct effect on economic growth in the region, foreign direct investment has a negative impact. However, the ability of the region to absorb and profit from the spillovers of foreign direct investment is positively impacted by trade openness and liberalisation. The results suggest that the COMESA region should work to increase trade openness and liberalisation, pursue foreign direct investment that supports economic growth, and achieve favourable economic growth from these investments[182].

Furthermore, a number of studies propose that trade openness has a negligible impact on economic growth. For example, Africa's regional economic communities (RECs), focusing on the Economic Community of West African States (ECOWAS) and Southern African Development Community (SADC), are examined to analyse the relationship between trade openness and economic growth for the period 2006–2017. Based on data from the World Development Indicators (WDI) and UNCTAD databases, the study uses the POLS, fixed, and random effects estimation methodologies as well as the Durbin-Wu Hausman test. The authors capture the economic growth rate as the annual proportion of the GDP growth rate at market prices in constant local currency, and they use three measures of trade openness: the trade to GDP ratio, world trade share, which captures a country's relative contribution to total world trade, and composite trade share, which is a trade share of overall economic activity. Other variables employed are the lending rate, foreign reserves, FDI net inflow, and the real effective exchange rate. In both the combined simulated ECOWAS and SADC and the individual REC, the results indicate a negligible relationship between economic growth rate and trade openness. The study came to the conclusion that Africa faces difficulties due to the low rate of intra-regional trade among its members[183].

Lead City University Ibadan DO NOT COPY

Some scholars in their research stated that the direct impact of openness on growth varies based on region, estimation technique employed, and measures employed to capture the variable, while others support the idea that it is based on the existence of certain conditions.

For example, 52 African countries are disaggregated into five regions, and diverse estimation techniques such as pooled OLS, fixed effects, and sys-GMM are utilised on the data in the period 2000–2018. Economic growth is proxied by GDP per capita, and trade is measured using four distinct indicators: imports plus exports to GDP, imports to GDP, exports to GDP, and the composite trade openness index. The results indicate that the estimation technique has a diverse openness-growth link. Also, the outcome varies across the sub-region[184].

In another study, the link between trade openness, financial openness, and economic growth in Sub-Saharan African countries are examined from 1980 to 2017. The region is disaggregated into low-income countries and middle-income countries. A neo-classical approach is applied to the model, and difference-GMM as well as system-GMM is employed as estimation techniques. The result revealed that trade openness is beneficial to countries with low incomes, but a mixed effect is obtained for middle-income countries[185].

Some scholars have established that the mixed result obtained is based on the variable indicators used. For example, when OLS is employed on Nigerian data from 1988 to 2020 using real GDP as a dependent variable while independent variables are the ratio of net exports to GDP, tariff rate, exchange rate, net exports, and foreign direct investments, the findings conclude that all the explanatory variables are positively and significantly linked to economic growth except net exports. Therefore, the larger the gap between exports and imports, the lower the GDP. The research is based on the augmented Heckscher-Ohlin model[186].

Lead City University Ibadan DO NOT COPY

Another study on the Nigerian economy utilised time-series annual data from 1980 to 2020 to examine the impact of trade openness on economic growth. The dependent variable is captured by GDP, and trade openness is represented by export and import rates. The controlled variable is the real exchange rate. The results of the ARDL suggest that the trade openness proxy of the export rate positively impacts economic growth while the import rate retards growth in the long run. The research concludes that the economy should imbibe an import liberalisation policy[187].

The link between trade openness and economic growth is examined with reference to the Zambian economy from 1980 to 2019. Using the ARDL technique, the findings stated that a percentage increase in trade openness retards growth by 0.14 percent. However, openness to trade promotes economic growth when based on other macroeconomic variables such as FDI, inflation rate, terms of trade, and secondary school enrollment. The study concluded that trade openness has both a direct and indirect impact on economic growth[57].

A study examines how institutional quality and trade openness interact to affect economic growth in sub-Saharan Africa. The sample spans the years 1986 to 2015 and comprises 38 sub-Saharan African nations. As estimate methods, pooled OLS, fixed effect, and dynamic GMM were employed. Data on institutional quality are obtained from the International Country Risk Guide (ICRG), which is published by Political Risk Services (PRS), and others are extracted from WDI. The empirical portion employed a nonlinear growth regression specification that takes into account the interactions between trade openness and the quality of the bureaucracy, law and order, corruption, stability of the government, and democratic accountability. The study discovered that all indices of institutional quality (IQ) employed hinder economic growth. The interaction of institutional quality and trade openness had a favourable effect on economic growth. It suggests

Lead City University Ibadan DO NOT COPY

that in the presence of high-quality institutional characteristics, the impact of trade openness on economic growth is more favourable[188].

Mozambique, a low-income African country with sustained economic growth for over two decades, was examined from 1981 to 2017. The study utilised the Vector Error Correction Model (VECM) and VAR as estimation techniques. The result of the findings shows short-run and long-run causality from economic growth to trade openness[189].

2.3.2.2 Other Emerging Countries

For the sample period from 1990 to 2017, the causal association between trade openness and economic growth in 15 Asian countries was investigated. Real GDP per capita is used as a proxy for economic growth; trade openness is calculated as the sum of exports and imports divided by the total population; the ratio of gross capital formation to the total population is used as a measure of domestic investment per capita; and per capita FDI inflow is calculated as the ratio of FDI to population growth. The variables are stationary at the first difference, according to the results of the Levin-Lin-Chu (LLC), Im, Pesaran, and Shin (IPS), and Maddala & Wu (MW) unit root tests. The research discovered a strong positive association between trade openness and economic growth using DOLS and FMOLS. Also, two-way causality runs between the variables[190].

From 2007 to 2018, research investigated the relationship between foreign direct investment (FDI) measured as net inflow FDI, capital formation as gross capital formation, trade openness as merchandise trade, inflation rate as consumer prices, money supply as broad money, and economic growth as GDP growth. A panel of data from 20 Asian economies was employed over a 12-year period. The fixed effect model and robust standard error are used to examine the relationship in

Lead City University Ibadan DO NOT COPY

the model. The findings revealed that all the variables had a favourable impact on economic growth except the inflation rate[191].

Furthermore, 34 Asian countries are examined to determine the effect of liberalising trade on growth from 1985 to 2014. Economic growth is proxied by GDP per capita, and the explanatory variables are trade openness, financial development, foreign direct investment, gross fixed capital formation, remittances, and human capital. The study employed Generalized Method of Moment and the results confirmed that trade openness significantly stimulates economic growth[192].

Research that concentrated on the service sector rather than the manufacturing sector examined data for Pakistan from 1990 to 2017. The study uses the GDP growth rate, FDI, inflation rate, real effective exchange rate, trade openness, and service sector as variables to analyse the influence of trade openness on economic growth. The results of the ARDL and ECM techniques demonstrated that the real effective exchange rate has a positive or negative impact on the prices of goods and services because of its fluctuations. Additionally, trade openness and the service sector foster economic growth[193].

Data from 1961 to 2019 was used to study the G-20 countries. Trade openness was measured using the following four indices: import-export share, total of export and import to GDP, export to GDP, and import to GDP. Other variables in the model are FDI and information and communication technology (ICT). The estimating methods used are VECM, FMOLS, DOLS, and GMM. The researchers discovered that trade openness had a positive and significant impact on economic growth, and they discovered a feedback association between trade openness and economic growth as a result of the Granger causality test[194].

Lead City University Ibadan DO NOT COPY

A study examined the direction of causality among foreign direct investment, trade openness, and economic growth in BRICS countries using annual data from 1990 to 2018. The study employed an auto-regressive distributed lag model to test cointegration and the Dumitrescu and Hurlin-Granger causality test to examine the causal relationships among the variables. Also, an augmented neo-classical production function method is adopted for the research. According to empirical findings, trade openness aids the development of FDI, and both variables contribute to long-term economic growth. There is a significant positive relationship between trade openness and GDP for all BRICS economies. In addition, there is a one-way causal relationship between trade openness and economic growth. The authors concluded that these countries could improve their trade by adopting new regulations and enacting more accommodating trade policies that would increase import and export activity in those nations[195].

The dynamic relationship between trade openness, FDI, and ICT and economic growth is examined in the BRICS countries from 2000 to 2018, with gross domestic product as the dependent variable and Internet, telephone, mobile, broadband, secure internet servers, trade, and foreign direct investment as the independent variables. Using generalised methods of moment, the results of this investigation are examined (GMM). This study found that ICT has a favourable effect on a few countries' economic development. On the other hand, economic growth is negatively impacted by trade openness and foreign direct investment[196].

A study examined the impact of trade openness on the economic growth of Indonesia by obtaining data from the World Bank spanning from 1986 to 2017. The outcome of the GMM estimation technique indicates that all the variables employed in the model—trade openness, FDI, inflation rate, and number of workers have a significant positive effect on the growth of the economy. Due to the instability in the foreign economy, the existence of trade openness also poses risks to the

Lead City University Ibadan DO NOT COPY

performance of the domestic economy. It is anticipated that the proper economic strategy for managing trade openness will lessen these risks and benefit the Indonesian economy[92].

Real GDP is used as the regressand in a model, along with a variety of other regressors such as total trade, exports, imports, exchange rates, gross capital formation, and foreign direct investment, to examine the effects of trade on economic growth in the Philippines (1981–2019). The results of the analysis, which used multivariate ordinary least squares, suggested that exports have a considerable positive impact while trade openness has a significant negative impact on economic growth. The results showed that imports do not significantly affect the regressand. The researchers came to the conclusion that an import-based strategy was inapplicable for the expansion of the economy[197].

The relationship between monetary policy, trade openness, and economic growth in India is investigated from 1985 to 2016. The dependent variable is represented by real GDP, and the dependent variables are broad money supply, real interest rate, real exchange rate (REET), and trade openness measured conventionally. The outcome of the ARDL estimation technique indicated that the impact of trade openness is unstable because trade openness stimulates economic growth in the short run and retards it in the long run[198].

The ARDL and threshold models are applied to China data from 1994 to 2018 to study the impact of trade openness on economic growth quality under exchange rate fluctuation. The variables employed in the model are the trade interdependence index generated from the sum of imports and exports as a percentage of GDP, the real exchange rate, FDI, and economic growth quality, which is measured by an index that encompasses efficiency, stability, and sustainability. The researchers discovered a long-term association between trade openness and the quality of economic growth, as well as the fact that short- and long-term trade openness significantly improves growth quality.

Lead City University Ibadan DO NOT COPY

However, they maintained that the beneficial effect varies by region and is realised by thresholds[199].

A study investigated the link between bilateral trade openness and economic growth before, during, and after the global financial crisis in 2008 for 15 Latin American (LA) countries using an augmented gravity model of trade. Tests are conducted on various trade openness indices, including the trade share ratio, the inverse of the tariff rate, and the ratio of export price level to import price level. The result showed empirical proof that when all LA countries are considered, there is a positive link between trade openness and economic growth before, during, and after the global financial crisis. However, when the ratio of the price value of exports to the price value of imports is used as a proxy for openness, the correlation turns negative. Also, after adjusting for outliers, the relationship between trade openness and growth remains negative. The study also determined whether geographical variables such as proximity to other countries, landlocked status, shared borders, and country size should be considered alongside demographic variables such as civil liberties and political rights when determining the link between trade openness and economic growth and discovered that both factors have a positive and significant influence, but countries with strong performance on the degree of civil rights will have smaller trade openness[200].

In a study that compares China and India, trade openness and economic growth are examined using the data triangulation technique. According to the research, China and India's trade openness ratios in 2018 were 35.4 percent and 31.9 percent, respectively, reflecting a decline in the trade-to-GDP ratio in both economies. Simple exports-to-GDP ratios for China were 20.5 percent and 42.34 percent in 2000 and 2010, respectively, compared to 9.6 percent and 15.1 percent for India, showing that China is significantly more integrated into international trade than India. China has grown to be India's top trading partner over time, but India's bilateral trade deficit is also widening

Lead City University Ibadan DO NOT COPY

alongside its overall trade deficit with the rest of the world. This contributes to India's overall trade imbalance and presents a challenge for policymakers who want to maintain trade. In order to realise their full trade potential, both nations must remove their current trade barriers and limitations[201].

Using time series data from Sri Lanka, a study statistically evaluated the link between trade openness and economic growth from 1990 to 2018. The study relies on secondary data. The data is sourced from the Central Bank of Sri Lanka and the World Bank Development Indicator. The dependent variable in this study is gross domestic product (GDP). As independent variables, trade openness, inflation rate, labour force, foreign direct investment, and population are used. A confidential ellipse is done to confirm the visual pattern between trade openness and economic growth. The findings show a negative correlation between the variables at a 95% confidence level. The regression model is estimated using the ARDL bounds test. The study indicated that trade openness has a beneficial impact on economic growth in the short run and becomes detrimental in the long run[202].

Using annual data for selected ASEAN countries, the effects of trade openness and other economic variables on economic growth are examined using annual data for the period 1970–2017. The asymmetric effects of trade openness on economic growth in Indonesia, the Philippines, Thailand, and Singapore are shown by the empirical NARDL models. However, in the case of Malaysia, these impacts are symmetric in both the short and long runs. For the Philippines, Thailand, and Singapore, trade openness has long-term asymmetric effects and short-term symmetric effects. For Indonesia, the impact of trade openness is asymmetric in the short term and symmetric in the long term. This study shows that only the Philippines and Singapore have good economic growth as a result of trade openness. It suggests that implementing trade liberalisation will be difficult for the majority of ASEAN nations. Given the significance and importance of FDI in the growth of those

Lead City University Ibadan DO NOT COPY

nations, financial mobility may be a key contributor to economic growth in the ASEAN region. FDI has facilitated economic growth as a result of the openness variable. Gross capital formation, which is a measure of domestic investment, has an impact on economic expansion in ASEAN nations. It suggests that these nations' financial development ought to be promoted. The life expectancy rate serves as a proxy for human capital, which also influences economic growth[203].

A study examined how trade openness and human capital accumulation (HCA) interact to affect the growth rate of GDP per capita in a sample of developing and developed nations between 1980 and 2014. The study made use of the SYS-GMM estimator, which was created for dynamic panel data models based on the new endogenous growth theory. The dependent variable of economic growth is represented as the growth rate of GDP per capita, and trade openness is measured as the share of exports to GDP, the share of imports to GDP, and total trade to GDP. The accumulation of human capital is represented by public expenditure on education, schooling years, and returns to education. Other explanatory variables are government expenditure, physical capital formation as a percentage of GDP to represent fixed investment, the labour growth rate, inflation, and financial development as measured by domestic credit to the private sector. According to the findings, there is a nonlinear relationship between trade opening and GDP growth. If a country has a low level of HCA, trade could have a detrimental effect on GDP growth. Contrarily, once a nation reaches a minimum HCA threshold, trade obviously supports increased economic growth. Therefore, the larger the influence of trade openness on GDP growth, the higher the level of HCA[204].

From a different angle, some studies contend that the inverted U-type curve, commonly known as the Laffer curve of trade, can be used to quantify the effect of trade openness on economic growth. As a result, the degree of trade openness strongly influences the impact of trade openness on

Lead City University Ibadan DO NOT COPY

economic growth. For example, a paper examines the nonlinear impact of trade openness on economic growth in the ASEAN-6 countries (Vietnam, Indonesia, Thailand, Singapore, the Philippines, and Malaysia) between the years 2004 and 2019, covering the period before, during, and after the global financial crisis. The authors measured economic growth as nominal annual GDP growth and trade openness as the ratio of total trade to GDP, and the model's control variables included domestic investment, inflation, and the 2008 financial crisis. The study used a fixed-effect panel threshold approach because of its ability to determine up to three threshold values. The authors discovered that trade openness has a nonlinear impact on economic growth and that there are two threshold values for trade openness. More specifically, trade openness is crucial for enhancing economic growth prior to the first threshold value. However, as trade openness rises above this threshold point, this impact level rapidly declines. In particular, the influence of trade openness on economic growth is still beneficial but has a relatively low value when it exceeds the second threshold value. The findings indicate that high levels of trade openness (beyond the threshold value) without the addition of other complimentary policies do not promote high-efficiency economic growth. The authors concluded that ASEAN-6 countries need to promote trade openness together with effective management and, in like manner, avoid excessive trade. Additionally, this study demonstrates that domestic investment has a beneficial impact on economic growth and that financial instability has a negative impact[205].

In the context of SAARC economies, a study empirically studied the linkages between trade openness and economic growth from 1990 to 2014. The analysis is conducted using a fixed effect, a random effect, and the Hausman test on data extracted from WDI and Penn World Table version 7.1. According to empirical findings, trade openness and investment substantially promote economic growth. The study supports the idea that both the conventional trade openness measure of the ratio of the sum of exports and imports to GDP and the new measure of the ratio of industrial

Lead City University Ibadan DO NOT COPY

output to GDP considerably contribute to economic output. The findings empirically validate the use of alternative trade openness measures for time series and cross-analysis purposes in future studies. The study pointed out that, in order to achieve desired economic growth, it is necessary for the SAARC member countries to remove all those obstacles that may limit outward-oriented policies. Other economic factors, such as inflation and education, impede economic growth, while the impact of the labour force is insignificant. This could be the result of an alarmingly high labour force participation rate that exceeds the economy's capacity, which leads to high unemployment and hinders economic growth[206].

A study investigated the relationship between trade openness and economic growth in Vietnam using data that covered the period 1985–2019. ARDL was employed to examine the link, and the variables used in the model are GDP per capita, trade openness, money supply, and inflation rate. The result showed that there is no substantial influence of trade openness on economic growth in the long run[207].

Similarly, Azerbaijani data from 1995 to 2020 is employed to study the link between trade openness and economic growth. The VAR estimation technique is used to analyse the model. Economic growth is represented by the GDP per capita growth rate and trade openness as the ratio of imports and exports to GDP. It is found that there is no cointegration and no causal relationship between the variables, despite the fact that Azerbaijan is a resource-rich country. This indicates that the economy has not reached the desired level of development[208].

The methodology and the selection of indicators are not always agreed upon; thus, a study that found that the majority of the variance in the trade-to-GDP share is due to GDP variability and not trade asked the question of what the proxy of trade openness measures[54]. Another study attempted a similar critique; thus, it divided openness into de facto and de jure metrics in an effort to reach

Lead City University Ibadan DO NOT COPY

unanimity. The de facto measure indicates the level of integration and is an outcome-oriented indicator typically evaluated by trade-to-GDP share. The de-jure measure, on the other hand, demonstrates how open a country wishes to be and is measured by indicators like tariff rates and licencing requirements[53].

2.3.3 Financial Development, Trade Openness, and Economic Growth

2.3.3.1 Africa

The Egyptian economy is investigated for the complementary effect of financial development, trade openness, and political stability on economic growth using annual data spanning 1977 to 2018. The long- and short-run co-integration between the series is calculated using the ARDL-ECM estimations. The results revealed that long-term economic growth is promoted by financial development, while growth is hampered by political stability. Additionally, while government spending, trade openness, and financial development all contribute to economic growth in the short term, political stability contributes to it in the short and long terms[209].

The link between financial development, trade performance, and economic growth in Nigeria over the period 1985–2020 was studied. The dependent variable is real GDP as a proxy for economic growth, and the explanatory variables are financial development, government expenditure, trade openness, and the inflation rate. Data were sourced from the Central Bank of Nigeria (CBN) bulletin and World Bank Development Indicators. The study results of the ARDL revealed that financial development and government expenditure positively and significantly influence economic growth in the long run. Trade openness and government expenditure have a positive relationship with economic growth, both in the long run and the short run. However, trade openness is significant only in the short run[210].

Lead City University Ibadan DO NOT COPY

Nigerian annual data from 1981 to 2018 is used to study the relationship between financial development, trade openness, and economic growth. The data is sourced from the Central Bank of Nigeria and the World Bank Development Indicator (WDI). The study employed the dynamic ordinary least squares (DOLS) estimation technique and the Granger causality test. Credit to the private sector as a ratio of GDP, the sum of exports and imports as a ratio of GDP, and real GDP are used as proxies for financial development, trade openness, and economic growth, respectively. Other control variables used in the model are the exchange rate and interest rate spread. The result showed that financial development, exchange rate, and interest rate spread have a significant impact on real GDP. However, the interest rate spread has an inverse relationship with real GDP. The interaction of trade openness with financial development exhibits no substantial influence on the economy; the findings support trade-led growth and demand-following hypotheses[211].

A study uses data from Nigeria from 1980 to 2019 to examine the relationship between financial development, trade openness, and economic growth. Using ARDL for analysis, the study discovers that trade openness and financial development both have a favourable, considerable impact on economic growth. However, trade openness shows influence in the short term, and financial development shows it in the long term[212].

Panel data from eleven West African countries was studied from 1985 to 2018 using the common correlated mean group technique and the Seemingly Unrelated Regression Estimator (SURE) to investigate the relationship between financial development, trade openness, and economic growth. Economic growth is measured as real GDP per capita, gross fixed capital formation, and population as a proxy for the labour force. Trade openness is measured as the sum of real per capita exports and imports. Financial development is represented by total domestic credit in the financial sector. The author provided evidence that trade openness and financial development has a large,

Lead City University Ibadan DO NOT COPY

direct relationship with economic growth on the whole, both in the short and long term. The Granger causality test demonstrated that the variables were causally related to one another[213].

Over a non-overlapping five-year period, from 1991 to 2015, a GMM panel data model was used to analyse the relationship between trade openness, financial development, and economic growth in a panel of four North African countries (Morocco, Egypt, Algeria, and Tunisia). The variables are trade openness as the sum of all exports and imports to GDP, financial development as measured by credit provided by the banking sector to the GDP, including credit to the private and public sectors but excluding credit issued by the Central Bank, economic growth as the growth rate of real GDP per capita, economic freedom as measured by the Fraser Institute's index of economic freedom, inflation rate as measured by the annual percentage change in consumer prices, and government spending as government expenditure to the GDP. The proxy for foreign direct investment was the value of the real gross foreign direct investment inflows to the GDP ratio, and for investment, its proxy was the ratio of gross fixed capital formation to GDP. These were sourced from the World Development Indicator database. The study's conclusions indicated that trade openness and financial development both have a large and advantageous effect on economic growth. The author introduces an interaction term between trade openness and the financial development level to investigate how the recipient country's financial development level influences the impact of trade openness on economic growth. The outcome shows that trade openness interacts with the financial development indicator, where the interaction term is typically large and positive. This outcome suggests that trade openness has a greater impact on economic growth in the presence of a well-developed financial system[214].

In a similar study on North African countries (Morocco, Egypt, Algeria, and Tunisia) with data ranging from 1998 to 2017, the relationship between financial development, trade openness, and

Lead City University Ibadan DO NOT COPY

economic growth is examined using the GMM technique. The findings indicate that trade openness stimulates economic growth. However, the existence of the financial development variable increases the impact of trade openness. The results imply that financial development and trade openness are crucial factors in determining economic growth[215].

Using panel data from 52 African countries, a study examines how trade and financial openness affect economic growth. Estimation techniques such as pooled OLS, fixed effects, and sys-GMM are utilised on the data in the period 2000 to 2018.The dependent variable is GDP per capita, while the independent variables are the sum of total trade to GDP as a proxy for trade openness, the share of foreign direct investment in GDP as a measure of financial openness, the consumer price index as a proxy for inflation, total capital formation, government expenditure, and total enrolment. The findings demonstrate that the concurrent openness hypothesis of economic growth does not exist. The findings suggest that, despite the fact that trade openness does not directly affect GDP growth, it is influenced by the degree of stock market development[185].

2.3.3.2 Other Emerging Countries

Research was carried out on the Pakistani economy to determine if financial development and economic openness are important for economic progress. Deposit money banks' assets as a percentage of GDP (financial depth) and credit to the private sector as an indicator of financial efficiency are used in the measurement of financial development; economic openness is measured as the sum of exports and imports to GDP; economic growth is measured as GDP; and the control variable is FDI using periodic data from 1975 to 2018. The unit root test, the ARDL co-integration test, and the vector error correction model (VECM) were the econometric tests that were used. The unit root test was used to determine the stationarity of the variables; the ARDL co-integration test was used to determine the long-term relationship between the variables; and the VECM was used

Lead City University Ibadan DO NOT COPY

to analyse the data to determine the speed of adjustment of the variables. The outcome of ARDL demonstrates a long-term association between the variables; financial development has a direct and considerable impact on economic growth over time, whereas economic openness has a large beneficial impact on economic progress only in the short term. Financial development and economic openness both promote economic growth, according to Granger causality[216].

The impact of financial development, trade openness, and foreign direct investment on the economic growth of Malaysia is investigated from 1970 to 2018. The variables employed in the model are domestic credit to the private sector by banks as a share of GDP, net FDI inflow as a share of GDP, the sum of exports and imports divided by GDP, government consumption expenditure as a share of GDP, and political stability. Empirical findings by autoregressive distributive lag (ARDL) revealed that both financial development and opening up the economy to international trade enhance economic growth[217].

Using annual data for Turkey from 1960 to 2017, the link between financial development, trade openness, and economic growth is examined. The ratio of financial system deposits to GDP serves as a proxy for financial development. The ratio of the total exports and imports of goods and services to GDP is used to measure trade openness. The Fourier-based stationarity test and its companion Fourier-based cointegration test were utilised in the investigation. The causal relationship between the variables is also examined using Fourier-based causality tests. The results indicate that the variables have a long-term cointegration connection. Additionally, the results of the Fourier Toda-Yamamoto causality analysis indicate that there is a unidirectional causality from financial development to trade openness, as well as from financial development to economic growth[218].

Lead City University Ibadan DO NOT COPY

Turkey, Brazil, India, Thailand, and the Philippines data spanning from 1974 to 2017 is used to examine the existence of causality between financial development and economic growth, controlling for foreign direct investment (FDI), portfolio investment, and trade openness. Financial development is measured by the ratio of domestic credit to the private sector provided by commercial banks to GDP and the ratio of domestic credit provided by banks to the private sector to GDP to capture financial depth and financial efficiency, respectively. Trade openness is measured by total trade to GDP, FDI as net inflows of FDI, and portfolio investment (PFI) as the GDP ratio of net flows through international bond issuance that are both privately assured and publically guaranteed. The study employed the VECM technique. In all of the sample countries, the research found a positive, bidirectional association between financial depth and economic growth. However, there were regional differences in financial efficiency and economic growth. In Turkey and the Philippines, opening up the economy to international trade improves the link between finance and growth[219].

From 1977 through 2018, researchers examined how the South Korean economy's trade openness, financial development, and economic growth interact. The ARDL, FMOLS, DOLS, and CCR models were used in the study as estimation techniques. The total of all exports and imports of goods and services is used to measure trade openness, domestic credit to the private sector is used to measure financial development, and GDP is used to measure economic growth. The results of the FMOLS, DOLS, and CCR models establish a long-term stable linkage among variables. The ARDL results revealed that trade liberalisation has no appreciable impact on South Korea's GDP, whereas financial development has a favourable and considerable impact on economic growth. The Granger causality test demonstrated that trade follows export-led hypotheses while financial development follows supply-leading and demand-following hypotheses[33].

Lead City University Ibadan DO NOT COPY

The study examines the causal relationship between financial development and economic growth through trade openness for the ASEAN-6 countries (Malaysia, Vietnam, Indonesia, Singapore, Thailand, and the Philippines). The study employs panel data spanning from 1995 to 2019 for the six countries. Financial development is measured by domestic credit to the private sector as a percentage of GDP, domestic credit from the financial sector as a percentage of GDP, and money supply as a percentage of GDP. Trade openness is captured by the ratio of exports to imports in real GDP, and economic growth is measured by real GDP per capita. Following the Hausman test, two models were utilised for the panel data: a fixed effect model (FEM) and a random effect model (REM). According to the REM results, trade openness and growth have a positive and significant relationship, but financial development and growth are favourably and insignificantly correlated. Furthermore, the Granger causality test revealed that financial development and economic growth showed bidirectional positive relationships through trade openness. This implies that finance stimulates growth in the presence of trade openness[220]

In the case of the SAARC region, a study investigates whether *financial development and trade openness have a complementary impact on economic growth.* The empirical analysis used a panel of six SAARC countries and the panel co-integration technique for the years 1980 to 2014. The Cobb-Douglas specification and Hicks neutral production function served as the model's foundation. The model uses four indicators to measure financial development: money supply (M2) as a percentage of GDP, domestic credit as a percentage of GDP, private credit as measured by deposit money as a percentage of GDP, and a composite index of the aforementioned indicators. Trade openness is measured as total trade to GDP, health expenditure as a percentage of GDP is used to measure human capital, physical capital is represented by the investment to GDP ratio, and population is measured by the annual percentage rise in population. Data for variables is gathered from the World Development Indicators and Economy Watch. The empirical estimates from

Lead City University Ibadan DO NOT COPY

FMOLS and DOLS revealed that nations with more developed domestic financial sectors benefit more from trade openness, which ultimately leads to economic growth. In SAARC countries, the domestic financial sector specifically serves as a complement to openness and growth[221].

A study estimated the relationship between financial development, trade openness, and human capital on agricultural productivity growth in the scenario of South Asian Association for Regional Cooperation (SAARC) countries by taking annual data ranging from 1996 to 2019. This study applies Westerlund and Edgerton's panel cointegration test and the CS-ARDL approach for long-run estimation. The research uses financial development, financial development square, trade openness, human capital, and income level as independent variables, and agriculture productivity is the dependent variable. The results of the CSD test demonstrate the cross-sectional dependence of all variables. These findings demonstrate the interdependence of the SAARC nations. The empirical findings discovered a positive coefficient of financial development and a negative significant coefficient of financial development square; this represented an inverted U-shaped association between financial development and agricultural production. The study's findings also demonstrated that long-term trade openness increases agricultural productivity by raising the sector's technological level[222].

Annual data from 11 new EU member states from 1995 to 2014 is employed to study the link between financial development, trade openness, and economic growth in 11 new European Union member states. The IMF broad index, which consists of 20 sub-indicators that cover three dimensions of financial development: depth, access, and efficiency, is used to measure financial development; trade openness is measured as a sum of exports and imports as a share of GDP; and economic growth is measured by GDP at purchaser's prices, which reflects the total gross value contributed by all resident producers in the economy plus any applicable product taxes and minus

Lead City University Ibadan DO NOT COPY

any subsidies not reflected in the value of the products. The World Development Indicator Database provided the data for economic growth and trade, while the IMF Financial Development Index Database provided the data for finance. The study used a bootstrap panel-data approach based on seemingly unrelated regression (SUR) systems. The empirical results revealed a statistically significant unidirectional Granger causality from finance to economic growth in five countries, a statistically significant two-way Granger causality between finance and growth in two countries, and a statistically significant two-way Granger causality between trade openness and growth in one country. The authors came to the conclusion that in more than half of the nations, trade openness and financial development are statistically significant predictors of economic growth[223].

The long-run relationship between financial development, export performance, and economic growth, covering the period of 1990–2017, is studied in the BRICS region. The dependent variable in the model is per capita gross domestic product to measure economic growth, while the independent variables are the financial development index, developed by Svirydzenka (2016), as a proxy for financial development; working-age populations are used as a proxy for the labour force; export value measured in US dollars is used as a proxy for export trade; the fertility rate is the fertility rate of women; and inflation is measured by the consumer price index. The data for this empirical analysis were taken from the World Bank development indicators with the exception of financial development, financial institutions, and financial markets, which were sourced from Svirydzenka (2016). In order to analyse the data, panel unit root tests and panel cointegration methods based on the autoregressive distributed lag (ARDL) method of cointegration are used. Additionally, the study employed the Hausman and Taylor estimators, a famous regression analysis technique built on an instrumental variable analysis approach. The empirical results support the idea that there is a strong relationship between financial development, export

Lead City University Ibadan DO NOT COPY

performance, and economic growth. The estimated results suggest that these variables play a significant positive role in economic growth. Although the financial market has a positive and insignificant relationship with economic growth, financial development and financial institutions have significantly contributed to economic growth. The study concluded that the best way to enhance the economic growth of the region is by developing the financial system to support export performance[224].

The Brazilian economy is investigated for a lengthy period from 1890 to 2003 to determine the impact of financial development, trade openness, and political instability on growth using the logistic smooth transition model. Financial development is measured by the ratio of commercial bank deposits to GDP, trade openness as the sum of exports and imports divided by GDP, and economic growth as the annual growth rate of GDP. The findings show a mixed time-varying impact of financial development on economic growth; trade openness promotes growth, and political instability hinders growth[225].

2.4 Conceptual Model

The conceptual framework presented in Figure 2.1 integrates the interlinkages among financial sector development, trade openness, and economic growth under the theoretical foundation of the endogenous growth framework. It suggests that financial sector development and trade openness are complementary inputs that provide an environment that are favourable for technological progress, and in turn a core determinant of long-term economic growth[226,227]. The base of the framework is financial sector development, which includes an array of factors ranging from effective investment, minimum risk of financial credit default, finance market development, savings mobilization, and improved mechanisms for finance and investment. A healthy financial industry mobilizes domestic savings, facilitates efficient capital allocation, and generates adequate

Lead City University Ibadan DO NOT COPY

capital for innovative projects. Also, efficient financial institutions play an important role in ensuing investment efficiency, which stimulates innovation and technological improvement[228]. The framework suggests that the functions of financial sector development created better investment and innovation, thereby providing a critical pathway to technological development.

Trade openness, charaterised enhanced trade volumes, lower barriers to trade, and flows of trade across boundaries, permit nations access to larger markets, more technologically advanced innovations, and positive competitive pressures. High trade openness enahnace the diffusion of innovations and compels firms to adopt more efficient production methods. By reducing isolation from global economic trends, trade openness fosters the business environment of domestic industries as they benefit from the best international practices and innovations, thereby complementing the impact of a developed financial sector.

Lead City University Ibadan DO NOT COPY

Conceptual Model

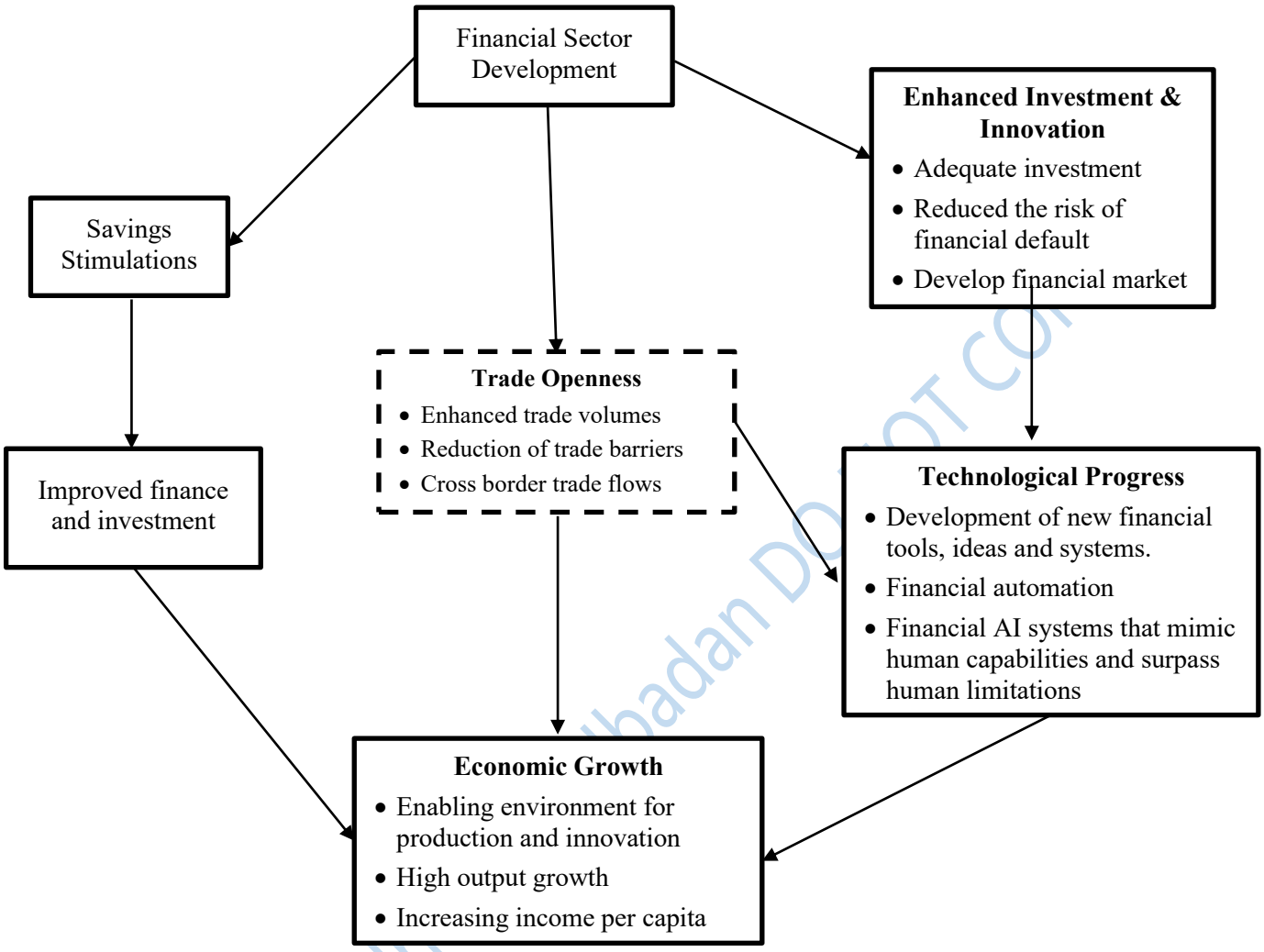


Figure 2.1: Conceptual links between financial sector development, trade openness and economic growth
Source: Author's conceptualization, 2024

The two flows, financial sector development and trade openness, interact to propel technological change. Within the framework, technological innovation is envisioned as the development of new finance instruments, ideas, and systems, including the advancement of financial automation and the deployment of financial AI systems that not only emulate but surpass human capabilities. Technological innovation is one of the key drivers of the endogenous growth model. A notable scholar observes that it is technological changes and innovations that propel long-term economic growth by creating increasing returns to scale and raising productivity continuously[229]. Both trade

openness and financial sector development are essential to this pursuit. As financial sector development supports investment capital and risk management tools for innovations, trade openness ensures that innovations are continuouslly renewed and supplied through international channels.

Economic growth, the outcome in this framework, is a product of a conducive environment for production and innovation. High output growth and increasing incomes are attained through adequate investment, improved finance and investment mechanisms, and the existence of effective financial markets. By lowering the risks of financial default and stimulating saving, the financial system ensures that the capital necessary for investment is both available and effectively utilized. The integration of financial and trade policies fosters an enabling environment where technological progress thrives, ultimately driving long-run economic growth. By basing this pattern of thought on the endogenous growth model, this research argues that long-term economic growth is not only a function of capital accumulation or labour but also driven by diffusion of new innovations and knowledge. Nations with advanced financial systems and open trade policies have witnessed swift economic growth compared to less developed counterparts. Also, the liberalization of trades and financial markets deepening are not merely supportive measures but key drivers of innovation and growth.

Lead City University Ibadan DO NOT COPY

2.5 Theoretical Framework

An extended theoretical model was developed for this study by incorporating the financial sector development and trade openness into the endogenous growth model[230,231]. This study addresses the theoretical underpinnings of the relationship among financial sector development, trade openness, and economic growth in South Africa, Algeria, Nigeria, and Egypt. We begin the model with the basic production function stated as:

$$Y(t) = f\left(K(t), L(t), A(t)\right) \tag{2.3}$$

where Y is output, K is capital, L is labour, and A is the "knowledge" or productivity of labour. Time (t) does not enter the production function directly; instead, its effect is transmitted through changes in K, L, and especially A, which changes with technological advances. The production function experiences constant returns to scale with respect to capital and real labour (AL), which means doubling each of the two inputs, doubles output. This allows the derivation of the intensive form by dividing through by AL, which yields:

$$y = {Y}/{AL} = f\left(k\right) \qquad \text{with} \qquad k = {K}/{AL} \tag{2.4}$$

This is an analytical simplification that isolates the dynamics of the evolution of capital per effective labour unit, k, which is the key determinant of output per worker, y. Labour and technology dynamics are modeled explicitly by assuming that labour grows at a rate n and that technology improves at a rate g, such that:

$$L(t) = L(0)e^{(nt)} \qquad \text{and} \qquad A(t) = A(0)e^{(gt)} \tag{2.5}$$

Investment within the economy is represented by supposing a portion, s, of output goes into capital formation and capital is depreciating at rate δ, so the equation for capital accumulation is:

$${dK}/{dt} = sY - \delta K \tag{2.6}$$

It is possible to deduce the differential equation for capital per effective labor evolution from these equations.

$${dk}/{dt} = sf\left(k\right) - \left(n + g + \delta\right)k \tag{2.7}$$

Lead City University Ibadan DO NOT COPY

In steady state, $dK/dt = 0$, the model is at a steady capital per effective labor level of k^*. It is described as equality of investment to labour and technology growth dilution effects. To extend the framework by incorporating financial sector development (*FSD*) and trade openness (*TO*), the model assumes that both are indirectly affecting economic growth through their effects on technological progress, *A*. Specifically, financial sector development enhances investment allocation productivity through lowering information asymmetry and transactions costs, and higher trade openness allows technology transfer and competitive pressure to enhance overall factor productivity. Their effects are incorporated in the model by redefining the technology parameter as follows:

$$A(t) = A_0 e^{(gt+\phi FSD+\varphi TO)} \tag{2.8}$$

Equation (2.8) is transformed by taking the natural logarithm:

$$lnA(t) = \ln A_0 + gt + \phi FSD + \varphi TO \tag{2.9}$$

Differentiating with respect to time, the growth rate of technology becomes:

$$d(ln\ A)/dt = g + \phi\left(dFSD/dt\right) + \varphi\left(dTO/dt\right) \tag{2.10}$$

The expression shows that an increase in financial sector development or an improvement in trade penness speeds up the rate of efficient progress of technology. Consequently, even if the values of parameters *s*, *n*, and δ do not change, higher financial sector development and trade openness translate to greater growth of *A*, thereby moving the economy to a higher steady-state production level. Assuming a specific form for the intensive production function for which Cobb-Douglas is often used is presented as:

Lead City University Ibadan DO NOT COPY

$$y = k^{\alpha} \tag{2.11}$$

Note that α is the elasticity of output with respect to capital. The marginal product of capital is then.

$$f'(k) = \alpha k^{\alpha-1} \tag{2.12}$$

This is positive but decreasing as k rises, given $\alpha < 1$. In the augmented model, the differential equation for k is:

$$dk/dt = sk^{\alpha} - (n + g + \delta + \Phi)k \tag{2.13}$$

In equation (2.13), Φ is the additional effective growth rate due to developments in the financial sector development and trade openness. That is, $\Phi = \phi\left(dFSD/dt\right) + \varphi\left(dTO/dt\right)$, which is the direct impact of these external factors on technological progress. For the concerned countries, South Africa, Algeria, Nigeria, and Egypt, the framework presumes that country differences in the levels of financial sector development and trade openness play an important role in accounting for cross-country differences in economic growth. For example, South Africa's relatively developed financial system and high level of integration into global trade networks should yield a higher effective g (augmented by Φ), thus promoting a higher steady-state output than in less developed financial sector and trading economies.

To further proceed with the description of the mathematical procedure, the study solves for the steady-state value of k (denoted k^*). Setting $dk/dt = 0$ in equation (2.13), it gives:

$$s\dot{k}^{\alpha} = (n + g + \delta + \Phi)\dot{k} \tag{2.14}$$

Lead City University Ibadan DO NOT COPY

or re-written as:

$$\dot{k}^{\alpha-1} = \left(n + g + \delta + \Phi\right) \Big/ s \tag{2.15}$$

Taking logarithms and the derivative with respect to time allows for analyzing transitional dynamics of *k*. This shows that policy intervention or reforms that improve financial sector development and trade openness (through an increase in Φ) improve $\dot{k}$, which in turn enhance output per effective labour (*y*). As the rise in per capita income is driven by the rate of technological advancement in the long run, the economy's overall growth rate is accelerated with the enhancement in financial sector development and trade openness.

The theoretical model is expressed by linking the growth rate of per capita output, g_Y, with the key determinants of the model. Because in the long run the output growth rate per worker is the same as the growth rate of technology, we have:

$$g_Y = g + \phi\left(dFSD \big/ dt\right) + \varphi\left(dTO \big/ dt\right) \tag{2.16}$$

Equation (2.16) emphasizes that, apart from the baseline rate of growth *g*, financial sector growth and higher trade openness contribute positively to output growth rate.

2.6 Summary of Gaps in Literature Reviewed

The existing literature on financial sector development, trade openness, and economic growth reveals several gaps that necessitate a more comprehensive and integrative approach. Many studies have examined the bivariate relationships between financial sector development and economic growth or trade openness and economic growth in isolation, but there remains a dearth of research that simultaneously considers the interplay among these three critical variables. For instance, while

Lead City University Ibadan DO NOT COPY

some scholars have investigated the direct effect of financial sector development on economic growth using measures such as domestic credit to the private sector, broad money supply, and stock market capitalization, these studies often overlook the mediating or moderating role of trade openness in the growth process. Similarly, research on trade openness has predominantly focused on its direct contribution to economic performance, typically measured as the ratio of total trade to GDP, without adequately exploring how trade openness might interact with the financial sector to influence growth outcomes.

Another notable gap in literature is the lack of studies that examine the complementarity or substitution dynamics between financial sector development and trade openness. Although both factors are widely recognized as catalysts for economic progress, it remains unclear whether their combined effect on economic growth is additive, synergistic, or even redundant. This issue is particularly relevant for emerging economies such as South Africa, Algeria, Nigeria, and Egypt, where financial markets are at varying stages of development and trade policies are subject to significant policy shifts. Understanding whether robust financial systems can compensate for lower trade openness or vice versa would offer valuable insights into the optimal policy mix for sustainable growth. Moreover, such an analysis would provide a more nuanced view of how improvements in one domain might amplify or mitigate the effects of shortcomings in the other.

A further gap lies in the measurement and decomposition of financial sector development. Literature tends to treat financial sector development as a monolithic concept, even though it encompasses a diverse set of indicators, including domestic credit to the private sector, broad money supply, and stock market capitalization. Each of these indicators reflects different dimensions of financial depth and efficiency. For example, domestic credit to the private sector captures the role of banks in resource allocation, while broad money supply reflects liquidity in

Lead City University Ibadan DO NOT COPY

the economy, and stock market capitalization serves as a proxy for the development of equity markets. However, the interactions among these indicators and their individual impacts on economic growth remain underexplored. This gap is significant because an understanding of financial sector development would reveal which aspects of the financial system are most effective at fostering innovation, investment, and, ultimately, economic growth.

Trade openness, although frequently measured as total trade as a ratio of GDP, also suffers from a lack of detailed investigation regarding its channels of influence on economic growth. While the aggregate trade to GDP ratio provides a broad measure of an economy's integration with global markets, it does not capture the underlying mechanisms, such as enhanced trade volumes, reduction of trade barriers, and increased cross-border trade flows, that drive technology transfer and competitive improvements. By decomposing trade openness into its constituent elements, policymakers and researchers would better understand how trade policies affect domestic industries, influence investment decisions, and contribute to technological progress, a key driver in the endogenous growth model.

Furthermore, previous studies have typically relied on conventional econometric techniques that often neglect the potential for structural breaks and fail to capture the heterogeneous dynamics across different economies. This methodological gap is particularly pronounced in comparative analyses of countries with distinct economic and institutional contexts. In addressing this gap, the current study undertakes a comparative analysis of South Africa, Algeria, Nigeria, and Egypt by employing advanced econometric tools, specifically structural unit root tests and the autoregressive distributed lag (ARDL) estimator. Structural unit root tests are integral to identifying potential breaks in the time series data, thereby accounting for regime shifts or significant policy changes that affect the relationships among financial sector development, trade

Lead City University Ibadan DO NOT COPY

openness, and economic growth. Concurrently, the ARDL estimator offers a robust framework to estimate both short- and long-run dynamics, even when the underlying variables exhibit different orders of integration. This methodological approach not only mitigates endogeneity concerns but also provides more reliable estimates of the interactions among the variables, ultimately enhancing the rigour of the comparative analysis.

Lead City University Ibadan DO NOT COPY

Endnotes

[1]S. Cevik, & M. Rahmati. "*Searching for the finance–growth nexus in Libya*." Empirical Economics, 58(2), 2020, 567-581.

[2]K. Hobelsberger, "An empirical re-assessment of the finance-growth nexus", 2020.

[3]M. Mugableh, *"Cointegration and causal relationships: the case of Jordanian and developed stock markets."* **International Journal of Financial Research** Vol. 11(6), 2020.

[4]U. G. Ogbonna, & C. A. Ejem. *"Financial deepening and capital market returns in Nigeria."* **Journal of Finance and Accounting** Vol. 8(4), 2020, 182-189. doi: 10.11648/j.jfa.20200804.13

[5]R. Tariq, M. Khan & A. Rahman. *"How does financial development impact economic growth in Pakistan?: new evidence from threshold model."* **Journal of Asian Finance, Economics and Business** Vol. 7(8), 2020, 161–173.

[6]Global Financial Development Report, *"Bank regulation and supervision a decade after the global financial crisis,* 2020.

[7]A. Algaeed. *"Capital market development and economic growth: an ARDL approach for Saudi Arabia, 1985–2018."* **Journal of Business Economics and Management** Vol. 22(2), 2021, 388–409 https://doi.org/10.3846/jbem.2020.13569

[8]M. Idris. "*Analysis of capital market development and economic growth in Nigeria*." **Global Journal of Applied, Management and Social Sciences (GOJAMSS);** Vol.20, September 2020, 156 – 172.

[9]N. Nyamwero. *"Relationship between capital market development and economic growth in India"*,2021. Available at SSRN: https://ssrn.com/abstract=4018258 or http://dx.doi.org/10.2139/ssrn.4018258

[10]O. E. Udeme, O. O. Chinelo, & O. U Georgina. *"The impact of financial deepening on the economy of Nigeria."* **Asian Journal of Economics, Business and Accounting,** 15(1), 2020, 12-21.

[11]N. Roubini & X. Sala-i-Martin. *"Financial repression and economic growth."* **Journal of Development Economics,** 39(1), 1992.

[12]J. Greenwood, & B. Jovanovic (1990). "Financial development, growth, and income distribution." **Journal of Political Economy**, 98, 1076–1107.

[13]S. Kallal & I. Gueta. *"Fiscal stance, election year and 2007 crisis, evidence from OECD countries (1980–2017)."* **The Journal of Economic Asymmetries**, 21 June, 2020, e00163.

[14]K. Makun. *"External debt and economic growth in Pacific Island countries: a linear and nonlinear analysis of Fiji Islands."* **The Journal of Economic Asymmetries**, Vol. 23, June 2021 Article e00197

Lead City University Ibadan DO NOT COPY

[15]R. McKinnon. *"Money and capital in economic development"*, Brookings Institution, Washington, DC., 1973

[16]S. Valverde, R. del-Paso, & F. Fernandez. *"Banks financial innovations and regional growth."* Department of Economics, University of Granada, Spain, 2004

[17]A. Omankhanlen, D. Samuel-Hope & B. Ehikioya. *"The effect of financial development on economic growth in Nigeria."* **Academy of Strategic Management Journal** Vol. 21(4), 2022.

[18]R. Levine. *"Financial development and economic growth: views and agenda."* **Journal of Economic Literature**, 35, 1997, 688–726

[19]A. Kalam & M. Utsho. *"How financial development affects economic growth: evidence from some SAARC Countries."* **African Journal of Economics and Sustainable Development** Vol. 3(3), 2020, 52-66

[20]J. Boyd & E. Prescott. *"Financial intermediary-coalitions."* **Journal of Economic Theory**, 38(2), 1986, 211-232.

[21]J. Stiglitz & A. Weiss. "*Credit rationing in markets with imperfect information.*" American Review of Economics, 71(3), 1981, 393-410.

[22]A. Demirguc-Kunt, & R. Levine. *"Finance, financial sector policies, and long run growth."* M. Spence Growth Commission Background Paper, No 11, World Bank, Washington, DC. 2008

[23]E. Sirri, & P. Tufano. *"The economics of pooling, in: the global financial system: a functional approach.* Eds: D. B. Crane, et al., Boston, MA: Harvard Business School Press: 1995, 81-128.

[24]A. Smith. *"The wealth of nation."* New York, N.Y: Bantam Classic 1776

[25]W. Obeng-Amponsah, Z. Sun, H. Havidz & E. Dey. *"Determinants of domestic credit to the private sector in Ghana: application of vector auto-regressive method."* The First International Symposium on Management and Social Sciences (ISMSS 2019). Atlantis Press, 2019.

[26]F. Marques, P. Almeida & M. Silva. *"The finance-growth nexus: an empirical analysis from Brazil"*. **Journal of Accounting, Business and Finance Research** Vol. 10(1), 2020, 17-25. DOI:10.20448/2002.101.17.25

[27]J. de Haan, R. Pleninger & J. Sturm. *"Does financial development reduce the poverty gap?"* Social Indicators Research 161, 2022, 1–27 https://doi.org/10.1007/s11205-021-02705-8

[28]R. Chandrashekar & C. Krishna. *"Financial development, energy consumption, and economic growth: Some recent evidence for India."* **International Journal of Financial Economics**, 2020, 1-12.

[29]A. Yahyaoui Abdelkarim, K. Samet & A. Amirat. *"Examining the financial development-economic growth nexus from an institutional approach: evidence from non-oil Arab countries."* **Asian Economic and Financial Review** Vol. 11(6), 2021, 457-470 DOI: 10.18488/journal.aefr.2021.116.457.470

Lead City University Ibadan DO NOT COPY

[30]L. Hoang. *"The energy-growth nexus revisited: the role of financial development, institutions, government expenditure and trade openness."* **Heliyon** 6(7), 2020.

[31]A. Sennuga, S. Adenaike, G. Adedayo & O. Sennuga. *"Financial development and economic growth in nigeria: the case study of Nigeria."* **International Journal Business Management** Vol. 4(4), 2021, 21-39.

[32]M. Twenefour. *"Financial development, international trade and economic growth: the case of Ghana."* Master Art Thesis, University of Lethbridge, 2021.

[33]S. Kalayci Salih & C. Özden. *"The nexus between international trade, financial development and economic growth: the case of South Korea."* **Revista Argentina de Clinica Psicologica**, Vol. 29, 2020, 715-725.

[34]A. Orji Anthony, J.E. Ogbuabor, C.F. Okolomike & O.I. Anthony-Orji. *"Capital inflows, financial development and growth in countries: a new empirical insight."* 2021 DOI: https://doi.org/10.21203/rs.3.rs-304218/v1

[35]M. J. Abeka, E. Andoh, J.G. Gatsi & S. Kawor. *"Financial development and economic growth nexus in SSA economies: The moderating role of telecommunication development."* **Cogent Economics & Finance**, 9(1), 2021. DOI: 10.1080/23322039.2020.1862395

[36]G. Muwanga. *"Economic growth and financial sector development: long-run structural break cointegration and short-run equilibrium relationships in the east african community international."* **Journal of Applied Economics, Finance and Accounting**, Vol. 9(2), 2021, 48-62. DOI: 10.33094/8.2017.2021.92.48.62

[37]F. Anetor. *"Foreign capital inflows, financial development and growth in Nigeria: a structural VAR approach."* **The Journal of Developing Areas,** Vol.54(3), Summer 2020.

[38]U. Golder, F. Sultana, M. Hossain, M. Hossen & M. Hossain. *"Finance-growth nexus in bangladesh: is it important to quantify financial development?"* **Universal Journal of Accounting and Finance,** Vol. 9(5), 2021, 961 – 971. DOI: 10.13189/ujaf.2021.090507.

[39]S. S. Vandana. *"Effect of financial development and foreign direct investments on economic growth in SAARC countries: a panel ARDL approach."* **Asian Journal of Management Studies,** Vol. 2(1), 2022, 72-97.

[40]H. Chen, D. Hongo, M. Ssali, M. Nyaranga & C. Nderitu, *"The asymmetric influence of financial development on economic growth in Kenya: evidence from NARDL."* SAGE open January-March 2020, 1-17 DOI: 10.1177/2158244019894071

[41] R. Ayadi, S. Naceur & M. Goaied. *"Financial Development and Employment: New Panel Evidence."* **Review of Banking, Finance and Monetary Economics,** Vol. 50(2), 2021 e12185.

[42]T. Redmond & M. Nasir. *"Role of natural resource abundance, international trade and financial development in the economic development of selected countries."* Resources policy, 66, 2020. 101591 https://doi.org/10.1016/j.resourpol.2020.101591

Ladoke Akintola University Ibadan DO NOT COPY

[43]J. Asafo. *"Financial Development, Institutions and Economic Growth in Sub-Saharan Africa."* Master of Philosophy thesis University of Cape Coast July, 2020

[44]K. Yusheng, J. Bawuah, A. Nkwannntabisa, S. Atuahene & G. Djan. *"Financial development and economic growth: empirical evidence from Sub-Saharan Africa."* **International Journal of Finance & Economics**, 26(3), 2020, 3396-3416

[45]B. Adesanya and A. Adediji & N. Okenna. *"Stock exchange market activities and economic development: evidence from the Nigerian economy."* MPRA Munich Personal RePEc Archive December 2020 Bingham. **Journal of Economics and Allied Studies (BJEAS)**, Vol. 4 No. 2 December 2020 ISSN: 2645-3045 University of Abuja.

[46]H. Bawazir, M. Kumar, S. Celik, K. Abdulla & B. Aktan. *"The interdependence between stock market development and economic growth: a multi-country examination"* Zb. rad. Ekon. fak. Rij., Vol. 38(2), 2020, 619-652.

[47]S. Temile & A. Owoeye. "An empirical analysis of the stock market and economic growth nexus in Nigeria and South Africa." **International Journal of Economics, Commerce and Management, United Kingdom**, Vol. 10(10), October 2022.

[48]S. Dada. *"Impact of capital market development on economic growth in Nigeria."* **International Journal of Research and Innovation in Social Science (IJRISS)**, Vol. 5(6), June 2021. ISSN 2454-6186

[49]P. Angaye & B. Frank. *"Capital market development and economic growth in Nigeria."* **American International Journal of Business Management (AIJBM),** Vol. 3(7), July 2020, 58-63.

[50]S. Kapaya. *"Stock market development and economic growth in tanzania: an ARDL and bound testing approach."* **Review of Economics and Political Science** Vol. 5(3), 2020, 187-206. Emerald Publishing Limited DOI 10.1108/REPS-11-2019-0150

[51]M. Ferreira, J. Dias & J. Serafim. *"Stock market and economic growth: evidence from Africa."* Research in Economics and Mathematics (REM) Working Paper 0228-2022 May 2022

[52]E. Nwagu. *"Research on the impact of stock market development on real economic growth in Nigeria."* **Saudi Journal of Economics and Finance**, 4(9), September 2020, 471-480

[53]G. Claudius, H. Philipp, K. Jakob & S. Florian. *"Understanding economic openness: a review of existing measures."* **Review of World Economics**, 157(1), 2021, 87–120. https://doi.org/10.1007/s10290-020-00391-1

[54]E. Fuji. *"What does trade openness measure?*" Oxford Bulletin of Economics and Statistics", 81(4), 2019, 868–888. https://doi.org/10.1111/obes.12275

[55]R. Intisar, M. Yaseen, R. Kousar, M. Usman & M. Makhdum. *"Impact of trade openness and human capital on economic growth: a comparative investigation of Asian countries."* **Sustainability**, 12, 2020, 29-30; doi:10.3390/su12072930

Lead City University Ibadan DO NOT COPY

[56] World Bank. World Bank Development Indicators. World Bank 2019

[57]C. Phiri. *"Trade openness and economic growth: the Zambian case."* Master thesis Bursa Uludag University, 2021.

[58]H. Seyidoğlu. *"International economics: theory-politics-practice."* Güzem Can Publications, 2007.

[59]R. Almeida & M. Fernandes. *"Openness and technological innovations in developing countries: evidence from firm-level surveys."* **The Journal of Development Studies,** 44(5), 2007, 701-702. https://www.econstor.eu/bitstream/10419/34618/1/551074612.pdf (09.02.2021)

[60]J. Cheung & Z. Ljungqvist. *"The impact of trade openness on economic growth a panel data analysis across advanced OECD countries."* Bachelor's thesis Södertörn University, 2021

[61]G. Adu-Gyamfi, E. Nketiah, B. Obuobi, & M. Adjei. "*Trade openness, inflation and GDP growth: panel data evidence from nine (9) West Africa Countries."* **Open Journal of Business and Management,** 8, 2020, 314-328.

[62]International Agricultural Trade Report. "*China's Growing Demand for Agricultural Imports."* United States Department of Agriculture, 2020

[63]K. Ogujiuba, G. Oji & A. Adenuga. *"Is trade openness valid for Nigeria's long run growth: a co-integration approach."* A Paper Presented to the USAID-Nigeria, 2004.

[64]Y. Bayraktutan. *"Bilgi ve uluslararası ticaret teorileri."* **C.Ü İktisadı ve İdari Bilimler Dergisi**, 4(2), 2003, 175-186. http://eskidergi.cumhuriyet.edu.tr/makale/195.pdf (03.02.2021)

[65]A. Sunday. *"ECOWAS trade liberalisation scheme administration, benefits and challenges."* Nigerian Export Promotion Council, 2021

[66]T. Apaitan, P. Disyatat & K. Samphantharak. *"Dissecting Thailand's international trade: evidence from 88 million export and import entries."* **Asian Development Review**, vol. 36(1), 2019, 20–53. https://doi.org/10.1162/adev_a_00122

[67]S. D. Sharma – 9781526137685 Thailand: Crisis, Reform and Recovery Downloaded from manchesterhive.com at 03/06/2023 01:10:32PM via free access

[68]H. Jacobs. "*Cheap foreign labor costs in the context of globalization: perspective from the United States of America."* **Journal of Economics**, 5(1), 2021, 29-40.

[69]V. T. Nguyen. *"The environmental effects of Trade Openness in developing countries: conflict or co-operation?"* **Environmental Science and Pollution Research** 27(6), 2020. DOI:10.1007/s11356-020-08352-9

[70]P. Ajayi & A. Ogunrinola. *"Growth, trade openness and environmental degradation in Nigeria."* MPRA Munich Personal RePEc Archive Online at https://mpra.ub.uni-muenchen.de/100713/ MPRA Paper No. 100713, posted 01 Jun 2020 08:41 UTC

Lead City University Ibadan DO NOT COPY

[71]Oxford Economics. *"The US-China economic relationship: A crucial partnership at a critical juncture."*. Washington, DC: US-China Business Council, January 2021

[72]E. Bekkers & S. Schroeter. *"An economic analysis of the US-China trade conflict."* WTO Staff Working Paper, No. ERSD-2020-04, World Trade Organization (WTO), Geneva, 2020

[73]J. Korinek, M. Evdokia, & J. Tange. *"Trade and gender: a framework of analysis.*" OECD Trade Policy Paper, March 2021

[74]S. Genç İleri & M.F. Ulu. *"Is trade against or in favour of women? Empirical evidence from manufacturing sector in Turkey."* Haziran 2021, 213-230 DOI: 10.14780/muiibd.960340

[75]A. Gupta. "*Effect of trade liberalization on gender inequality: the case of India*." IMF Econ Rev 69, 2021, 682-720. https://doi.org/10.1057/s41308-021-00143-7

[76]M. Koengkan, J. Fuinhas, M. Belucio, E. Kazemzadeh, Y. Poveda, N. Alavijeh & R. Santiago. *"The consequences of gender inequality on latin america's economic growth: macroeconomic evidence."* **Sexes**, 3, 2022, 396–412. https://doi.org/10.3390/ sexes3030030

[77]P. Egger, S. Nigai & N. Strecker. *"The taxing deed of globalization."* **American Economic Review**, 109(2), 2019, 353-390.

[78]World Bank. World Bank Development Indicators Database. World Bank 2020

[79]K. Tang. *"Correcting the size bias in trade openness and globalization measures."* **Global Economy Journal**, 11(3), 2011, 1-24.

[80]J. Squalli & K. Wilson. *"A new measure of trade openness."* **The World Economy**, 34(10), 2011, 1745-1770.

[81]F. Alcala & A. Ciccone. *"Trade and productivity."* **Quarterly Journal of Economics**, 119(2), 2004, 613-646.

[82]K. Li, R. Morck, F. Yang & B. Yeung. *"Firm specific variation and openness in emerging markets."* **Review of Economics and Statistics**, 86(3), 2004, 658-669.

[83]R. Feenstra, R. Inklaar & M. Timmer. *"The next generation of the penn world table."* **American Economic Review**, 105 (10), 2015, 3150-3182. DOI: 10.1257/aer.20130954

[84]J. Sachs & A. Warner. *"Economic reform and the process of global integration."* Brookings Paper on Economic Activity, 1995(1), 222-238.

[85]F. Jaumotte, S. Lall & C. Papageorgiou. *"Rising income inequality: technology, or trade and financial globalization?"* IMF Economic Review, 61(2), 2013, 271-309.

[86]T. Miller, A. Kim, J. Roberts. & P. Tyrell. *"2018 index of economic freedom."* Washington, D.C. The Heritage Foundation, 2020

[87]Economic Freedom of the World, Annual Report. Fraser Institute, 2020

The City University Ibadan DO NOT COPY

[88]World Bank, World Integrated Trade Solution (WITS) database 2020 (Washington, DC: World Bank)

[89] D. Dollar, T. Kleineberg & A. Kraay. *"Growth still is good for the poor."* **European Economic Review**, 81(1), 2016, 68-85.

[90] F. Rodríguez & D. Rodrik. *"Trade policy and economic growth: A skeptic's guide to the cross-national evidence."* In Ben S. Bernanke and Kenneth Rogoff (eds). NBER Macroeconomics Annual 2000.National Bureau of Economic Research, Cambridge, MA. 2001

[91] M.P. Todaro & S.C. Smith. *"Economic development (10th ed.)."* Harlow: Addison Wesley Publication, 2009.

[92] K. Ifa & M. Yahdi. *"Trade openness and economic growth in Indonesia." Wiga:* **Jurnal Penelitian Ilmu Ekonomi**, 10(2), 2020, 163-170. https://doi.org/10.30741/wiga.v10i2.599

[93]L. Arsyad. "*Ekonomi pembangunan*." Edisi 5. UPP STIM YKPN, Yogyakarta. 2010

[94] W. Boyes & M. Melvin. *"Economics, 2nd Edition."* Houghton Mifflin Company, Boston, USA, 1994.

[95] P. P. Singh. *"Economies of growth and development."* Lovely Professional University Dec0501, USI publications

[96] R. Barro & X. Sala-i-Martin. *"The economic growth."* BINOM. The Knowledge Laboratory, Moscow, 2014.

[97]A. Lewis. *"Theory of economic growth."* Routledge, 2013.

[98]S. Oladitan & A. Bello. *"The trilogy of entrepreneurship education, human capital development and economic growth in Nigeria."* **International Journal of Research in Business, Economics and Management,** 5(3), 2021

[99]R.T. Byrns & G.W. Stone. *"Economics (5th ed.)."* New York: Harper Collin Publishers, 1992.

[100]C. Imoagwu & C. Ezeanyeji. *"Financial development and economic growth nexus in Nigeria."* **International Journal of Business and Management Invention**, 8(03), 2019, 50-63.

[101]A. Poliduts & Y. Kapkaev. *"Economic growth: types and factors."* International Conference on Eurasian Economies, 2015, 62-66.

[102] R. Harrod. *"Towards a dynamic economics. some recent developments of economic theory and their application to policy."* Foreign Literature Publishing House, Moscow, 1959.

[103] E. Pestel. *"Beyond the limits to growth: a report to the club of Rome."* Universe Pub, 1989.

[104] C.O. Omodero. *"The financial and economic implications of underground economy: the nigerian perspective."* **Academic Journal of Interdisciplinary Studies,** Vol. 8(2), 2019, 155-167.

Lead City University Ibadan DO NOT COPY

[105] Savchenko. *"The exogenous factors of sustainable economic growth in Russia: The scientific research."* The Kuban State University, 2005, 197.

[106]Bureau of Economic Analysis. *"Measuring the economy: a primer on GDP and the national Income and Product Accounts."* 2015. Available at: https://www.bea.gov/national/pdf/nipa_primer.pdf.

[107]J. Robinson. *The rate of interest and other essays*, MacMillan, London. 1952

[108]S. Kuznets. *"Economic growth and income inequality",* The **American Economic Review** Vol. 45, 1955, 1-28.

[109]H. Patrick. *Financial development and economic growth in underdeveloped countries*, in: Economic development and cultural change, Vol. 14, 1966, 174-199

[110]M. Azeem, & A. Mohammad. *"Money and physical capital relationship: McKinnon's complementarity hypothesis on Turkey's economy.* **Expert Journal of Finance,** Vol. 3, 2015, 21-30.

[111] G. Xu & B. Gui. *"From financial repression to financial crisis? the case of China."* **Asian Pacific Economic Literature,** Vol. 33(1), 2019.

[112]E. S. Shaw. *"Financial deepening in economic development."* New York: Oxford University Press, 1973.

[113]R.I. McKinnon. *"Financial liberalization in retrospectt interest rate policies in LDCs"* in Gustav Ranis and T. Paul Schults, eds. The State of Development Economics: Progress and Perspectives, Oxford, Basil Blackwell, 1988, 386-410.

[114]V. Bencivenga & B. Smith. *"Financial intermediation and endogenous growth."* RCER Working Papers 24, University of Rochester- Center for Economic Research, 1991

[115]R. Levine. *"Finance and growth: theory and evidence"*: NBER Working paper series, 2004, 10-766.

[116] A. Demirguc-Kunt & R. Levine. "*Stock market development and financial intermediaries: stylized facts*", World Bank Economic Review. 1996

[117]J. Kurtzleben. "The economic policies of Jean-Baptiste Colbert," Draftings In: 9(3), Article 4, 1997.

[118] E. Pentecost. *"Macroeconomics: an open economy approach."* 1st Edition, Macmillan Press Ltd, New York, 2000.

[119] J. Pinas, S. Wei, T. Oppong-Baah, E. Kim, M. Addai, I. Owusu, E. Gyamfi, D. Ofosu, A. Nsaful, E. Nketiah, M. Adjei, A. Asiamah, F. Boateng, C. Twi-Brempong, S. Fianko, & K. Gyamerah. *"Assessing a causal relationship between foreign direct investment and human capital: the case of the Netherlands."* **International Business Research,** Vol. 13(1), 2020.

Lead City University Ibadan DO NOT COPY

[120] D.K. Ude & J.E. Agodi. *"Does trade openness make sense? investigation of Nigeria trade policy."* **International Journal of Academic Research in Economics and Management Sciences,** vol. 4 (1), 2015.

[121] F. Nwakoh. *"Effect of trade liberalization on the economic growth of Nigeria."* Master thesis, Delta State University, Abraka, 2017

[122] D. Hume [1752] (1985) Essays: moral, political and literary, ed. Miller, Indianapolis: Liberty Fund

[123] M. Friedman & A. Schwartz. *"A monetary history of the United States, 1867 – 1960."* Princeton: Princeton University Press, 1963

[124]P. Samuelson & W. Nordhaus. *"Economics."* 19th Edition. Richard D Irwin Inc New York, 2010

[125] D. Davis & J. Dingel. *"The comparative advantage of cities."* **Journal of International Economics,** 123, 2020, 103-291.

[126] A.P. Sikobi. *"The impact of international trade of commodities on the economic growth of South Africa."* Master of Science Dissertation, World Maritime University, 2021.

[127] P. Machumu. *"The effect of international trade on economic growth of the East African Community."* Master of Business Administration Dissertation Mzumbe University, 2020

[128]M. Todaro & S. Smith. *"Economic development."* 11th Edition, Prentice Hall, Harlow, 2011

[129]R. Ibrahim, Z. Yu, S. Hassan, K. Ajide, M. Tanveer & A. Khan. *Trade facilitation and agriculture sector performance in Sub-Saharan Africa: insightful policy implications for economic sustainability.* Front. Environ. Sci. 10:962838. 2022 Doi: 10.3389/fenvs.2022.962838

[130]D. Salvatore. *"International economics: trade and finance."* (Eighth Edition). Hoboken, New Jersey: John Wiley & Sons, Inc. 2014.

[131]S. Sen. *"International trade theory and policy: a review of literature."* Levy Economics Institute of Bard College, 2010.

[132]A. Bhattacharjea. *"Trade and competition policy."* Indian Council for Research on International Economic Relations, Working paper No. 146, consulting: January 2016, URL:http://www.eldis.org/vfile/upload/1/document/070 8/DOC19484.pdf

[133]H. Myint. *"The classical theory of international trade and the underdeveloped countries."* **The Economic Journal,** 68, 1958, 317-337. https://doi.org/10.2307/2227598

[134]A. Krueger. *"Foreign trade regimes and economic development: liberalisation attempts and consequences."* Ballinger Publishing Co. for National Bureau of Economic Research, Cambridge, MA. 1978.

[135]P. Krugman, M. Melitz & M. Obstfeld. *"International economics, theory and policy."* eleventh edition, Pearson Education Limited, 2018.

Lead City University Ibadan DO NOT COPY

[136]R. Narula, C. G. Asmussen, T. Chi & S. Kundu. *"Applying and advancing internalization theory: the multinational enterprise in the twenty-first century."* **Journal of International Business Studies**, 50, 2019, 1231-1252.

[137]A. Ucak. *"Adam Smith: the inspirer of modern growth theories."* Procedia- Social and Behavioural Sciences 195, 2015, 663-672

[138]Y. Liu. *"Financial development and economic growth: evidence from China in 1978-2009."* Master thesis Lund University, 2011.

[139]R. Harrod. *"An essay in dynamic theory."* **The Economic Journal**, Vol. 49 (193), March, 1939, 14-33.

[140]E. Domar. *"Capital expansion, rate of growth and employment. econometrica."* **Journal of the Econometric Society,** Vol. 14(2), April 1946, 137-147.

[141]R. Solow & T. Swan. *"A contribution to the theory of economic growth."* **Quarterly Journal of Economics**, 70(1), 1956, 65-94.

[142]C. Jones. *"Paul Romer: ideas, nonrivalry and endogenous growth."* **The Scandinavian Journal of Economics**, Vol. 121(3), 2019, 859-883. DOI: 10.1111/sjoe.12370.

[143]R. M. Leichenko. *"Exports, employment and production: a causal assessment of U.S states and regions."* **Economic Geography,** vol. 76(4), 2000, 303-25.

[144]R.J. Barro. Macroeconomics, 4th edn, John Wiley & Sons, New York, 1993

[145]E. W. Tallman & P. Wang. *"Human capital investment and economic growth: new routes in theory address old questions."* **Economic Review**, September/October 1992, 1-11.

[146]R. Martin & P. Sunley. *"Slow convergence? the new endogeneous growth theory and regional development."* **Economic Geography**, Vol. 74, 1998, 201-27.

[147]A. Biringanine & K. Muzee. *"Financial development and economic growth in the CEPGL region: evidence based on panel data."* 2020. DOI: http://dx.doi.org/10.25115/eea.v39i1.3254

[148]M. Ogbuagu, C. Olunkwa & B. Ogunniyi. *"Dissecting the threshold effects of financial deepening on industrial sector performance in Nigeria."* **Tanzanian Economic Review**, Vol. 11(1), June 2021, 57–72.

[149]L. Charfeddine & M. Kahia. *"Impact of renewable energy consumption and financial development on CO2 emissions and economic growth in the MENA region: A panelvector autoregressive (PVAR) analysis, Renewable Energy."* 2019, doi: https://doi.org/10.1016/j.renene.2019.01.010.

[150]A. S. Alimi & I. A. Adediran. *"ICT diffusion and the finance-growth nexus: a panel analysis on ECOWAS countries."* **Future Business Journal**, 6(1), 2020.

Lead City University Ibadan DO NOT COPY

[151]T. Akinlo. *"Financial development, real sector and economic growth in Sub-Saharan Africa: The Threshold Effect."* **Journal of African Business,** 2020. DOI: 10.1080/15228916.2020.1773608.

[152]A. Farhan, K. Shazia, P. Ambe & A. Shabbir. *"Do institutional quality and financial development affect sustainable economic growth? Evidence from South Asian countries."* **Borsa Istanbul Review**, 22(1):189–196, 2022. https://doi.org/10.1016/j.bir.2021.03.005.

[153]K. Kumar & R. Paramanik. *"Nexus between Indian economic growth and financial development: a non-linear ARDL approach."* **Journal of Asian Finance, Economics and Business**, Vol. 7(6), 2020, 109-116.

[154]C. C. Hoan. *"Examining the relationship between electricity consumption, financial development and economic growth in ASEAN countries: evidence from a Bayesian analysis."* **International Journal of Energy Economics and Policy**, 11(2), 2021, 49-56.

[155]I. Matei. *"Is financial development good for economic growth? empirical insights from emerging European countries."* **Quantitative Finance and Economics**, Vol. 4(4), 2020, 653-678.

[156]I. Khan, F. Rehman, P. Pyplacz, M. Khan, A. Wiśniewska & K. Liczmańska-Kopcewicz. *"A dynamic linkage between financial development, energy consumption and economic growth: evidence from an asymmetric and nonlinear ARDL."* **Model Energies**, 2021, 14, 5006. https://doi.org/10.3390/en14165006

[157]V. Sanaphanh & Y. Sethapramote. *"Financial development and economic growth in Asia."* **ABAC Journal,** 41(2), 61–81, 2021. https://doi.org/10.2139/ ssrn.3832920

[158]M. Siddikee & M. Rahman. *"Foreign direct investment, financial development, and economic growth nexus in Bangladesh."* **The American Economist**, 00(0), 2020, 1–16.

[159]Z. Denaux, M. Topcu & F. Emirmahmutoglu. *"Revisiting the financial development and economic growth nexus: South Korea"*, 2022.

[160] K. Fathima Rinosha & A. Mohamed Mustafa. *"Nexus between Financial development and economic growth: evidence from Sri Lanka."* **Journal of Asian Finance, Economics and Business,** A. vol. 8(3), 2021, 0165-0170.

[161]S. Abendin & P. Duan. *"International trade and economic growth in Africa: The role of the digital economy."* **Cogent Economics and Finance**, 9(1), 2021, 1911767, DOI: 10.1080/23322039.2021.1911767.

[162]J. Wiredu, E. Nketiah & M. Adjei. *"The relationship between trade openness, foreign direct investment and economic growth in West Africa: static panel data model."* **Journal of Human Resource and Sustainability Studies**, 8, 2020, 18-34.https://doi.org/10.4236/jhrss.2020.81002

[163]O. Çoban, S. T. Onifade, A. R. B. Yussif, & I. Haouas. *"Reconsidering trade and investment-led growth hypothesis: new evidence from Nigerian economy."* **J Int Stud**, 13(3), 2020, 98-110.

Lead City University Ibadan DO NOT COPY

[164]T. Oppong-Baah, Y. Bo, C. Twi-Brempong, E. Amoah, N. Prempeh & M. Addai. *"The impact of trade openness on economic growth: the case of Ghana and Nigeria."* **Journal of Human Resource and Sustainability Studies**, 10, 2022, 142-160 https://www.scirp.org/journal/jhrss

[165]K. Osei-Assibey & O. Dikgang. *"International trade and economic growth: the nexus, the evidence, and the policy implications for South Africa."* **The International Trade Journal**, 2020. DOI: 10.1080/08853908.2020.1737598

[166]R. Hadjou, & A. Raad. *"Trade openness, institutions and economic growth in MENA region, cross-country evidence over the period 1994-2018."* **Economic Researcher Review**, Volume 08(02), December 2020, 176-186.

[167]B. Jirbo, D. Jonathan & A. Atayi. *"The analysis of trade openness, foreign direct investment and economic growth ineconomic community of west african countries."* **American Journal of Multidisciplinary Research & Development (AJMRD)**, Volume 04(01), 2022, 36-45.

[168]M. Farahane & A. Heshmati. *"Trade and economic growth: theories and evidence from the Southern African Development Community."* IZA discussion paper no. 13679, 2020.

[169]I. Ngouhouo, T. Nchofoung & K. Messo. *"Effect of trade openness on economic growth: does institutional quality influence the link in Sub-Saharan Africa?"* **Empirical Economics Review,** 10(4), 2020.

[170]N. Nthangu & K. Bokana Koye. *"Foreign capital inflows, trade openness and output performance in selected Sub-Saharan African countries."* **Investment Management and Financial Innovations**, Volume 19(1), 2022, 236-246 doi:10.21511/imfi.19(1).2022.18

[171]C. E. Yameogo & J.A. Omojolaibi. *"Trade liberalisation, economic growth and poverty level in Sub-Saharan Africa."* **Economic Research-Ekonomska Istraživanja**, 34:1, 2021, 754-774. DOI: 10.1080/1331677X.2020.1804428

[172]A. Atayi, N. Nkire, A. Akanmu & B. Ojo. *"The nexus between trade openness and economic growth in Nigeria."* **United International Journal for Research and Technology**, Vol. 02(07), 2021

[173]M. Qi, J. Xu, N. Amuji, S. Wang, F. Xu, & H. Zhou. *"The nexus among energy consumption, economic growth and trade openness: Evidence from West Africa."* **Sustainability**, 2022, 14, 3630.https://doi.org/10.3390/su14063630

[174]I. U. Duru, B. O. Okafor, F.O. Adikwu & F.C. Njoku. *"Trade liberalization and economic growth: An Assessment of Nigerian Experience."* **Asian Development Policy Review**, 8(3), 2020, 194-213.

[175]F. Adegboye, O. Mathew, J. Ejemeyovwi, O. Adesina & R. Osabohien. *"Assessing the role of trade liberalization in facilitating trade flows and economic expansion: evidence from ECOWAS countries."* **Advances in African Economic, Social and Political Development (AAESPD)** book, 2020.

Lead City University Ibadan DO NOT COPY

[176]B.V. Jirbo, D.D. Jonathan & A.V. Atayi. *"The assessment of trade openness, foreign direct investment and economic growth in the non-West African Economic Monetary Union."* **International Journal of Scientific Engineering and Science**, 6(1), 2022, 70-75.

[177]S. Onifade, A. Khatir, A. Ay & M. Canitez. *"Reviewing the trade openness, domestic investment, and economic growth nexus: contemporary policy implications for the MENA."* **Region Revista Finanzas y Política Económica**, 14(2), julio-diciembre, 2022, 489-512. https://doi.org/10.14718/revfinanzpolitecon.v14.n2.2022.7

[178]G. Adu-Gyamfi, E. Nketiah, B. Obuobi, & M. Adjei. "*Trade openness, inflation and GDP growth: panel data evidence from nine (9) West Africa countries."* **Open Journal of Business and Management,** 8, 2020, 314-328.

[179]A. Adeyemi & A. Odefunsho. *"Does trade openness influence economic growth in Nigeria?"* **Al-Hikmah Management Review**, Vol. 5(1), 2020.

[180]C. Emehelu. *"Effects of international trade on economic growth of Nigeria."* **International Journal of Innovative Finance and Economics Research**, 9(1), January - March 2021, 144-157.

[181]A. Salik & O. Aras. *"The effects of trade openness, FDI and exchange rate fluctuations on non-oil GDP growth in Nigeria."* **Journal of Management, Economics, and Industrial Organization**, 6(1), 2022, 98-117. http://doi.org/10.31039/jomeino.2022.6.1.6

[182]P. Kitonyo & M. Kathanje. *"Foreign direct investment and growth in the COMESA region: Is trade openness important?"* **Journal of Emerging Issues in Economics, Finance and Banking,** Vol. 9(1), 2020.

[183]B. Oloyede, E. Osabuohien & J. Ejemeyovwi. *"Trade openness and economic growth in Africa's regional economic communities: empirical evidence from ECOWAS and SADC."* **Heliyon**, 7, 2021 e06996.

[184]M. Bunje, S. Abendin, & Y. Wang. *"The effects of trade openness on economic growth in Africa."* **Open Journal of Business and Management**, 10, 2022, 614-642.https://doi.org/10.4236/ojbm.2022.102035

[185]A. Aremo & O. Arambada. *"Effect of trade openness and financial openness on economic growth in Sub-Saharan African countries."* **African Journal of Economic Review**, Vol. 9(1), January 2021.

[186]S. Muhammed, V. Okafor & C. Itodo. *"Trade liberalization and its economic growth impact: a case study of Nigeria."* **Indiana Journal of Humanities and Social Sciences**, 3(2), 2022, 30-35.

[187]U. Bala, H. Ambi, N. Hadith & Y. Baba. *"Impact of trade openness on economic development in Nigeria."* **international Journal of Intellectual Discourse**, 4(2), June 2021

[188]T. Akinlo & C. Okunlola. *"Trade openness, institutions and economic growth in Sub-Saharan Africa."* **Journal of Regional Development and Financing Perspectives**, 8(6), 2021, 541-560. Available at: https://doi.org/10.22437/ppd.v8i6.10653.

LeadCity University Ibadan DO NOT COPY

[189]L. Mashimbye & A. Fanta. *"Trade openness and economic growth in Mozambique."* **Regional and Sectoral Economic Studies**, Vol. 21(2), 2021.

[190]K.J. Alam & K.K. Sumon. *"Causal relationship between trade openness and economic growth: a panel data analysis of Asian countries."* **International Journal of Economics and Financial Issues**, 10(1), 2020, 118-126

[191]X. Yang & M. Shafiq. *"The impact of foreign direct investment, capital formation, inflation, money supply and trade openness on economic growth of Asian countries."* **iRASD, Journal of Economics**, Vol. 2(1), 2020, 25-34.

[192]I. Ullah, M. Tufail & M. Rafiq. *"Effect of trade liberalization on economic growth in the panel of ASIAN economies."* **Journal of Business and Tourism**, Vol. 07(01), January-June 2021

[193]A. Awan & U. Shahzad. *"Impact of trade openness on economic growth of Pakistan."* **Global Journal of Management, Social Sciences and Humanities**, Vol 7 (2) April-June 2021, 298-323. DOI: https://orcid.org/0000-0001-5767-6229.

[194]M. Arvin, R. Pradhan & M. Nair. *"Uncovering interlinks among ICT connectivity and penetration, trade openness, foreign direct investment, and economic growth: The case of the G-20 countries."* **Telematics and Informatics**, 60, 2021, 101567

[195]U. Banday, S. Murugan & J. Maryam. *"Foreign direct investment, trade openness and economic growth in BRICS countries: evidences from panel data."* Transnational Corporations Review, 2020. DOI: 10.1080/19186444.2020.1851162.

[196]A. Soomro, J. Kumar & J. Kumari. *"The dynamic relationship between FDI, ICT, trade openness, and economic growth: evidence from BRICS countries."* **Journal of Asian Finance, Economics and Business**, 9(2), 2022, 0295–0303

[197]K. Biemudo, R. Antonio & N. Agustin. *"An empirical analysis on the impact of international trade in Philippine economic growth."* **Journal of Economics, Finance and Accounting Studies**, 4(1), 2022, 607-628.

[198]T. Hossain & B. Maitra. *"Monetary policy, trade openness and economic growth in india under monetary-targeting and multiple-indicator approach regimes."* **Journal of Economic Theory and Practice,** 19(1), 2020, 108–124.

[199]Q. Kong, D. Peng, Y. Ni, X. Jiang & Z. Wang. *"Trade openness and economic growth quality of China: empirical analysis using ARDL model."* Finance Research Letters, 2020. doi: https://doi.org/10.1016/j.frl.2020.101488.

[200]F. Benita. *"Trade openness, economic growth and the global financial crisis of 2007–2009 in Latin America."* **Journal of International Development**, 31(5), 2019, 411-431.

[201]F. Sudan. *"Trade openness and economic growth in China and India in comparative perspective: An exploratory study."* **Regional Economic Development Research**, Vol. 3(1), 2022.

Lead City University Ibadan DO NOT COPY

[202]J. Wanigasuriya. *"Impact of trade openness on economic growth: the long run and short run analysis of Sri Lanka."* **Asian Journal of Advances in Research**, 13(3), 2022, 1-7.

[203]J. Sriyana & A. Afandi. *"Asymmetric effects of trade openness on economic growth in selected ASEAN countries."* **E&M Economics and Management**, 23(2), 2020, 66–82. https://doi.org/10.15240/tul/001/2020-2-005

[204]S. Fatima, B. Chen, M. Ramzan & Q. Abbas. *"The nexus between trade openness and GDP growth: analyzing the role of human capital accumulation."* SAGE Open, Vol. 10(4), 2020, 1-18.

[205]M. Nguyen & T. Bui. *"Trade openness and economic growth: a study on ASEAN-6".* **Economies**, 9: 113, 2021. https:// doi.org/10.3390/economies9030113

[206]S. Ullah & M. Tahir. *"Linkages between trade openness and economic growth: Evidence from SAARC member countries."* **International Journal of Finance, Insurance and Risk Management**, Volume 10(4), 2020, 81-94.

[207]N. Thach & D. Huy. *"Trade openness and economics growth in Vietnam."* **Palarch's Journal of Archaralogy of Egypt/Egyptogy**, 17(1), 2020, 12-22.

[208]S. İlgar. *"Trade openness and economic growth: evidence from Azerbaijan."* Problems and Perspectives in Management, 20(1), 2022, 564-572.

[209]Z. Yakubu, N. Loganathan, N. Sethi & A.A. Hassan. *"Do financial development, trade openness and political stability complement for Egypt's economic growth?"* **Journal of International Commerce, Economics and Policy**, Vol.12(1), 2021.

[210]O. Adeyemo & C. Tamunowariye. *"The nexus between financial development, trade performance and growth in Nigeria"* **Global Journal of Arts, Humanities and Social Sciences**, Vol. 10(3), 2022, 1-17.

[211]J. Afolabi. *"Financial development, trade openness, and economic growth in Nigeria."* **Iranian Economic Review**, 26(1), 2022, 237-254 DOI: 10.22059/ier.2020.77972

[212]D. Dan'Asabe & A. Mustapha. *"Financial development, trade openness and economic growth: Evidence from Nigeria."* **Journal of Economics and Allied Research,** Vol. 8(1), 2023.

[213]Y. Keho. *"Financial development, trade openness and economic growth: The evidence from West African countries revisited."* **International Research Journal of Finance and Economics**, Issue 179, 2020.

[214]I. Sghaier. *"Trade openness, financial development and economic growth in North African countries."* **International Journal Finance and Economics**, 28(2), 2021, 1729-1740

[215]I. Sghaier. *"Does financial development affect the economic growth gains from trade openness?"* **Economic Alternatives**, Issue 4, 2020, 666-682

[216]A. Hussain, O. Ammar, A. Munir, I. Muhammad & S. Farhan. *"Do financial development and economic openness matter for economic progress in an emerging country? Seeking a sustainable*

Bad City University Ibadan DO NOT COPY

development path." **Journal of Risk and Financial Management**, 14, 2021. https:// doi.org/10.3390/jrfm14060237

[217]Z. Yakubu, N. Loganathan & A. Hassan. *"Financial development, foreign direct investment and trade openness impact in the economic growth of Nigeria."* 2nd International Conference on Accounting and Finance (ICAF-IMDS 2020), 24-27 February 2020, Kuching, Malaysia, Borneo

[218]H. Tatar, G. Konat & M. Temiz. *"The relationship between financial development, trade openness and economic growth in Turkey: evidence from fourier tests."* **Statistika**, 102 (2), 2022.

[219]T. Fukuda. *"Finance-growth nexus and globalization in Brazil, India, Philippines, Thailand, and Turkey: evidence from VECM cointegration analysis."* **Journal of Economics and Financial Analysis**, Vol. 4(1), 2020, 55-77

[220]C. Ho, N. Pham, & K. Nguyen. *"Economic growth, financial development, and trade openness of leading countries in ASEAN."* **Journal of Asian Finance, Economics and Business**, Vol 8(3), 2021, 0191–0199

[221]M. Haq, L. Ahmad & J. Alyia. *"Financial sector development, trade openness and economic growth nexus: evidence from SAARC countries."* **Forman Journal of Economic Studies**, Vol. 17(1), 2021, 99-118. DOI: 10.32368/FJES.20211705

[222]N. Ali, U. Hayat, M. Khan & S. Khattak. *"Sources of agricultural productivity growth in SAARC countries: the role of financial development, trade openness and human capital."* **Sarhad Journal of Agriculture**, 37(2), 2021, 586-593. DOI | https://dx.doi.org/10.17582/journal.sja/2021/37.2.586.593

[223]P. Kawa, M. Wajda-Lichy, K. Fijorek & S. Denkowska. *"Do finance and trade foster economic growth in the new EU member states: Granger panel bootstrap causality approach."* **Eastern European Economics**, 2020. DOI:10.1080/00128775.2020.1762497

[224]R. Paudel & J. Sun. *"Financial development, export performance and economic growth in BRICS: New evidence from panel unit root and ARDL cointegration."* **IOSR Journal of Economics and Finance** (IOSR-JEF), Vol. 11(6), Series V, 2020, 36-49.

[225]N. Campos, E. Glebkina, M. Karanasos & P. Koutroumpis. *"Financial development, political instability, trade openness and growth in brazil: evidence from a new dataset, 1890‑2003."* **Open Economies Review**, 2022 https://doi.org/10.1007/s11079-022-09684-4

[226]P. M. Romer. *Endogenous technological change*. **Journal of Political Economy**, 98(5), 1990, S71–S102.

[227]R. E. Lucas. *On the mechanics of economic development*. **Journal of Monetary Economics**, 22(1), 1988, 3–42.

[228]R. Levine. *Financial development and economic growth: views and agenda*. **Journal of Economic Literature**, 35(2), 1997, 688–726.

Lead City University Ibadan DO NOT COPY

[229]J. A. Frankel, & D. Romer. *Does trade cause growth*? **American Economic Review**, 89(3), 1999, 379–399.

[230]R. M. Solow. *A contribution to the theory of economic growth*. **The Quarterly Journal of Economics**, 70(1), 1956, 65-94.

[231]D. Romer. *Advanced macroeconomics*. 4th Edition. New York: McGraw-Hill Companies, Inc. 2012.

Lead City University Ibadan DO NOT COPY

Chapter Three

Methodology

This chapter of the study concentrated on the estimation methodologies utilised to investigate the relationship between investment financial sector development, trade openness, and economic growth in South Africa, Algeria, Nigeria, and Egypt. It covers the specifications of empirical models, a'priori expectations, data sources, estimating methodologies, diagnostic assessments, and data measures.

3.1 Model Specification

3.1.1 Empirical Model of Financial Sector and Trade Openness

The degree of development in the financial sector is important in influencing trade openness in an economy. A well-developed financial system entails the efficient allocation of resources, lower transaction costs, and better access to credit, which would enhance a country's ability to take part in international trade. For instance, the financial liberalization theory, and more specifically the McKinnon-Shaw Hypothesis, postulates that a reduction in financial repression such as interest rate controls and credit rationing, increases savings, investment, and trade openness. In this respect, financial liberalization yields capital accumulation, which strengthens the ability of firms to engage in international trade. Financial repression distorts the savings-investment process, makes capital markets inefficient, and discourages productive investment[1,2]. When financial markets are liberalized, interest rates become market-determined, attracting more savings and improving credit availability for trade-related activities. This point is supported by empirical studies, who documented that financial development eases financing constraints and enables firms to more easily engage in international trade[3]. Their empirical model showed that higher access to

Lead City University Ibadan DO NOT COPY

private credit and developed stock markets correspond to higher openness to trade. Following the arguments of McKinnon and Shaw, the capital accumulation equation derivation indicates that financial sector development affects capital formation, which is stated as[1,2]:

$$k_t = \beta_0 + \Theta FD_t \quad (3.1)$$

Where *k* is capital-labour ratio, *FD* is the financial sector development indicators such as domestic credit to private sector, broad money supply, and stock market capitalization, β_0 is constant, *t* is time, and Θ is the vector parameter of financial sector development.

Similarly, Levine provided abundant evidence that financial development promotes economic efficiency and international trade by facilitating capital mobility, improving risk diversification, and lowering the cost of cross-border transactions[4]. Financial institutions, including banks and capital markets, enhance trade openness by providing firms with the necessary financial instruments for export and import activities. The ability of the firm to increase production and internationalize depends on the level of financial development, determining the credit, liquidity, and investment capital available. From an endogenous growth theory perspective, financial sector development influences trade openness in a positive manner by stimulating technological progress and deepening capital. The work of Romer and Lucas indicates that financial markets play a substantial role in long-run economic growth, due to the better allocation of resources to high-productivity sectors[5,6]. These theories confirm that efficiency in the financial sector has direct implications on economic output, which in turn impacts trade openness. Through an effectively working financial system, a country can more efficiently accumulate capital, foster innovation, and improve productivity, all of which contribute to higher trade openness. Using the Cobb-Douglas specification, trade openness is expressed as a function of acculated capital:

Lead City University Ibadan DO NOT COPY

$$TO_t = Ak_t^{\alpha} \quad (3.2)$$

Where: *TO* represents trade openness, *k* denotes the capital-labour ratio, α is the trade openness elasticity of capital-labour ratio, *t* is time, and *A* indicates the total factor productivity.

Substituting equation (3.1) into (3.2), we have:

$$TO_t = A(\beta_0 + \Theta FD_t)^{\alpha} \quad (3.3)$$

Where: *TO* represents trade openness; *FD* is the financial sector development indicators such as domestic credit to private sector, broad money supply, and stock market capitalization; β_0 is constant; Θ is the vector parameter of financial sector development; α is the trade openness elasticity of capital-labour ratio; *t* is time; and *A* indicates the total factor productivity.

Furthermore, inflation (*INF*), foreign direct investment (*FDI*), and gross fixed capital formation (*GFCF*) are key factors that influence the long-term productivity and trade competitiveness of an economy. The study assumes that they influence the long-term productivity and trade competitiveness of a country through total factor productivity (*A*). For instance, inflation impinges on long-term productivity and openness to trade through its impact on the real cost of capital, price competitiveness, and macroeconomic stability. A persistent inflationary environment creates distortion in economic decisions, which results in lower investments and reduced trade. Also, FDI directly influences technological progress and productivity by bringing with it advanced technology, managerial skills, and global market access, thereby increasing trade openness. Likewise, investment in infrastructure and capital stock raises productive efficiency and reduces trade costs, improving a country's global trade competitiveness. Total productivity (*A*) is re-specified as:

Lead City University Ibadan DO NOT COPY

$$A = A_0 e^{\phi INF_t + \varphi FDI_t + \gamma GFCF_t} \quad (3.4)$$

Substituting into the trade openness model, and taking the natural logarithm, we have:

$$ln\,T\,O_t = \theta_0 + \Phi\, ln\,F\,D_t + \phi INF_t + \varphi FDI_t + \gamma GFCF_t + \varepsilon_t \quad (3.5)$$

Where: *TO* represents trade openness; *FD* is the financial sector development indicators such as domestic credit to private sector, broad money supply, and stock market capitalization; *INF* is inflation; *FDI* denots foreign direct investment; *GFCF* represents gross fixed capital formation; θ_0 is constant; Φ is the vector parameter of financial sector development; ϕ, φ, γ are parameters of inflation, FDI, and investment; *t* is time; and ε is the stochastic term.

3.1.2 Empirical Model of Financial Sector Development and Economic Growth

Following the endogenous theoretical model in the previous chapter, economic growth is considered a function of both physical capital accumulation and financial sector development, which fosters technological progress and efficient resource allocation. For this study, financial sector development (*FD*) is measured using three indicators: domestic credit to the private sector, broad money supply, and stock market capitalization. The labour factor is not considered in the model to focus on the contribution of capital and financial intermediation. According to endogenous growth theory, long-run economic growth is driven by factors that augment technological efficiency and capital accumulation. In its functional form, the production function is presented as[5,6]:

$$Y_t = AK_t^{\alpha} \quad (3.6)$$

Lead City University Ibadan DO NOT COPY

Where: *Y* denotes output, *K* is the physical capital stock, α is the elasticity of output with respect to capital, and *A* stands for total factor productivity or the level of technological efficiency. In the endogenous framework, however, *A* is not exogenous; it is rather determined by internal factors of the economy. The study assumes that one of those crucial factors is financial sector development. More precisely, financial sector development influence output growth through the total factor productivity, which is mathematically stated as:

$$A = A_0 F D_t^{\theta} \tag{3.7}$$

Where: A_0 is a baseline level of technology; *FD* is a composite measure of financial sector development; and θ captures the sensitivity of technological efficiency to changes in *FD*. The variable *FD* itself is captured by indicators like domestic credit to the private sector, broad money supply, and stock market capitalization. Thus, these measures reflect the degree to which the financial system mobilizes savings, allocates credit, and supports efficient investment. Incorporating the expression for *A* into the production function (3.6) gives:

$$Y_t = A_0 F D_t^{\theta} K_t^{\alpha} \tag{3.8}$$

The natural log of equation (3.8) gives:

$$ln\, Y_t = ln\, A_0 + \theta\, ln\, F\, D_t + \alpha\, ln\, K_t \tag{3.9}$$

This specification indicates that economic output is not only dependent on the capital stock but also on the efficiency of the financial system. Higher levels of financial sector development, through better domestic credit availability and higher liquidity, as well as deeper capital markets, should stimulate technological progress and, thereby, economic growth.

Lead City University Ibadan DO NOT COPY

Accounting for other factors affecting growth, the study adds control variables reflecting the state of macroeconomic stability and investment conditions, which are: inflation rate (*INF*), and foreign direct investment (*FDI*). In the case of inflation, high and volatile inflation is believed to have a negative effect on growth, as it might erode the real value of savings and discourage investment. On the other hand, foreign direct investment is one of the channels through which technology, managerial expertise, and additional capital enter the economy, thus fostering growth. Gross fixed capital formation (*GFCF*) also stands as the capital, which measures investment in physical assets that expands productive capacity. Including these variables, the extended model is written as:

$$ln\, Y_t = \varphi_0 + \theta\, ln\, F\, D_t + \alpha\, ln\, G\, FCF_t + \pi_1 INF_t + \pi_2 FDI_t + v_t \qquad (3.10)$$

Where: $\varphi_0 = \ln A_0$ is constant; θ is the vector of financial sector development's parameter; $\alpha, \pi_1,$ and π_2 are parameters representing the effects of GFCF, inflation, and FDI on economic growth, respectively; t is time; and v is the error term capturing other random shocks and omitted variables. In the model, the financial development variable is proxied by domestic credit to the private sector, broad money supply, and stock market capitalization.

3.1.3 Empirical Model of Trade Openness and Economic Growth

In this sub-section, the analytical model incorporates openness to trade into an endogenous growth framework to explain its impact on economic growth. In this model, besides capital accumulation, economic growth (measured by output, *Y*) is driven by trade openness (*TO*) as a prime driver of technological progress and efficiency improvement. The labour variable is not considered from the model to bring about a focus on the role played by capital and trade openness in driving long-run growth. Within the endogenous growth literature, Lucas and Romer argued that long-run

Lead City University Ibadan DO NOT COPY

economic growth is determined by factors that affect the accumulation of knowledge and capital. The basic production function in this framework is given by[5,6].

$$Y_t = AK_t^{\alpha} \tag{3.11}$$

Where: Y is economic growth, K is the physical capital stock measured by gross fixed capital formation (*GFCF*), and α is the elasticity of output with respect to capital. A is a measure of total productivity that represents technological progress and improvements in efficiency. In this model, it assumes that trade openness raises total factor productivity by facilitating technology diffusion, promoting competition, and allowing access to a larger variety of inputs and knowledge. The study thus specifies the technological term as:

$$A = A_0 TO_t^{\phi} \tag{3.12}$$

where A_0 is a baseline level of technology, TO is trade openness measured by the ratio of trade volume to GDP, t is time, and ϕ is a parameter capturing the sensitivity of total productivity to trade openness. Substituting this expression of A into the production function yields:

$$Y_t = A_0 TO_t^{\phi} K_t^{\alpha} \tag{3.13}$$

Express equation (3.13) in linear form by taking the natural log, it becomes:

$$\ln Y_t = \ln A_0 + \phi \ln TO_t + \alpha \ln K_t \tag{3.14}$$

To capture other macroeconomic impacts on economic growth, we add control variables such as inflation and foreign direct investment. Inflation is usually expected to have a negative effect on growth, since high and volatile inflation erodes the real value of savings by disrupting economic planning. On the other hand, FDI represents the inflow of capital and technology from abroad that

Lead City University Ibadan DO NOT COPY

can improve the domestic productive capacity and, therefore, foster growth. Adding these controls, the model becomes:

$$\ln Y_t = \vartheta_0 + \phi \ln TO_t + \alpha \ln GFCF_t + \pi_1 INF_t + \pi_2 FDI_t + e_t \quad (3.15)$$

The variables remained as earlier stated; while $\vartheta_0 = \ln A_0$ is constant; ϕ, α, π_1, and π_2 are parameters representing the effects of trade openness, gross fixed capital formation, inflation, and FDI on economic growth, respectively; t is time; and e is the error term capturing other random shocks and omitted variables.

3.1.4 Empirical Model of Financial Sector Development, Trade Openness and Economic Growth

The analytical model of financial sector development, trade openness, and economic growth is based on the endogenous growth framework. In this formulation, economic growth (Y) is determined by an aggregate production function where the level of technology (A) is determined endogenously by financial sector development (FD) and trade openness (TO) as well as their interaction. For purposes of this model, labour is subsumed into the technology parameter, and additional control variables like inflation and FDI are incorporated to capture other macroeconomic influences. The model is specified as:

$$ln\, Y_t = \theta_0 + \gamma\, ln\, F\, D_t + \lambda\, ln\, T\, O_t + \pi(ln\, F\, D \times ln\, T\, O)_t + \varphi\, ln\, G\, FCF_t + \psi INF_t + \omega FDI_t + v_t \quad (3.16)$$

Where: K denotes the capital stock, and α (with $0 < \alpha < 1$) is the elasticity of output with respect to capital. The variables TO and FD stand for trade openness and financial sector development, respectively. Financial sector development is captured by proxies of domestic credit to the private

Lead City University Ibadan DO NOT COPY

sector, broad money supply, and stock market capitalization. γ, λ are parameters of financial sector development and trade openness, while θ_0 is the constant. The term $\pi(ln\,F\,D \times ln\,T\,O)$ captures the interaction effect of trade openness and financial sector development, given that the growth-promoting impact of one is dependent on the level of the other. The coefficients φ, ψ, and ω are the coefficients of inflation, *FDI*, and *GFCF*.

3.2 Theoretical Expectation

Theoretically, regarding the model of trade openness, financial sector development is presumed to promote openness in trade since it improves availability and efficiency in the access to financial services that reduces transaction costs and reduces financing constraints of the firms engaged in international trade. A good financial system, characterized by high levels of domestic credit to the private sector, broad money supply, and vibrant stock market capitalization, would ease cross-border payments and risk management, thus encouraging export and import activities[3,4]. Moreover, higher gross fixed capital formation supports the development of infrastructure such as transportation networks and communication systems that lower the costs of logistics and operation of trade. Improved infrastructure not only increases productivity but also enhances the competitiveness of a country in global markets, hence making it easier for local firms to become integrated into international supply chains and thus access foreign markets. Foreign direct investment is assumed to be one of the major drivers of openness in trade, since it usually brings advanced technologies, better management practices, and stronger linkages to global production networks, all facilitating increased participation in international trade. FDI stimulates domestic industries by providing the capital necessary to expand production capacities and enter export markets, thereby reinforcing the trade network[7]. On the other hand, high inflation tends to hurt trade openness by introducing macroeconomic instability and uncertainty. Inflation destroys the

Lead City University Ibadan DO NOT COPY

real value of the earnings and complicates pricing and exchange rate forecasting, which may discourage domestic firms and foreign investors from trading activities[8].

As regards the economic growth model, financial sector development is expected to foster economic growth. It gives way to resource allocation efficiency by reducing financial frictions. Thus, a well-developed financial system such as domestic credit to the private sector, broad money supply, and stock market capitalization, make credit access easier and manage the risks, improving investment opportunities and innovative activities. Likewise, trade openness enhances output growth by exposing domestic firms to international competition and technology spillovers, while it reduces costs due to specialization and economies of scale. Concerning the interaction of financial sector development with trade openness which is presumed to be positive; when both are strong, financial systems can channel resources more efficiently into export-oriented sectors, while firms enjoy greater access to global markets, producing a synergy that further speeds growth[4,5,6]. Similarlyr, gross fixed capital formation contributes directly to economic growth by expanding the stock of productive capital and thus increasing output capacity and productivity. Foreign direct investment brings in additional capital, advanced technologies, and managerial expertise, which further stimulate productivity gains and growth. On the other hand, inflation is likely to negatively impact growth, as it erodes purchasing power, creates uncertainty, and distorts relative prices, which may discourage both domestic and foreign investment.

3.3 Data Description, Sources and Measurements

The study focused on the relationship among trade openness, financial sector development and economic growth in South Africa, Algeria, Nigeria and Egypt. A time series data spanning from 1986 to 2022 is used for the analysis. The secondary data is obtained from the World Bank

Lead City University Ibadan DO NOT COPY

Development Indicator (WDI, 2022). The variables in this study are described and measured as presented in Table 3.1.

Table 3.1: Description and Measures of variables

Variables	Measurements
Economic Growth (GDP)	GDP growth (annual percentage)
Trade openness (TO)	Total trade (% of GDP) i.e. sum of export and import of goods and services (% of GDP)
Financial sector development (FD)	Domestic credit to private sector as % of GDP, broad money (% of GDP) and market capitalization of listed domestic companies (% of GDP)
Inflation rate (INF)	Inflation, CPI
Foreign direct investment (FDI)	Net inflow FDI
Gross fixed capital formation (GFCF)	Gross fixed capital formation (current US$)

Source: Author's compilation (2024).

3.4 Estimation Techniques

This study applies both traditional unit root tests as well as structural breakpoint techniques to determine the integration order for the sampled variables. More specifically, it applies the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and Zivot-Andrews tests to confirm that each variable is integrated at order zero or one, to ensure that none are integrated of order two (I(2)). Most importantly, this ensures that the variables under regression analysis are not integrated at order 2 hence validating the model. These methods are wide in the analysis of the stationarity of the variables, and their application ensures robust results and credible subsequent econometric analysis.

The autoregressive distributed lag (ARDL) is appropriate for variables that are stationary at both levels and first difference. The ARDL bounds cointegration approach is expected to yield valid and reliable regression results since the necessary and sufficient conditions for its application

Lead City University Ibadan DO NOT COPY

have been satisfied. This method was selected for several reasons. First, it is simple to apply in empirical research and it uses ordinary least square techniques for estimating cointegration. Second, it works very effectively in cases of finite and small sample studies. Third, the ARDL approach is robust in cases where one or more regressors are endogenous, hence assures that the estimation results are consistent. Fourth, it is flexible as it includes an unlimited number of lags for both the dependent variable and the regressors. These advantages are well documented in the literature[9,10,11]. In view of these virtues, this paper estimates the unrestricted error correction model described by Pesaran and Shin[12]. This model not only captures the short-run dynamics but also delineates the long-run equilibrium relationships among the variables, offering a complete framework for understanding the adjustment process after any deviations from equilibrium. The unrestricted error correction model is stated as:

$$\Delta \ln Y = \vartheta + \sum_{i=1}^{p} \rho_i \Delta \ln Y_{t-i} + \sum_{i=1}^{p} \sigma_i \Delta \ln X_{t-i} + \sum_{i=1}^{p} \Theta_i' \Delta Z_{t-i} + \pi_1 \ln Y_{t-1} + \pi_2 \ln X_{t-1} + \Psi' Z_{t-1} + \nu_t \quad (3.17)$$

Where: Δ is the first difference operator; ϑ represents the drifts; Ψ' and π_{1-2} are vector and parameter long-run multipliers associated to the long-run relationships; $\rho_i, \sigma_i, \Theta_i'$ represent the dynamic short-run parameters of the basic bound testing method in equation (3.17); and ν is the white noise error. The estimated F-statistics and the test for rejecting the null hypothesis (absence of cointegration) against the alternative hypothesis (presence of cointegration) are employed to ascertain the existence of a long-term relationship. According to the previously stated equation, the subsequent null and alternative hypotheses are evaluated:

H_0: $\rho = 0, \sigma = 0, \Theta' = 0$ [i.e. there is no long-run relationship], and

H_1: $\rho \neq 0, \sigma \neq 0, \Theta' \neq 0$ [i.e. there is long-run relationship]

Lead City University Ibadan DO NOT COPY

The tabulated upper and lower bounds from Narayan are juxtaposed with the calculated F-test values. If the calculated F-values exceed the tabulated values at the upper limit, the null hypothesis of no cointegration is rejected, and the alternative hypothesis of cointegration is adopted. The null hypothesis of no long-run association is not rejected if the F-values are below the lower bound. Consequently, the outcomes become ambiguous if the F-values reside within the two key thresholds. The error correction model for the short run is as follows:

$$\Delta \ln Y = \vartheta + \sum_{i=1}^{p} \rho_i \Delta \ln Y_{t-i} + \sum_{i=1}^{p} \sigma_i \Delta \ln X_{t-i} + \sum_{i=1}^{p} \Theta_i' \Delta Z_{t-i} + \gamma ECT(-1) + \upsilon_t \quad (3.18)$$

The variables are defined as earlier stated, and $(-)\gamma$ show that in the short run, any disequilibrium brought about by shocks to the relevant variables will converge back to its long-run equilibrium state. In this respect, the error correction term (ECT) measures the speed of adjustment by which the system moves back to equilibrium. For ECT to be effective, its coefficient must be statistically significant and negative, indicating that deviations from the equilibrium are systematically corrected over time. Practically, the error correction techniques relate the actual value of the dependent variable to its long-run equilibrium value and thus compensate for any temporary disequilibrium. The "equilibrium error" is the residual obtained from an initial cointegrating regression and measures how far the outcome in the short run deviates from its equilibrium path in the long run. This mechanism ensures that, as time went by, these short-run fluctuations would die out and pull the dynamic model back to its long-run equilibrium.

Lead City University Ibadan DO NOT COPY

Endnotes

1. R. I. McKinnon. "*Money and capital in economic development*." Washington, D.C.: Brookings Institution, 1973.

2. E. S. Shaw. "*Financial deepening in economic development*." Oxford University Press, 1973.

3. R. G. Rajan, & L. Zingales. "*The great reversals: The politics of financial development in the twentieth century*." **Journal of Financial Economics**, 69(1), 2003, 5-50.

4. R. Levine. "*Financial development and economic growth: views and agenda*." **Journal of Economic Literature**, 35(2), 1997, 688–726.

5. P. M. Romer. "*Endogenous technological change*." **Journal of Political Economy**, 98(5), 1990, S71–S102.

6. R. E. Lucas. "*On the mechanics of economic development*." **Journal of Monetary Economics**, 22(1), 1988, 3–42.

7. B. A. Blonigen. "*A review of the empirical literature on FDI determinants*." **Atlantic Economic Journal**, 33, 2005, 383-403.

8. S. Fischer. "*The role of macroeconomic factors in growth*." **Journal of Monetary Economics**, 32(3), 1993, 485-512.

9. M. H. Pesaran, Y. Shin, & R. J. Smith. "*Bounds testing approaches to the analysis of level relationships*." **Journal of Applied Econometrics**, 16(3), 2001, 289-326.

10. I. A. Ogbuji, E. P. Mesagan, & O. Y. Alimi. "*The dynamic linkage between money market, capital market and economic growth in Ghana: New lessons relearned*." **Econometric Research in Finance**, 5(2), 2020, 59-78.

11. O. Y. Alimi, I. Ogbekene, & O. A. Idowu. "*Public health financing and population health: What role do institutions play*?" **Journal of Public Affairs**, 24(3), 2024, e2944.

12. H. H. Pesaran, & Y. Shin. "*Generalized impulse response analysis in linear multivariate models*." **Economics Letters**, 58(1), 1998, 17-29.

13. P. Narayan. "*Reformulating critical values for the bounds F-statistics approach to cointegration: An application to the tourism demand model for Fiji*." Department of Economics Discussion Paper No.: 02/04. Australia: Monash University, 2004.

Lead City University Ibadan DO NOT COPY

Chapter Four

Results and Discussion of Findings

The empirical results of the study are discussed in this chapter. The sub-sections are presented in three parts: the first section shows preliminary analysis, the second section presents the empirical results according to the stated objectives, and the last section discusses the discussion of findings. The discussion of results started with descriptive analysis and summary statistics, which provided trend analysis of basic measures of financial sector development, trade openness and economic growth of SANE countries.

4.1 Preliminary Analysis

The preliminary analysis on descriptive statistics and trend analysis of the variables understudied for empirical analysis based on formulated hypotheses are presented in this section.

4.1.1 Descriptive and Trend Analysis

This sub-section presents the descriptive analysis, trend and pattern of financial sector development, trade openness and economic growth in SANE countries. The stylized facts of the trend of GDP growth (gdp), domestic credit to the private sector (dcps), broad money (bm), stock market capitalization (smc), trade openness (to), inflation rate (inf), foreign direct investment (fdi), and gross fixed capital formation (gfcf) are reviewed under this section using summary statistics in Table 4.1.

Lead City University Ibadan DO NOT COPY

Table 4.1: Descriptive Statistics

	GDP	DCPS	BM	SMC	TO	INF	FDI	GFCF
South Africa								
Mean	2.0580	121.0027	62.6042	207.1421	53.0946	0.9901	7.5881	18.4931
Maximum	5.6037	160.1248	80.7998	352.4448	72.86539	5.983088	18.6549	23.5112
Minimum	-6.3411	70.4604	45.5000	118.4474	37.4874	-0.2163	-0.6920	15.1502
Std Dev.	2.3880	27.2845	10.8558	67.9788	8.2496	1.2408	4.3124	2.1324
Skewness	-1.2095	-0.4908	0.0194	0.5035	-0.0300	2.0976	0.8449	0.3636
Kurtosis	5.4354	2.0067	1.5016	2.0077	2.6085	8.3302	3.1327	2.2916
Jarque-Bera	18.1663	3.0063	3.4632	3.0818	0.2417	70.9349	4.4298	1.5892
Algeria								
Mean	2.3604	21.7274	63.1792	0.2532	56.0409	0.8558	8.5032	30.6660
Maximum	7.2018	69.3118	83.8240	0.5687	76.6845	2.3040	31.6696	43.0485
Minimum	-5.1000	3.9074	33.0058	0.0534	32.6845	-0.3240	0.3391	20.6772
Std Dev.	2.4275	19.4074	15.1335	0.1649	10.7686	0.7191	8.5378	6.94285
Skewness	-0.8151	1.4750	-0.4833	0.4953	-0.0782	0.2325	1.6396	0.4742
Kurtosis	4.0702	3.9498	2.0093	2.0163	2.3572	1.9842	4.3914	1.7651
Jarque-Bera	5.8639	14.8090	2.9539	3.0050	0.6746	1.9240	19.5629	3.7374
Nigeria								
Mean	4.1737	10.4383	17.3032	12.6621	32.7721	1.8152	19.7983	29.0886
Maximum	15.329	22.2893	25.8000	30.8006	53.2779	5.7908	72.8355	54.9482
Minimum	-2.0351	4.9575	9.0633	2.4887	9.1358	0.3525	5.3822	14.1687
Std Dev.	3.8518	4.2348	5.9583	5.5156	11.9099	1.2287	17.2589	13.6932
Skewness	0.5082	0.9356	0.2202	1.2174	-0.2186	1.4007	1.7238	0.4176
Kurtosis	3.4601	3.4358	1.3704	5.0655	2.0820	5.0372	4.7616	1.7568
Jarque-Bera	1.9192	5.6913	4.3930	15.7173	1.5940	18.4986	23.1102	3.4579
Egypt								
Mean	4.4358	35.2532	85.0402	29.8918	48.0943	2.5366	17.4402	20.2994
Maximum	7.1562	54.9311	98.1361	106.7404	71.6806	9.3435	75.3108	34.1271
Minimum	1.1254	22.0586	69.7154	10.0090	30.2465	-0.2045	2.2697	12.4456
Std Dev.	1.4768	11.0029	7.5433	20.4796	9.5829	2.1303	17.4981	5.2840
Skewness	-0.2105	0.6740	0.0855	2.1588	0.4323	1.6666	1.9467	0.7957
Kurtosis	2.5473	1.9219	2.1590	7.7193	2.650217	5.8143	6.1413	3.001863
Jarque-Bera	0.5892	4.5934	1.1353	63.0770	1.341296	29.3404	38.5841	3.904785

Lead City University Ibadan DO NOT COPY

Source: Author's computation, 2024

Lead City University Ibadan DO NOT COPY

Table 4.1 shows that the mean economic growth of South Africa is 2.058 which is the lowest among the S.A.N.E. countries. Similarly, the lowest minimum and maximum economic growth of -6.411 and 5.6037 is observed in South Africa. This could be attributed to isolation of South Africa during apartheid which led to low competition and low integration with regional and global value chains. The Egyptian economy has the largest mean and minimum economic growth of 4.4358 and 1.1254 respectively over the period while Nigeria has the highest maximum economic growth of 15.329. Lately, Nigeria has been recognized as the largest market in Africa. This could be attributed to its population as it is noted to be the most populous Africa and black nation in the world.

The greatest value of minimum, maximum and mean domestic credit to the private sector is 70.4604, 160.1248 and 121.0027 respectively in South Africa. These show high development of the financial sector in South Africa. Least mean and maximum of domestic credit to the private sector are 10.4383 and 22.2893 in Nigeria. These represent that the country has the lowest level of domestic credit to the private sector. The results also suggest that financial sector development measured as broad money in Egypt recorded the highest mean of 85.0402 within the ranges of 69.7154 to 98.1361.

Country witnessing highest development of the capital market measured by stock market capitalization is South Africa as it has the greatest mean, maximum and minimum of 207.1421, 352.4448 and 118.4474 respectively. It indicates that South Africa has the highest stock exchange among the SANE countries. Algeria is ranked lowest among SANE countries having the least mean, maximum and minimum stock market capitalization of 0.2532, 0.5687 and 0.0534 respectively. Moreover, the data suggest that Algeria is highly open to international trade, with the sum of imports and exports averaging approximately 56.0409 within the range of 32.6845 and

Lead City University Ibadan DO NOT COPY

76.6845 of the total GDP. Among the SANE countries, Nigeria has the lowest level of openness to foreign trade with a mean value of 32.7721 within the range of 9.1358 and 53.2779.

As regards the inflation rate, it recorded the highest mean of 2.5366 in Egypt within the range of -0.2045 and 9.3435 while the lowest mean of 0.8558 is recorded in Algeria. This therefore means that the Egyptian economy experiences rapid and sustained increase in the general level of prices leading to a volatile economy. South Africa has the lowest value of mean foreign direct investment of 7.5881. It represents low level of foreign direct investment in the economy while Nigeria recorded the highest level of mean 19.7983 within the range of 5.3822 and 72.8355.

Gross fixed capital formation (% of GDP) in Algeria is 30.6660 as the highest mean within the range of 20.6772 and 43.0485 which signifies high investment in the country. Its lowest mean is 18.4931 in South Africa within the range of 15.1502 and 23.5112.

Furthermore, the standard deviation reports the rate at which these variables deviate from their individual mean values. Most of the variables across the countries have low deviation rates in varying magnitude from their mean values, as their standard deviation values are lower than average values except economic growth, and inflation rate for South Africa. In the case of Algeria, only economic growth has high deviation rate from their mean values. However, for Egypt, foreign direct investment has high deviation rate.

Moreover, all the variables in each country have a mixed skewness i.e., some of the variables exhibit leftward skewness while other indicators skewed rightward. Also, the Kurtosis identified 3.0 suggesting the normal distribution. From Table 4.1, none of the variables exhibits normal distribution. All the variables are either platykurtic or leptokurtic in distribution implying that the variables are not normally distributed.

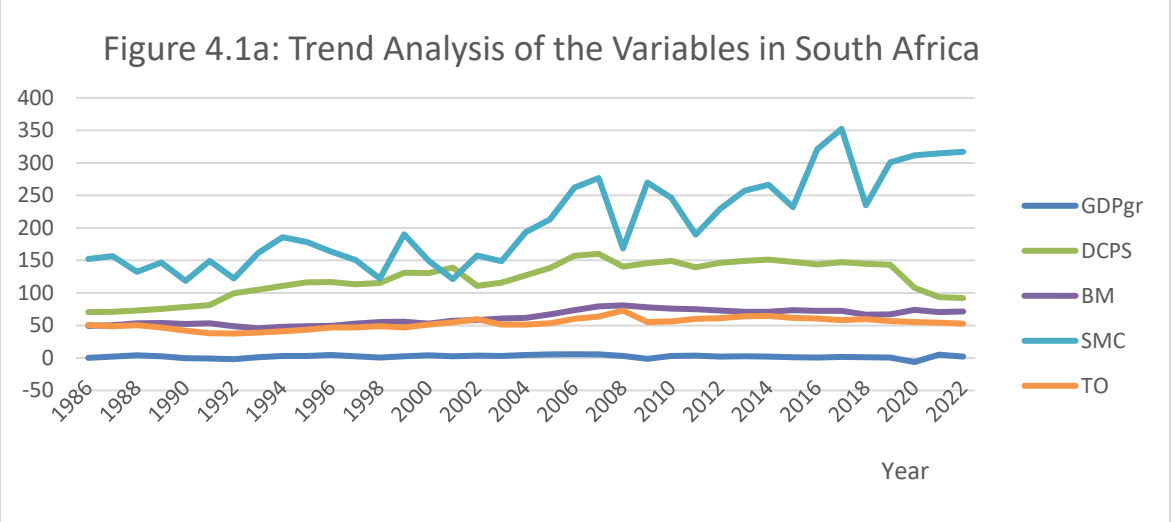
Lead City University Ibadan DO NOT COPY

The trend analysis review of financial sector development (such as domestic credit to the private sector, broad money supply and stock market capitalization) trade openness and economic growth for SANE countries are shown in Figure 4.1(a-d). The flowchart movement of domestic credit to private sector as a measure of financial sector development increases upwardly till 2001, thereafter, decline in 2002. After that, the chart rises to 2007, later approximately maintain a constant trend up to 2018.

Overall, the flowchart of financial sector development measures as stock market capitalization reveals an improvement in the financial sector over time as it shows an upward trend movement throughout the periods understudied. It is obtained from the chart that the sector possibly has a weak performance at the initial period till 2001 when the sector experienced market recapitalization by the authority. Apparently, the industry performed well and sustained the upward trend from 2002 to 2022 with the highest value in 2017. It is observed in the chart that financial sector development as a measure of broad money supply exhibit slight zigzag movement till 2001 thereafter increases and reaches its peak at 80.8 in 2008. The measures declined in 2009 due to global financial crisis.

As described by figure 4.1a, total trade recorded persistent decline from 2008 till 2010. This may be attributed to the observed global financial crises around this period. In the post 2010, trade volume sustained upward trend till around 2013. This was however cut short as the economy recorded declining trade flow till 2021.

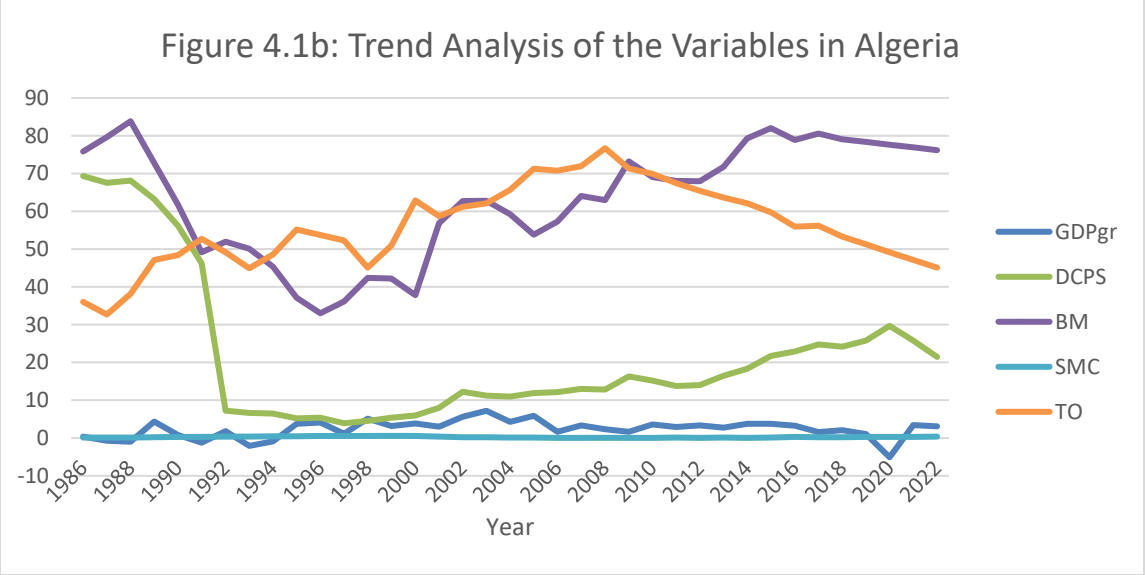
Lead City University Ibadan DO NOT COPY



Source: Author's computation, 2024

As revealed by South Africa data in figure 4.1a, between 1990 and 1992, the GDP growth rate of South Africa depicts a negative outcome. More so, between 2005 and 2007, the economy witnessed unprecedented increase in economic growth as annual GDP growth rates exceeded 5% in during the period. However, GDP growth rate recorded a rising trend till around 2008, thereafter it falls continually. More so, the upward trend was sustained till around 2014 after which it declines gradually even up to negative outcome despite the observed increase in financial development within the period reviewed.

Lead City University Ibadan DO NOT

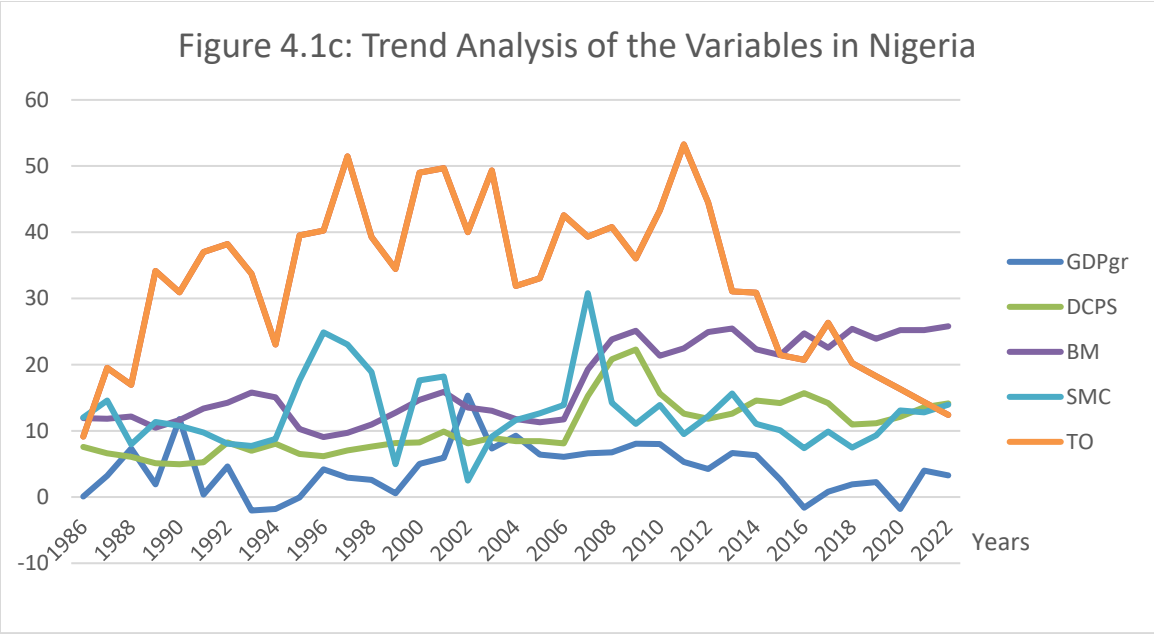


Source: Author's computation, 2024

In Figure 4.1b for Algeria, the domestic credit to private sector of Algerian economy dropped sharply from 68.1 in 1988 to 7.2 in 1992. It sustains the decline till 2000. It rises from 8.0 in 2001 to 27.7 in 2021. The ratio of broad money to GDP falls from 72% in 1989 to 33% in 1996 and thereafter, it sustains upward trend. The rise in broad money to GDP could be due to increase in government spending and the development of the parallel market which does not necessarily indicate a larger role for financial intermediation.

On the average market capitalization declines continually till around 2015, after which it sustains upward trend till 2021. On the average trade openness maintain upward trend from 1986 to 2008 rising from 36% to 76.6% respectively and thereafter, it declines till 2022. The GDP of Algerian economy has been low since 1986 running to negative output of -0.7% in 1987 and -1% in 1988. But from 1995 to 2019, the economy had macroeconomic stability. GDP fell to a negative level between 2020 and 2021.

Lead City University Ibadan DO N



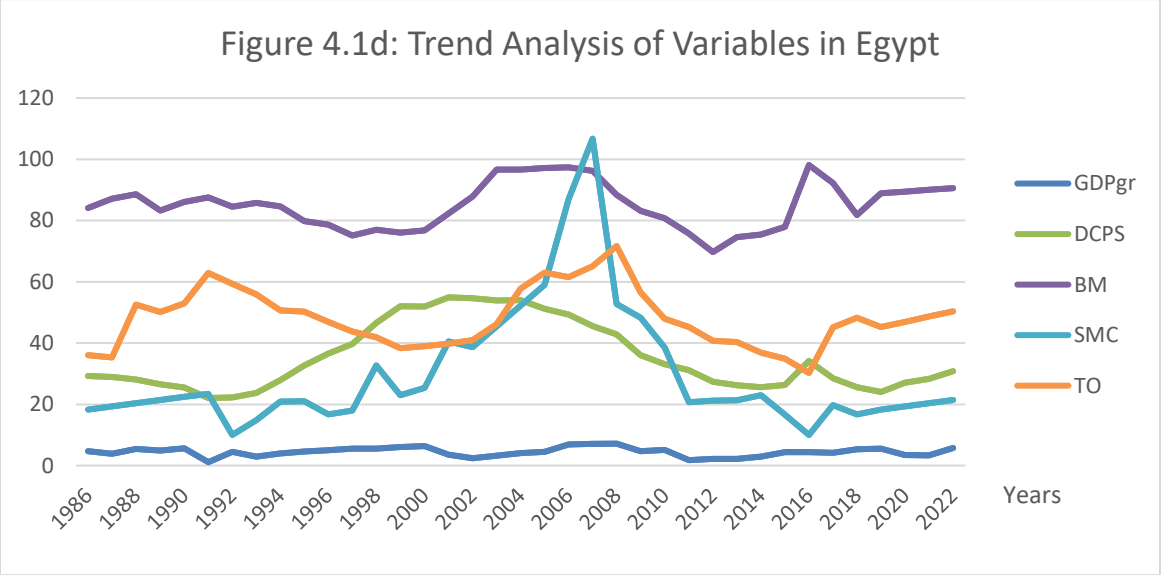
Source: Author's computation, 2024

In figure 4.1c, financial sector development measure as domestic credit to private sector is low in the studied period recording value less than 9.0 from 1986 to 2006. Thereafter, it rises up to 22.3 in 2009 and declines to 2022. The Nigeria broad money supply has been cyclical till 2006. However, the variable increases from 12% in 2006 to around 25% in 2009 despite global financial crisis. Market capitalization of listed domestic companies decrease till 1991 thereafter increases till 1996. However, the value declines significantly to -22% in 2001. Thereafter, it rises to around 28% in 2003 and maintain cyclical trend. Trade openness trend is cyclical all through the studied period; this could be due to volatility of exchange rate.

As shown in figure 4.1c, in 1987, the GDP growth rate was negative this may be explained by deregulation of interest rate policy. From 1988 to 1990, the country however, recorded positive growth rates. The growth performance in the post-liberalization era showed a contrast outcome when compared with the performance in the pre-liberalization era. The highest growth period observed is 2003 with 7.8% GDP.

Lead City University Ibadan DO

For figure 4.1d, the broad money declines from 1986 to 2000 on the average. In the post 2000, there was sustained increase till 2002, after which it was relatively stable till 2007. In the post 2007, there was a drastic decline till 2012. In 2014, there was another round of decline increase in broad money till 2017 which is followed by persistent decline. The trend shows that market capitalization of listed companies continuously declines and the stock market almost crashed in 2001. After which an increase was sustained till 2011. The market capitalization thereafter witness persistent decline.



Source: Author's computation, 2024

The trend of domestic credit to private sector swings within the study period recording the lowest value of 22.05 and peak of 54.93 in 1991 and 2001 respectively. Until the implementation of ERSAP, there is an increase in trade openness till 1992, after which it sustained downward trend till 1999. It later rises significantly till 2008. There has been a sharp slowdown in GDP growth that has lasted for years since 1986. Focusing on the interlink among the six variables, domestic credit to private sector, broad money supply and market capitalization declines in 2018 as revealed by figure 4.1d. Also, total trade slightly increased in the same period and thereafter declines.

The trend analysis review of financial sector development (such as domestic credit to the private sector, broad money supply and stock market capitalization) trade openness and economic growth for S.A.N.E. countries are shown in Figure 4.2(a-e). The gross domestic product growth rate of chart movement of Nigeria has shown in figure 4.2a records a sharp upward movement from 1986 to 1988. It thereafter falls and exhibit zigzag trend till 2002 where it records the highest value. The Nigerian GDP growth rate records and maintains a downward trend from 2002 to 2016. When compared with South Africa, Algeria and Egypt, it has the highest value from 2002 to 2014. Figure 4.2b shows that Algeria has dominated the category of openness to foreign trade among the S.A.N.E countries. The Algerian economy as shown in Figure 4.2b also recorded the highest value in 2008. In recent years, trade openness for Egypt has increased modestly, whereas for South Africa, Algeria and Nigeria have fallen relatively.

Lead City University Ibadan DO NOT COPY

Figure 4.2a: Trend Analysis of GDP growth rate in SANE

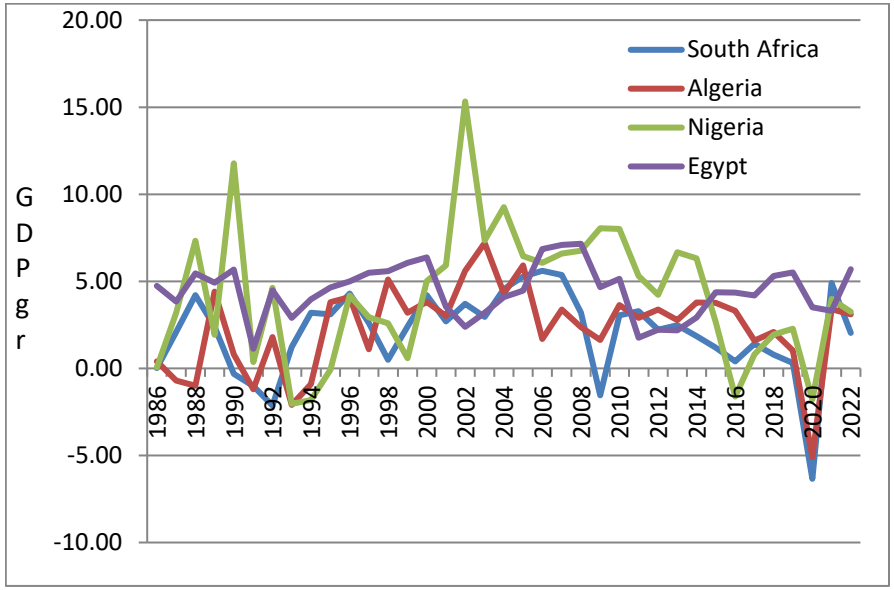
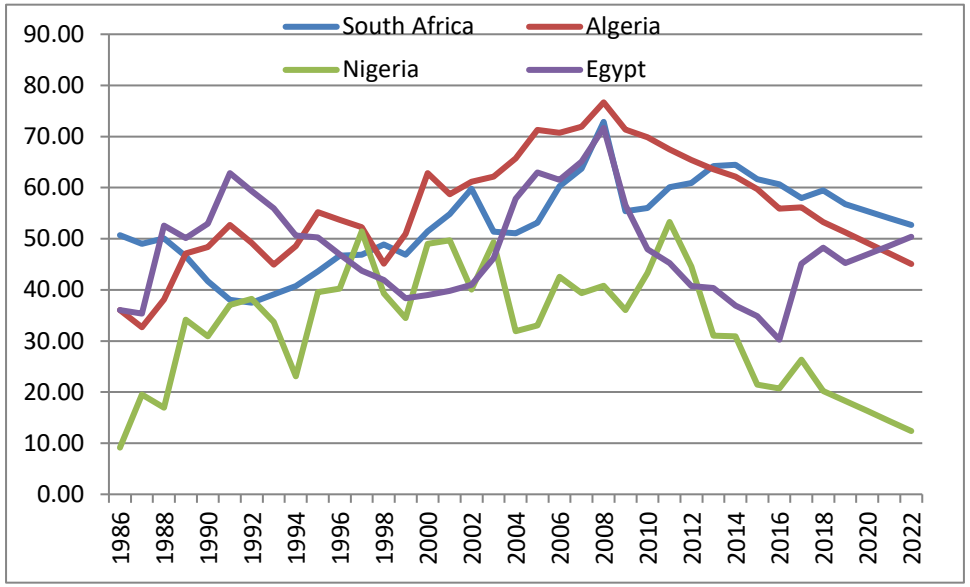


Figure 4.2b: Trend Analysis of trade openness in SANE



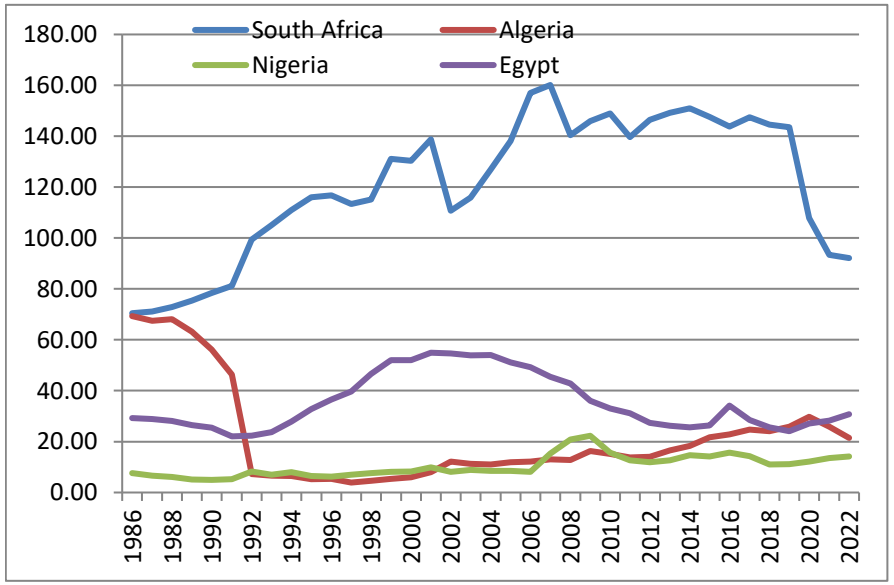


Figure 4.2c: Trend Analysis of domestic credit to private sector in SANE countries

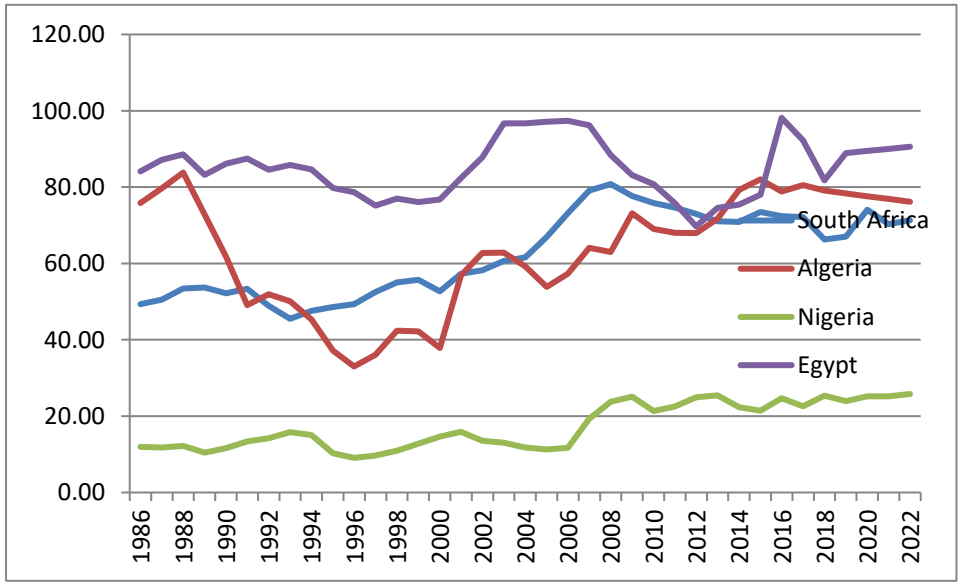
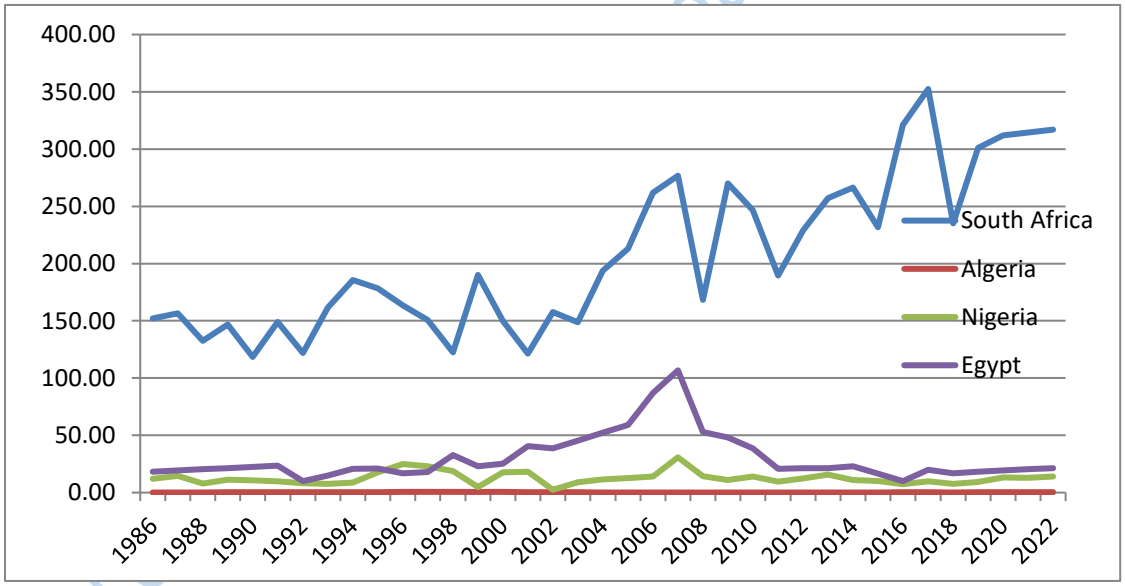


Figure 4.2d: Trend Analysis of domestic credit to private sector in SANE countries

Using Figure 4.2c which shows trend analysis of domestic credit to private sector of S.A.N.E. countries, South Africa is by far the country with greatest domestic credit to private sector. South Africa is followed by Egypt, Algeria and Nigeria which has the least domestic credit to the private sector in the study period. From the Figure 4.2d, Nigeria fared worst in broad money supply and Egypt remains the highest supplier of broad money of the S.A.N.E. countries.

The trend analysis of stock market capitalization as shown in Figure 4.2e revealed that South Africa has the highest value among the countries. The financial sector in South Africa is a highly sophisticated and globally competitive sector of the country's economy. The value of stock market capitalization for Algeria is relatively very low throughout the study period.

Figure 4.2e: Trend analysis of stock market capitalization in S.A.N.E. countries



Source: Author's computation, 2024

4.1.2 Correlation Analysis

Table 4.2 presents the correlation of domestic credit to private sector, broad money supply, stock market capitalization, trade openness, and GDP growth rate in South Africa, Algeria, Nigeria and

DO NOT COPY

Egypt using annual dataset within the period of 1986 and 2022. The correlation matrix of S.A.N.E. countries is revealed in Table 4.2. This is done to measure the degree to which the variables in our empirical models exhibit multicollinearity.

For South Africa, domestic credit to private sector and broad money supply has positive level of association with GDP growth rate. As for financial development measured by stock market capitalization, the correlation matrix revealed that the variable negatively correlates with GDP growth rate. Furthermore, the correlation table reveals that GDP growth rate indirectly relates with the control variables measure as inflation rate and gross fixed capital formation but directly associate with foreign direct investment.

In addition, the correlation matrix table for Algeria shows that all the indicators of financial sector development exhibit weak and indirect relationship with GDP growth rate and stock market capitalization is the weakest of the variables. For the control variables, GDP growth rate relates indirectly with inflation rate and gross fixed capital formation while foreign direct investment has a direct correlation with it. For Nigerian economy, the three measures of financial sector development have a weak relationship with GDP growth rate with domestic credit to private sector and stock market capitalization showing direct correlation while broad money supply has an indirect association with GDP growth rate.

Lead City University Ibadan DO NOT COPY

Table 4.2: Correlation matrix of S.A.N.E. countries

SOUTH AFRICA	gdpgr	dcps	bm	smc	to	inf	Fdi	gfcf
gdpgr	1							
Dcps	0.216	1						
Bm	0.021	0.675	1					
Smc	-0.097	0.490	0.740	1				
To	0.207	0.674	0.734	0.529	1			
Inf	-0.294	-0.736	-0.575	-0.556	-0.459	1		
Fdi	0.175	0.515	0.313	-0.027	0.444	-0.270	1	
Gfcf	-0.140	-0.004	0.360	0.073	0.373	0.405	0.020	1
ALGERIA	gdpgr	dcps	bm	smc	to	inf	Fdi	gfcf
gdpgr	1							
dcps	-0.395	1						
Bm	-0.156	0.549	1					
Smc	-0.021	-0.335	-0.721	1				
To	0.463	-0.569	-0.088	-0.414	1			
Inf	-0.335	0.034	-0.419	0.374	-0.349	1		
Fdi	0.239	-0.373	0.178	-0.142	0.434	-0.568	1	
gfcf	-0.202	0.183	0.734	-0.314	-0.095	-0.160	0.190	1
NIGERIA	gdpgr	dcps	bm	smc	to	inf	fdi	gfcf
gdpgr	1							
dcps	0.107	1						
Bm	-0.093	0.719	1					
smc	0.016	0.033	-0.158	1				
To	0.360	-0.070	-0.296	0.304	1			
Inf	-0.336	-0.357	-0.283	-0.127	-0.100	1		
Fdi	-0.147	-0.205	-0.378	0.095	0.399	0.533	1	
gfcf	-0.126	-0.763	-0.719	0.002	0.037	0.376	0.367	1
EGYPT	gdpgr	dcps	bm	smc	to	inf	fdi	gfcf
gdpgr	1							
dcps	0.288	1						
Bm	0.186	0.238	1					
Smc	0.381	0.610	0.472	1				
To	0.266	0.068	0.440	0.553	1			
Inf	0.035	-0.458	0.267	-0.265	0.059	1		
Fdi	0.587	0.130	0.562	0.706	0.528	0.226	1	
gfcf	0.260	-0.170	0.010	-0.107	0.237	-0.038	0.035	1

Note: gdpgr – GDP growth rate, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, to – trade openness as a percentage of GDP, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.

Source: Author's Computation, 2024

Lead City University Ibadan DO NOT COPY

For Egyptian economy, all the indicators of financial sector development have weak and direct association with GDP growth rate. Concerning the control variables, both inflation rate and gross fixed capital formation have a weak and positive level of association with GDP growth rate. Also, a strong and direct relationship exists between foreign direct investment and GDP growth rate. Also, for South Africa, the result shows that trade openness has a weak and positive level of association with GDP growth rate.

For the control variables, trade openness directly correlates with foreign direct investment and gross fixed capital formation but indirectly relates with inflation rate. Also, inflation rate and gross fixed capital formation were found to have negative level of association with GDP growth rate while foreign direct investment correlate positively with GDP growth rate. For Algeria, GDP growth rate associates positively with trade openness. With respect to the control variables, inflation rate and gross fixed capital formation relates negatively with GDP growth rate and trade openness. Also, foreign direct investment has positive level of correlation with GDP growth rate and trade openness.

The correlation matrix result for Nigeria, reveal that GDP growth rate increases with increase in trade openness. Considering the association of the control variables with the GDP growth rate, inflation rate, foreign direct investment and gross fixed capital formation correlates indirectly with GDP growth rate. For Egyptian economy, from the result presented, trade openness correlates positively with GDP growth rate. Similarly, inflation rate, foreign direct investment and gross fixed capital formation which are used as control variables have direct association with GDP growth rate.

Lead City University Ibadan DO NOT COPY

The correlation analysis revealed that the explanatory variables in the estimate model were neither highly multicollinear nor linearly dependent on one another. When the correlation coefficient between two independent variables is greater than 0.80, it is referred to as high collinearity[1]. However, the result has no record of high collinearity, therefore, the estimation results will not be impacted by multicollinearity or overparameterization problems. Nonetheless, the results of the correlation coefficients are just preliminary analyses that are being put through confirmation in the next sub-section.

4.2 Test of Objectives

In this section, the research study presents empirical results regarding the set objectives in the following sub-sections. Prior to the findings of the stated objectives, pre-estimation test such as unit root for stationarity test for long-run relationship to decide the appropriate estimators. The outcomes are presented in the following sub-sections.

4.2.1 Analysis of the First Objective

This sub-section reports the empirical results relating to the relationship between financial sector development and trade openness in S.A.N.E. countries.

4.2.1.1 Pre-Estimation Tests (Unit Root and Cointegration Tests)

The pre-estimation approaches used to estimate the stationary level of the variables is Augmented Dickey Fuller (ADF), Phillips-Perron (PP) and Zivot-Andrews (ZA) unit roots. The estimators are employed to test the stationary level of the financial sector development indicators and trade openness to suggest the appropriate technique to estimate the parameter coefficients. Table 4.3 presents the results of the unit roots for the indicators. The tau-statistic results for intercept and

Lead City University Ibadan DO NOT COPY

trend model were used to find the statistically significant of the variables at 1%, 5% and 10% critical point at levels and first difference.

Table 4.3: Unit root test (ADF, PP and Zivot-Andrew)

Variables	ADF		PP		Remark	Zivot-Andrew Test		
	Levels	1st Diff	Levels	1st Diff.		Break	t-statistics	Remark
South Africa								
to	-2.251	-3.642**	-2.281	-6.556***	I(1)	2009	-7.337***	I(1)
dcps	-0.242	-5.613***	0.559	6.218***	I(1)	2004	-6.172***	I(1)
bm	-1.308	-4.686***	-1.563	-4.690***	I(1)	2009	-6.209***	I(1)
smc	-5.015***	-	-5.005***	-	I(0)	2004	-6.359***	I(0)
inf	-2.997	-6.439***	-2.797	-11.825***	I(1)	2001	-4.925**	I(1)
fdi	-0.841	-7.555***	-4.639***	-	I(1)	2001	-4.114**	I(0)
gfcf	-2.327	-4.387***	-2.221	-4.169**	I(1)	2006	-4.191***	I(0)
Algeria								
to	-0.779	-6.069***	-0.574	-6.461***	I(1)	2005	-4.112***	I(0)
dcps	-2.517	-4.710***	-2.077	-4.710***	I(1)	1993	-10.240***	I(1)
bm	-2.108	-4.750***	-2.079	-4.691***	I(1)	1994	-3.482***	I(0)
smc	-2.666**	-	-1.609	-	I(0)	2001	-3.845***	I(1)
inf	-2.023	-5.081***	-2.202	-5.085***	I(1)	2000	-5.302***	I(1)
fdi	-2.806	-7.428***	-2.820	-7.428***	I (1)	2012	-4.520***	I(0)
gfcf	-2.485	-6.270***	-2.721	-4.894***	I(1)	1999	-3.525***	I(1)
Nigeria								
to	-2.482	-7.561***	-2.742	-20.703***	I(1)	2013	-4.907***	I(0)
dcps	-3.784**	-	-2.246	-5.953***	I(0)	2010	-6.348***	I(1)
bm	-3.034	4.845***	-2.223	-6.788***	I(1)	2007	-5.697***	I(1)
smc	-4.317**	-	-4.264***	-	I(0)	1998	-7.036***	I(1)
inf	-3.356*	-5.642***	-3.373*	-6.513***	I(1)	1996	-7.030***	I(1)
fdi	-4.349***	-	-4.280***	-	I(0)	1995	-5.826***	I(1)
gfcf	-1.948	-6.023***	-1.829	-8.071***	I(1)	2010	-4.480***	I(0)
Egypt								
to	-2.689*	-6.042**	-2.564	-5.061***	I(1)	2004	-4.589***	I(1)
dcps	-1.565	-3.419**	-1.418	-3.384**	I(1)	1998	-3.282***	I(1)
bm	-3.690***	-	-2.435	-5.327***	I(1)	2017	-4.047***	I(1)
smc	-1.904	-5.791***	-1.945	-5.738***	I(1)	2009	-3.225***	I(1)
inf	-1.858	-4.298**	1.690	-6.043***	I(1)	2014	-3.187***	I(0)
fdi	-3.284**	-	-2.421**	-	I(0)	2004	-4.586***	I(1)
gfcf	-3.986**	-	-1.898	-5.762***	I(1)	1998	-3.701***	I(1)

Note: to- trade openness, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.

Source: Author's Computation, 2024.

Lead City University Ibadan DO NOT COPY

The unit root estimation approaches follow the same decision on stationary level of variables of interest at varying significant levels which were not stationary at levels at 5% except for some few differences. Thus, the unit root test results were found not to reject the null hypothesis "not stationary at level" at 5% McKinnon significance level. These variables that are not stationary at levels were further tested at first differences which were found significant 5% significance level. The results suggest that at first difference, the time series of the variables were stationary and integrated of order one and therefore suggest that after differencing at first levels the series, they converge to their long-run equilibrium or true mean.

The result of South Africa in table 4.3 shows the Phillips-Perron (PP) unit root result is in line with the outcome of ADF unit root test except that in addition to the stock market capitalization, the foreign direct investment was also stationary at levels. For Algeria, both ADF and PP unit root tests were exactly similar. For Nigeria, the outcomes of PP unit root test are alike with the findings of ADF unit root test except for domestic credit to private sector that was significant at first difference. Also, the variables of Egypt have similar findings for ADF and PP unit root test except that broad money supply and gross fixed capital formation that are stationary at I(1) in PP unit root test. The PP test is used in this investigation because its methodology yields a residual variance that is resistant to auto-correlation. The test has indicated that it is reasonable to treat the variables as a mixture of I (0) and I (1) processes. This justifies the use of the ARDL technique, which enables the inclusion of both I (1) and I (0) series in the same equation.

The results of these two conventional tests (ADF and PP) do not account for the potential for any structural breakdowns in the series; therefore, they may be biased. According to the research, if a structural break is not looked at during the creation of a data process, the statistical significance of these conventional unit root tests may be significantly reduced, leading to an inaccurate hypothesis

Lead City University Ibadan DO NOT COPY

test. Therefore, in order to identify any potential structural breaks in the series, the study supplement the ADF and PP unit root tests in this work with the Zivot-Andrews unit root test. The process makes it possible to locate a structural break at an unidentified break site.

Based on Table 4.3 for Zivot-Andrews unit root test, it can be inferred that all of the series were found to be stationary with time-based breaks when the unit root test was run on the variables in their first differences. Consequently, at the 1%, 5%, and 10% significance levels, the null hypothesis that there would be a unit root without a structural break was rejected. From the discussions above, the unit root test findings have shown that the some of the variables are non-stationary at the levels but stationary in their first differences. Therefore, they imply that none of the series are integrated above I(1).

Subsequently, the study conducted the long run relationship test using the ARDL bound approach for South Africa, Algeria, Nigeria and Egypt, which is found appropriate due to the outcomes of the unit root test. The estimation approach is employed because it is suitable for variables at different order of integration. The F-statistics estimates for testing the existence of long-run relationship between the financial sector development and trade openness were presented in Table 4.4

In the table, for South Africa, Algeria, Nigeria and Egypt, the estimated F-statistics of the normalized equations were found greater than the lower and upper critical bound at 1% significance level. It implies that the null hypothesis of no long-run relationship is rejected at 5% significance level. The implication of the above estimation is that there is existence of long-run relationship between the indices of financial sector development and trade openness in South

Lead City University Ibadan DO NOT COPY

Africa, Algeria, Nigeria and Egypt. The model has equilibrium condition that keeps the variables together in the long run.

Table 4.4: Cointegration Test Results using ARDL Bound Test

Dependent variable: *y*	**Functions**					**F-statistics**
South Afri Model I ARDL (1, 2, 2, 0, 0, 1, 2)	F(dcps, bm, smc, inf, fdi, gfcf)					4.577
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	3.6	4.9	2.87	4.0	2.53	3.59
Algeria Model I ARDL (1, 2, 1, 0, 2, 0, 0)	F(dcps, bm, smc, inf, fdi, gfcf)					4.423
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	3.6	4.9	2.87	4.0	2.53	3.59
Nigeria Model I ARDL (1, 2, 1, 2, 1, 1, 2)	F(dcps, bm, smc, inf, fdi, gfcf)					7.950***
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	3.6	4.9	2.87	4.0	2.53	3.59
Egypt Model I ARDL (1, 0, 2, 1, 0, 1, 0)	F(dcps, bm, smc, inf, fdi, gfcf)					13.610***
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	3.60	4.90	2.87	4.00	2.53	3.59

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. to – trade openness, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's Computation, 2024.

Lead City University Ibadan DO NOT COPY

4.2.1.2 Short run Estimation Results

The autoregressive distributed lag (ARDL) model results of the parameter estimate in short-run are presented in Table 4.5. The results on the tables provide answers to the null hypothesis that financial sector development that stimulates trade openness is not statistically significant. First, the short run analysis in this sub-section shows the dynamic pattern in the model, the error correction term (ECT) that measures the speed or degree of adjustment is reported in the short-run

estimation results in Table 4.11a. It shows the rate of adjustment at which the outcome variable changes owing to changes in the explanatory variables.

The coefficients of the Error Correction Term (ECT) are found to be negative and statistically significant, as the ECT value of -0.542, -0.559, -0.712 and -0.857 of South Africa, Algeria, Nigeria and Egypt respectively implies that the model corrects its short-run disequilibrium by 54.2%, 55.9%, 71.2% and 85.7% speed of adjustment to return to the long run equilibrium. For South Africa, according to the short-run parameters, domestic credit to the private sector and broad money supply has positive and negative relationship with trade openness respectively but statistically insignificant albeit only the coefficients of lag one of domestic credit to private sector and lag one of broad money supply are positively and statistically significant at 5% level. Thus, it does not follow the a'priori expectation as it means that the level of financial sector development in the previous periods is not sufficient to ensure improvement in trade openness in the current short period. In the case of the controlling variables, foreign direct investment and gross fixed capital formation have significant positive link with trade openness except the first lag of gross fixed capital formation that negatively influenced trade openness.

Lead City University Ibadan DO NOT COPY

Table 4.5: Short-run Estimates of Financial Sector Development and Trade Openness in South Africa, Algeria, Nigeria and Egypt

Country	Variables	Dependent Variable: Trade Openness (*to*)			
		Coefficient	Std Error	t-Statistic	Prob.
South Africa	Δ(dcps)	0.0053	0.0306	0.1743	0.8634
	Δ(dcps(-1))	0.1717	0.0310	5.5351	0.0000
	Δ(bm)	-0.0809	0.1127	-0.7185	0.4812
	Δ(bm(-1))	0.3430	0.1231	2.7854	0.0118
	Δ(fdi)	0.8718	0.2198	3.9657	0.0008
	Δ(gfcf)	2.2871	0.3225	7.0917	0.0000
	Δ(gfcf(-1))	-1.0688	0.2992	-3.5715	0.0020
	ECT(-1)	-0.5423	0.0835	-6.4933	0.0000
Algeria	Δ(dcps)	-0.0208	0.0669	-0.3115	0.7584
	Δ(dcps(-1))	0.1969	0.0609	3.2326	0.0040
	Δ(bm)	-0.5187	0.0709	-7.3127	0.0000
	Δ(inf)	-0.0915	0.0846	-1.0812	0.2918
	Δ(inf (-1))	0.3364	0.0889	3.7806	0.0011
	ECT(-1)	-0.5596	0.0886	-6.3095	0.0000
Nigeria	Δ(dcps)	0.1585	0.4223	0.3753	0.7121
	Δ(dcps(-1))	-0.9529	0.3555	-2.6801	0.0158
	Δ(bm)	-0.8513	0.4079	-2.0869	0.0523
	Δ(smc)	0.4633	0.1206	3.8416	0.0013
	Δ(smc(-1)	0.2260	0.1313	1.7213	0.1033
	Δ(inf)	-0.5055	0.0818	-6.1733	0.0000
	Δ(fdi)	0.4691	0.8676	0.5407	0.5957
	Δ (gfcf)	0.9406	0.3322	2.8310	0.0115
	Δ (gfcf (-1))	-3.1718	0.3748	-8.4607	0.0000
	ECT(-1)	-0.7128	0.0821	-8.6772	0.0000
Egypt	Δ(bm)	-0.0616	0.0780	-0.7902	0.4378
	Δ(bm(-1))	-0.1673	0.1084	-1.5434	0.1370
	Δ(smc)	0.0961	0.0410	2.3388	0.0288
	Δ(fdi)	0.1685	0.3563	0.4730	0.6409
	ECT(-1)	-0.8579	0.0779	-11.011	0.0000

Note: to- trade openness, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.

Source: Author's computation, 2024.

For Algeria, the coefficient of domestic credit to the private sector suggests a negative and insignificant relationship with trade openness. The lag of domestic credit to the private sector has a positive and significant impact on trade openness. This means that, in the short term, credit given

Lead City University Ibadan DO NOT COPY

to private sector in the previous year usually helps openness to trade. When financial sector development is measured as broad money supply, it suggests a negative and statistically significant relationship with trade openness. With regards to the control variables, a negative and statistically insignificant relation was noted between inflation rate and trade openness. However, a positive and significant lagged impact of inflation rate on trade openness was estimated. Thus, inflation rate in the previous year enhances trade openness in the current year.

Considering the short run results for Nigeria, increase in domestic credit to the private sector has a beneficial effect on openness to trade but it is not statistically significant. On the other hand, an increase in domestic credit to the private sector in the previous year led to a decline in trade openness. This was statistically significant at the five percent level. A one percent rise in the first lagged of domestic credit to the private sector is associated with a 0.9529 reduction in trade openness. A negative and significant relationship exists between broad money supply and trade openness. Stock market capitalization is estimated to have a positive and statistically significant impact on openness to trade. It was also observed that lagged stock market capitalization has a positive and non-significant effect on trade openness. Turning attention to the control variables, the coefficient of inflation rate is estimated to be negative and statistically significant, denoting that its impact is harmful on trade openness in the short run. Both foreign direct investment and gross fixed capital formation relates positively with trade openness but only gross fixed capital formation is statistically significant at five percent level. However, the first lagged of gross fixed capital formation is significantly deleterious to trade openness.

For the short run parameters of Egypt, broad money supply in the previous and current period has negative and insignificant effect on trade openness. Financial sector development as stock market capitalization has beneficial impact on trade openness in the short run. This is statically significant

Lead City University Ibadan DO NOT COPY

at five percent significance level. As regards the controlling variables, foreign direct investment positively influenced openness to trade.

Table 4.6: Long-run Estimates of Financial Sector Development and Trade Openness in SANE countries

Variables	**Dependent Variable:** Trade Openness (*to*)			
	South Africa	**Algeria**	**Nigeria**	**Egypt**
dcps	0.0230	-0.2325*	1.6665	-0.3291***
	(0.0664)	(0.1202)	(1.2773)	(0.0838)
bm	0.1052	-0.5386**	-0.3408	0.6254***
	(0.2421)	(0.2422)	(0.7330)	(0.1584)
smc	-0.0282	56.8411***	-0.2892	0.4382***
	(0.0250)	(9.2983)	(0.4899)	(0.0940)
inf	0.0962	-0.5742**	-0.9989	0.2561***
	(0.4457)	(0.2179)	(0.2014)	(0.0761)
fdi	3.1141**	-0.4176	9.0528	-1.3243
	(1.2842)	(1.7716)	(2.2881)	(0.8286)
gfcf	0.5193	0.1505	1.4874	-0.4498
	(0.8511)	(0.4270)	(0.8915)	(0.3856)
Adjusted R^2	0.8650	0.7756	0.7752	0.8560
F-Stat	25.213***	17.794***	11.6622***	34.7074***
Durbin Watson	2.4615	2.106	2.411	2.3163

Note: to- trade openness, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.

Source: Author's computation, 2024

4.2.1.3. Long run Estimation Results

The autoregressive distributed lag (ARDL) model results of the long-run parameter estimate are presented in Table 4.6. As for the long-run estimates of South Africa, all the financial sector development variables have no significant relationship with trade openness. However, both domestic credit to private sector and broad money supply relates positively while stock market capitalization associates negatively. This insignificance of financial sector development variables is not in line with the a'priori expectation. However, the result supports findings from the short run estimates. Looking at the control variables, they all have a positive link with trade openness,

Lead City University Library DO NOT COPY

but only foreign direct investment is statistically significant in its relationship. Besides, the coefficient of determination (measured by the Adjusted-R^2) is high for the model. The adjusted R^2 at 86.5% indicates that about 86.5% of the total variations in trade openness were explained by the explanatory variables in the model. As for the overall test, the F-statistics values are statistically significant at 1% level of significance which means that the estimated model is well specified and statistically significant.

The results of long run estimates of Algeria presented in Table 4.6, the coefficients of domestic credit to private sector and broad money supply exhibit a substantial harmful influence on trade openness. This negative association is the same as in the short run. The result for stock market capitalization exhibits a positive and statistically significant association. Turning attention to the control variables, inflation rate is significantly deleterious to trade openness. It is consistent with the short run results that were also obtained. A substantial negative impact of foreign direct investment on trade openness was also observed from the findings. The results also suggest that gross fixed capital formation exerts a positive effect on trade openness in the long run, which is statistically insignificant. Increasing investment by one percent in the long run increases openness to trade by 0.1505. Moreover, the coefficient of determination (measured by the Adjusted-R^2) of 0.7756 is high for the model, the adjusted R^2 at 77.56% indicates that about 77.56% of the total variations in trade openness was explained by the variables in the model. The overall test using the F-statistics are statistically significant at 1% level of significance showing that model is well specified and statistically significant.

With regards to the long run estimates of Nigeria presented in table 4.6, increase in domestic credit to the private sector has a favourable and insignificant effect on trade openness in the long run; this is similar to the short run results. Also, the increase in broad money supply has a detrimental

Lead City University Ibadan DO NOT COPY

impact on trade openness in the long run but it is statistically non-significant. Stock market capitalization has a negative non-significant effect on trade openness in the long run. This finding is a deviation from the positive significant relation found between stock market capitalization and trade openness in the short run. In the case of the controlling variables, just like in the short run, a negative association was estimated between inflation rate and trade openness in the long run. However, this was statistically insignificant. The results also suggest that foreign direct investment and gross fixed capital formation exert a positive and insignificant influence on openness to trade. Moreover, the coefficient of determination (measured by the Adjusted-R^2) of 0.7752 is high for the model, the adjusted R^2 at 77.52% indicates that about 77.52% of the total variations in trade openness was explained by the variables in the model. The overall test using the F-statistics are statistically significant at 1% level of significance showing that model is well specified and statistically significant.

As regard long-term estimates of Egypt, the estimated coefficient on domestic credit to the private sector is -0.3291 and is statistically significant at the 1% significance level. This states that a negative relation exists between domestic credit to the private sector and trade openness. Put specifically, when domestic credit to the private sector increases by 1%, trade openness declines by 0.3291. However, both broad money supply and stock market capitalization exerts positive and significant impact on trade openness. Regarding the controlling variables, inflation rate positively and significantly influences trade openness. However, foreign direct investment and gross fixed capital formation exhibit detrimental and insignificant influence on trade openness. Furthermore, the model has a high coefficient of determination (as determined by the Adjusted-R2) of 0.8560; the adjusted R2 of 85.60% means that the variables in the model accounted for roughly 85.60% of the overall changes in trade openness. The model is well-specified and statistically significant, as

Lead City University Ibadan DO NOT COPY

demonstrated by the overall test using the F-statistics, which is statistically significant at the 1% level of significance.

4.2.1.4. Diagnostic and Structural Stability Tests

A set of diagnostic tests are computed in Table 4.7 to validate the predicted symmetric ARDL models. The diagnostic tests included in the table are functional form test statistics, heteroskedasticity, serial correlation, and normality. Table 7 shows that the results of the Breusch-Godfrey serial correlation LM test, the normality test, the heteroskedasticity test (ARCH test), and the Ramsey-Reset functional form test reject the null hypotheses. It demonstrates that there are no issues with normality, serial correlation, heteroskedasticity, or misspecification mistakes. As a result, at the 5% significance level, the error terms have a normal distribution, and there is no serial correlation. The functional form's results also demonstrate that the models' specifications were accurate.

Table 4.7: Diagnostic and structural stability tests of the estimated model

Test Statistics	**Dependent Variable:** Trade Openness (*to*)			
	South Africa	**Algeria**	**Nigeria**	**Egypt**
Normality test	0.6892	1.6708	0.9818	1.4466
	(0.7084)	(0.4336)	(0.6120)	(0.4851)
Serial Correlation	3.4999	12.2371	3.2622	2.2263
	(0.4401)	(0.1380)	(0.0733)	(0.1267)
Heteroscedasticity	0.8146	1.0653	0.3317	2.2165
	(0.3731)	(0.3093)	(0.5684)	(0.1458)
Functional form	0.8686	1.8590	6.6711	3.9202
	(0.3590)	(0.1832)	(0.2151)	(0.0573)

Note: the statistics in parenthesis for the selected stability and diagnostic test techniques are the p-values of the previously disclosed test results. Histogram for the test of normalcy; The Ramsey RESET test is used for functionality form, the ARCH approach is used for heteroskedasticity testing, and the Breusch-Godfrey LM method is used for serial correlation.

Source: Author's computation, 2024.

Lead City University Ibadan DO NOT COPY

4.2.2 Analysis of the Second Objective

In this sub-section, the study presents the empirical outcomes with reference to the relationship between financial sector development and economic growth in S.A.N.E. countries.

4.2.2.1. Pre-Estimation Tests (Unit Root and Cointegration Tests)

In this sub-section, Augmented Dickey Fuller (ADF), Phillips-Perron (PP) and Zivot-Andrews (ZA) unit root tests estimation approaches are used to estimate the stationary level of the variables. These estimators are used to reveal the stationary level of financial sector development indicators and economic growth to propose the appropriate method to evaluate the parameters. The results of the unit root for the indicators are presented in Table 4.8. For the tau-statistics, their results in intercept and trend form were used to find the statistically significant of the variables at 1%, 5% and 10% critical point at levels and first difference.

The unit root test follows approximately the same decision on stationary level of variables of interest at varying significant levels which were stationary at levels at 5%. As for the remaining variables, the unit root test results were found not to reject the null hypothesis "not stationary at level" at 5% McKinnon significance level. The variables that are not stationary at levels were further tested at first differences which were found significant at 5% level. The results suggest that at first difference, the time series of the variables were stationary and integrated of order one and therefore suggests that after differencing at first levels the series, they converge to their long-run equilibrium or true mean. The result of ADF unit root test revealed that the variables that are stationary at levels and I(1) across the S.A.N.E. countries are GDP growth rate and inflation rate respectively, while domestic credit to private sector, broad money supply, stock market capitalization, foreign direct investment and gross fixed capital formation maintains stationarity at

Lead City University Ibadan DO NOT COPY

levels or first difference. The results indicated that there was mixed order of stationarity for the SANE countries.

Table 4.8: Unit root test (ADF, PP and Zivot-Andrew)

Variables	ADF		PP		Remark	Zivot-Andrew Test		
	Levels	1st Diff	Levels	1st Diff.		Break	t-statistics	Remark
South Africa								
gdpgr	-4.411***	-	-4.397***	-	I(0)	2009	-5.443***	I(1)
dcps	-0.242	-5.613***	0.559	6.218***	I(1)	2004	-6.172***	I(1)
bm	-1.308	-4.686***	-1.563	-4.690***	I(1)	2009	-6.209***	I(1)
smc	-5.015***	-	-5.005***	-	I(0)	2004	-6.359***	I(0)
inf	-2.997	-6.439***	-2.797	-11.825***	I(1)	2001	-4.925**	I(1)
fdi	-0.841	-7.555***	-4.639***	-	I(1)	2001	-4.114**	I(0)
gfcf	-2.327	-4.387***	-2.221	-4.169**	I(1)	2006	-4.191***	I(0)
Algeria								
gdpgr	-5.08***	-	-4.302***	-	I(0)	1994	-7.967***	I(1)
dcps	-2.517	-4.710***	-2.077	-4.710***	I(1)	1993	-10.240***	I(1)
bm	-2.108	-4.750***	-2.079	-4.691***	I(1)	1994	-3.482***	I(0)
smc	-2.666**	-	-1.609	-	I(0)	2001	-3.845***	I(1)
inf	-2.023	-5.081***	-2.202	-5.085***	I(1)	2000	-5.302***	I(1)
fdi	-2.806	-7.428***	-2.820	-7.428***	I (1)	2012	-4.520***	I(0)
gfcf	-2.485	-6.270***	-2.721	-4.894***	I(1)	1999	-3.525***	I(1)
Nigeria								
gdpgr	-4.061***	-	-3.916**	-	I(0)	2001	-4.318***	I(0)
dcps	-3.784**	-	-2.246	-5.953***	I(0)	2010	-6.348***	I(1)
bm	-3.034	4.845***	-2.223	-6.788***	I(1)	2007	-5.697***	I(1)
smc	-4.317**	-	-4.264***	-	I(0)	1998	-7.036***	I(1)
inf	-3.356*	-5.642***	-3.373*	-6.513***	I(1)	1996	-7.030***	I(1)
fdi	-4.349***	-	-4.280***	-	I(0)	1995	-5.826***	I(1)
gfcf	-1.948	-6.023***	-1.829	-8.071***	I(1)	2010	-4.480***	I(0)
Egypt								
gdpgr	-3.644***	-	-3.676**	-	I(0)		-4.836***	I(1)
dcps	-1.565	-3.419**	-1.418	-3.384**	I(1)	1998	-3.282***	I(1)
bm	-3.690***	-	-2.435	-5.327***	I(1)	2017	-4.047***	I(1)
smc	-1.904	-5.791***	-1.945	-5.738***	I(1)	2009	-3.225***	I(1)
inf	-1.858	-4.298**	1.690	-6.043***	I(1)	2014	-3.187***	I(0)
fdi	-3.284**	-	-2.421**	-	I(0)	2004	-4.586***	I(1)
gfcf	-3.986**	-	-1.898	-5.762***	I(1)	1998	-3.701***	I(1)

Note: gdpgr-GDP growth rate, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's Computation, 2024.

Lead City University Ibadan DO NOT COPY

The result of PP unit root test for South Africa shows similar outcome with the ADF except for foreign direct investment that is stationary at levels. Considering Algeria, both ADF and PP unit root tests findings are the same. When looking at Nigeria, the results are also alike except that domestic credit to private sector is stationary at I(1) for PP unit root test. Also, variables of Egypt revealed similar result except for broad money supply and gross fixed capital formation that are stationary at I(1) for PP unit root test.

The outcome of these traditional unit root tests may be biased as they do not consider the likelihood of structural breaks in the series. Failure to determine the presence of structural break could reduce the statistical significance of the traditional unit root which could give spurious hypothesis test. In view of this, the study complements the traditional test with Zivot-Andrews unit root test. From Table 4.8, the results show that all the variables were stationary at mixed order with time breaks. Hence, the null hypothesis of presence of unit root without structural break was rejected.

In addition, the study conducted the long run relationship test using the ARDL bound approach, which is found appropriate due to the outcomes of the unit root test. The estimation approach is employed because it is suitable for variables at different order of integration. The F-statistics estimates for testing the existence of long-run relationship among the domestic credit to private sector, broad money supply, stock market capitalization and economic growth in South Africa, Algeria, Nigeria and Egypt were presented in Table 4.9.

Lead City University Ibadan DO NOT COPY

Table 4.9: Cointegration Test Results using ARDL Bound Test

Dependent variable: *y*	**Functions**					**F-statistics**
South Afri Model 2 ARDL (1, 1, 2, 2, 1, 2, 1)						
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	3.60	4.90	2.87	4.00	2.53	3.59
Algeria Model 2 ARDL (1, 2, 1, 0, 0, 0, 1)	F(dcps, bm, smc, inf, fdi, gfcf)					4.6952***
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	2.66	4.05	2.04	3.24	1.75	2.87
Nigeria Model 2 ARDL (2, 0, 2, 2, 2, 2, 2)	F(dcps, bm, smc, inf, fdi, gfcf)					3.752***
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	2.66	4.05	2.04	3.24	1.75	2.87
Egypt Model 2 ARDL (2, 0, 2, 2, 0, 2, 1)	F(dcps, bm, smc, inf, fdi, gfcf)					6.1048***
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	2.66	4.05	2.04	3.24	1.75	2.87

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. to – trade openness, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's computation (2024).

The result of South Africa, Algeria, and Egypt shows that the estimated F-statistics of the normalized equations were found greater than the lower and upper critical bound at 1% significance level. It implies that the null hypothesis of no long-run relationship is rejected at 5% significance level. Therefore, the study stated there is existence of long-run relationship between the indices of financial sector development and economic growth in South Africa, Algeria, and Egypt. The model has equilibrium condition that keeps the variables together in the long run.

Contrarily, the estimated F-statistics of the normalized equations for Nigeria were found lower than the upper critical bound at 1% significance level. It implies that the null hypothesis of no

Lead City University Ibadan DO NOT COPY

long-run relationship is not rejected at 5% significance level. Therefore, the study stated there is no long-run relationship between the indices of financial sector development and economic growth in Nigeria.

4.2.2.2. Short-run Estimation Results

The parameter estimates for the autoregressive distributed lag (ARDL) model in the short run are shown in Tables 4.10. The results address the null hypothesis, which holds that there is no statistically significant correlation between financial sector development and economic growth.

First, the dynamic pattern in the model is shown by the short run analysis in this subsection. The error correction term (ECT), which quantifies the rate or degree of adjustment, is shown in Table 4.11a's short run estimation findings. It displays the rate of adjustment at which modifications to the explanatory variables cause changes in the result variable. The Error Correction Term (ECT) coefficients are found to be statistically significant and negative. The model corrects its short-run disequilibrium by 84.9%, 91.5%, 90.9%, and 68.1% speed of adjustment to return to the long run equilibrium, as indicated by the ECT values of -0.8494, -0.915, -0.9096, and -0.6811 for South Africa, Algeria, Nigeria, and Egypt, respectively.

According to the short-run criteria, broad money supply is notably detrimental to economic growth in South Africa, while stock market capitalization strongly fosters it significantly. The detrimental effects of a broad money supply contradict the a'priori expectation. However, domestic credit to the private sector is not statistically significant in the short term. Regarding the control variables, gross fixed capital formation and economic growth are positively correlated, while the impact of foreign direct investment and inflation rate is not statistically significant.

Lead City University Ibadan DO NOT COPY

Table 4.10: Short-run Estimates of Financial Sector Development and Economic Growth in South Africa, Algeria, Nigeria and Egypt.

Country	Variables	**Dependent Variable:** Economic Growth (*gdpgr*)			
		Coefficient	**Std Error**	**t-Statistic**	**Prob.**
South Africa	Δ(dcps)	0.0090	0.0264	0.3428	0.7359
	Δ(bm)	-0.3281	0.0955	-3.4333	0.0032
	Δ(bm(-1))	-0.1927	0.0926	-2.0799	0.0530
	Δ(smc)	0.0205	0.0065	3.1230	0.0062
	Δ(smc(-1))	-0.0141	0.0064	-2.2075	0.0413
	Δ(inf)	-0.1877	0.1321	-1.4205	0.1735
	Δ(fdi)	0.2754	0.1932	1.4255	0.1721
	Δ(fdi(-1))	-0.6656	0.2036	-3.2681	0.0045
	Δ(gfcf)	1.3564	0.2866	4.7325	0.0002
	ECT(-1)	-0.8494	0.1304	-10.3468	0.0000
Algeria	Δ(dcps)	-0.1803	0.0461	-3.9049	0.0007
	Δ(dcps(-1))	0.1532	0.0450	3.4048	0.0023
	Δ(bm)	0.0228	0.0582	0.3928	0.6979
	Δ(gfcf)	-0.0824	0.1349	-0.6110	0.5469
	ECT(-1)	-0.9158	0.1428	-6.4096	0.0000
Nigeria	Δ(gdpgr(-1))	-0.3505	0.1001	-3.5020	0.0027
	Δ(bm)	-0.3681	0.1748	-2.1053	0.0504
	Δ(bm(-1))	0.4495	0.1766	2.5444	0.0209
	Δ(smc)	0.1203	0.0676	1.7800	0.0930
	Δ(smc(-1))	-0.2174	0.0749	-2.9014	0.0099
	Δ(inf)	-0.1660	0.0321	-5.1586	0.0001
	Δ(inf(-1))	0.0705	0.0344	2.0494	0.0562
	Δ(fdi)	-1.9780	0.4869	-4.0622	0.0008
	Δ(fdi(-1))	1.7714	0.4604	3.8472	0.0013
	Δ(gfcf)	-0.8740	0.1849	-4.7269	0.0002
	Δ(gfcf (-1))	-0.4712	0.1695	-2.7792	0.0129
	ECT(-1)	-0.9096	0.0183	-5.9615	0.0000
Egypt	Δ(gdpgr(-1))	0.3861	0.1582	2.4408	0.0241
	Δ(bm)	-0.0409	0.0249	-1.6430	0.1160
	Δ(bm(-1))	-0.0640	0.0252	-2.5390	0.0195
	Δ(smc)	-0.0708	0.0152	-4.6586	0.0002
	Δ(smc(-1))	0.0657	0.0172	3.8090	0.0011
	Δ(fdi)	0.7981	0.1343	5.9418	0.0000
	Δ(fdi(-1))	-0.8932	0.2506	-3.5640	0.0019
	Δ(gfcf)	-0.1345	0.0784	-1.7138	0.1020
	ECT(-1)	-0.6811	0.2255	-7.4534	0.0000

Note: gdpgr – GDP growth rate, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's computation, 2024.

Leadcity University Ibadan DO NOT COPY

Algeria's short-term estimations showed a statistically significant negative coefficient of domestic credit to the private sector. Nonetheless, there is a positive correlation between economic growth and the first lag in domestic credit to the private sector. The broad money supply shows a positive correlation, but statistically, its coefficient is not significant. Gross fixed capital formation as a control variable shows a negligible negative correlation with economic growth. According to the findings of the short-run analysis for Nigeria, the present GDP growth rate and the first lag of GDP growth rate are negatively correlated. Except for the broad money supply lag, which has a direct and considerable impact on economic growth, and the stock market capitalization lag, which shows some degree of negative influence on growth, all the financial sector development indicators in their present level are statistically insignificant. Regarding the control variables, gross fixed capital formation, foreign direct investment, and inflation rate all negatively affect economic growth.

The results of the short-run analysis for Egypt indicate a positive correlation between the GDP growth rate at present and the GDP growth rate at the first lag. Both stock market capitalization and lag one of broad money supply show some degree of negative influence on economic growth, whereas broad money supply in the present level also exhibits a harmful relationship although not statistically significant. Regarding the control variables, foreign direct investment enhances growth of the economy significantly, but it becomes harmful in its first lag.

4.2.2.3. Long-run Estimation Results

With regards to the long run estimates presented in Table 4.11, the result of South Africa stated that domestic credit to the private sector has a negative relationship with economic growth that is statistically significant at the 5% significance level. Specifically, a five percent (5%) increase in

Lead City University Ibadan DO NOT COPY

domestic credit to the private sector (% of GDP) is associated with a 0.047 percent (%) decrease in GDP growth rate. This result obtai*n*ed contrasts with the a'priori expectation.

Table 4.11: Long-run Estimates of Financial Development and Economic Growth in SANE countries

Variables	**Dependent Variable:** Economic Growth (*gdpgr*)			
	South Africa	**Algeria**	**Nigeria**	**Egypt**
dcps	-0.0478**	-0.1470***	-1.8810	0.1102***
	(0.0187)	(0.0404)	(5.9962)	(0.0132)
bm	0.0862	0.2445***	-0.1770	0.0081
	(0.0765)	(0.0636)	(1.2494)	(0.0088)
smc	0.0386**	7.6784**	4.6103	-0.1014***
	(0.0141)	(2.8009)	(10.9816)	(0.0165)
inf	-0.6781***	-0.0494	0.5632	-0.0267***
	(0.1751)	(0.0743)	(2.0384)	(0.0092)
fdi	1.2574**	-0.4604	-26.9102	1.1940***
	(0.4775)	(0.7358)	(62.8771)	(0.1547)
gfcf	-0.1883	-0.3622***	-0.1408	0.0190
	(0.2526)	(0.1202)	(1.0000)	(0.0239)
Adjusted R^2	0.8008	0.6070	0.7744	0.7807
F-Stat	13.4294*	11.9153***	9.6894***	12.834***
Durbin Watson	2.02	2.34	2.296	2.34

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. gdpgr – GDP growth rate, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's computation, 2024

When financial sector development is proxy by broad money supply, it maintained a positive but insignificant relationship with GDP growth rate (economic growth). Stock market capitalization suggests a positive and significant association with economic growth in the long run. Regarding the connection between financial development and economic growth, the noteworthy findings are consistent with those of the endogenous growth theorists and other findings[2]. They assert that investing in financial development has a positive impact on an economy's growth.

The endogenous growth theory emphasizes the importance that the development of the financial sector plays in advancing innovations, income distributions, and the rate of technological advancement[3]. Thus, consistent with earlier predictions, in the long run, the development of the

Lead City University, Ibadan DO NOT COPY

financial sector measured by SMC leads to increased growth of the South African economy. This result is validated by a few findings[4,5,6].

Additionally, inflation rate maintained its statistically significant negative correlation with economic growth in this model. Accordingly, a one-point increase in inflation is linked to a 0.678 decline in economic growth, which is statistically significant at one percent (1%). This result is contrary to the "Mundell-Tobin effect" theory that stated that positive relationship exists between inflation and economic growth. Based on the neo-classical growth theory, the proponents showed that increase in nominal interest rates due to inflation will enable people to commit a higher percentage of their income to investment than consumption, and that rises in investments will cause increase in capital accumulation that will stimulate growth of the economy. The result is consistent with the long run growth model which is based on the "cash-in-advance" limitation assumption. Contrarily, some economists noted real money balance and investment as substitute, while a scholar considered them complementary, inflation tends to reduce both the real money balance and investment, which hinders economic growth because people will receive the profit from this investment in the form of money[7,8,9]. Some empirical studies support the robust negative relation between inflation rate and economic growth[10]. Foreign direct investment shows a statistically significant positive relationship with economic growth. Hence, a one percentage increase in FDI is associated with 1.257 increases in economic growth.

From the result, gross fixed capital formation as a percent of GDP (proxy of investment) has a negative but statistically insignificant association with GDP growth rate (economic growth). This inverse relationship is contradictory to the Solow growth hypothesis, which uses a production function to predict that the capital stock will positively contribute to economic growth. A unit increase in gross fixed capital formation is associated with a 0.188 decrease in economic growth.

Lead City University Ibadan DO NOT COPY

That is, over time, higher investment levels are linked to slower rates of economic growth (there was less economic growth because there were not enough new investments to replace worn-out capital and yet positively contribute to capital stock growth). As a result, domestic economic investment over time has not been sufficient to stimulate growth. This finding is in agreement with conclusions of some researchers, but it is not consistent with some findings[11,12, 13,14].

Moreover, the coefficient of determination (measured by the Adjusted-R^2) of 0.8008 is high for the model, the adjusted R^2 at 80.08% indicates that about 80.08% of the total variations in economic growth was explained by the variables in the model. The overall test using the F-statistics are statistically significant at 1% level of significance showing that model is well specified and statistically significant.

Table 4.11 shows the long run result for Algeria, when financial development is determined by the broad money supply (% of GDP), the long-term correlation between the variables reveals a positive relationship between financial development (BMS) and economic growth. Thus, higher rates of economic growth are linked to higher money supply levels. More specifically, a one percentage (1%) rise in broad money supply to GDP ratio causes 0.244 increases in economic growth which is statistically significant at the one percent significance level. The Keynesian hypothesis, which maintains that changes in the money supply have an impact on actual output levels and prices, is compatible with this outcome. The result, however, contradicts the monetary theory, which holds that changes in the money supply only have an impact on prices and not actual output levels. The result agrees with some research findings[15].

Similarly, stock market capitalization as a proxy of financial sector development is associated positively and significantly with economic growth. Thus, as stock market capitalization increases

Lead City University Ibadan DO NOT COPY

by one per cent, economic growth also rises by 7.678. This has further strengthened the body of literature supporting the beneficial effects of financial development (as determined by the depth of financial market) on economic growth.

The result of the long run association shows a negative association between domestic credit to private sector (% of GDP) and economic growth. This relationship is different from when financial development was proxy by broad money supply and stock market capitalization. Hence, an increase in domestic credit to the private sector is associated with a decrease in economic growth. Specifically, a one percentage increase in domestic credit to private sector to GDP ratio coincides with a 0.147 decrease in economic growth and this is statistically significant at the one percent (1%) significance level.

All three control variables have a negative relationship with economic growth but are statistically not significant. A one percent rise in inflation causes 0.0494 falls in economic growth; a 1% increase in foreign direct investment will lead to a 0.4604 decrease in Algerian growth; and a unit rise in gross fixed capital formation is correlated with a 0.3622 decline in the growth of the economy. The results of the various diagnostic tests carried out on the growth model specified in this study reveal that the errors of the short run models are normally distributed, homoscedastic and not serially correlated.

For Egyptian economy shown in Table 4.11, the long run relationship between the variables when financial development is measured by domestic credit to private sector and broad money supply (% of GDP) show positive association between financial sector development and economic growth. Thus, increase in domestic credit to private sector and broad money supply is related with a rise in economic growth. Precisely, a unit rise in domestic credit to private sector and broad

Lead City University Ibadan DO NOT COPY

money supply coincides with a 0.110 and 0.008 increase in economic growth. However, domestic credit to private sector is statistically significant at 1% significant level and broad money supply is insignificant. The result agrees with some findings who found that the broad money supply had an insignificant influence in explaining real output levels[16]. In contrast, stock market capitalization indicates negative and statistical significance in association with economic growth. The outcome is not in line with the a'priori expectation but follows a number of research findings[17,18].

Looking at the variables that were controlled for in this study, inflation has the expected sign. It is negatively and significantly related to economic growth. Also, foreign direct investment in its long run maintained its positive relations with economic growth as observed in the short run and it is observed as a robust determinant of economic growth in the long term. Gross fixed capital formation is not a robust determinant of economic growth in the long run as it shows a positive association with economic growth although it is not significant.

4.2.2.4. Diagnostic and Structural Stability Tests

The study performed some diagnostic tests in order to validate the predicted symmetric ARDL models. The diagnostic tests are normality test, serial correlation, heteroskedasticity and functional form test statistics. The findings of the numerous diagnostic tests performed on the second model mentioned in this study are displayed in Table 4.2. According to the model test's chi-square, F-statistics, and probability values, all the variables appear to meet the requirements of the traditional linear regression model. As a result, the findings show that the short run models' errors are normally distributed, not serially correlated, devoid of heteroscedastic, and any ARCH effects. Additionally, the Ramsey reset test verified that the short run model's functional form was precisely defined.

Lead City University Ibadan DO NOT COPY

Table 4.12: Diagnostic and structural stability tests of the estimated model

Test Statistics	**Dependent Variable:** Trade Openness (*to*)			
	South Africa	**Algeria**	**Nigeria**	**Egypt**
Normality test	1.1887	1.6708	0.9818	1.4466
	(0.5519)	(0.4336)	(0.6120)	(0.4851)
Serial Correlation	0.0874	12.2371	3.2622	2.2263
	(0.9167)	(0.1380)	(0.0733)	(0.1267)
Heteroscedasticity	0.7993	1.0653	0.3317	2.2165
	(0.4589)	(0.3093)	(0.5684)	(0.1458)
Functional form	0.1419	0.4018	0.0373	2.0895
	(0.7091)	(0.5311)	(0.8480)	(0.1590)

Note: the statistics in parenthesis for the selected stability and diagnostic test techniques are the p-values of the previously disclosed test results. Histogram for the test of normalcy; The Ramsey RESET test is used for functionality form, the ARCH approach is used for heteroskedasticity testing, and the Breusch-Godfrey LM method is used for serial correlation.
Source: Author's computation (2024).

4.2.3 Analysis of the Third Objective

In this sub-section, the study presents the empirical outcomes with reference to the relationship between trade openness and economic growth in S.A.N.E. countries.

4.2.3.1. Pre-Estimation Test (Unit Root and Cointegration Tests)

In this sub-section, three different pre-estimation approaches are used to estimate the stationary level of the variables which are Augmented Dickey Fuller (ADF), Phillips-Perron (PP) and Zivot-Andrews unit root tests. This estimator is employed to test the stationary level of the trade openness, economic growth, inflation rate, foreign direct investment and gross fixed capital formation to suggest the appropriate technique to estimate the parameter coefficients. The results of the unit root tests for the indicators are presented in Table 4.13. The tau-statistic results for intercept and trend model were used to find the statistically significant of the variables at 1%, 5% and 10% critical point at levels and first difference.

The findings of the conventional unit root tests using ADF and PP revealed that the model is stationary at mixed order for S.A.N.E. countries. However, the findings of ADF and PP unit root

Lead City University Ibadan DO NOT COPY

tests do not consider the possibility of any structural break in the series; therefore, they may be biased. Based on research, if a structural break is not looked at when creating data process, the statistical significance of these conventional unit root tests may be significantly decreased, causing an inaccurate hypothesis test. Hence, for any potential structural breaks in the series to be identified, the study complements the ADF and PP unit root tests in this work with the Zivot-Andrews unit root test. The test will aid to locate a structural break at an unidentified break point.

Table 4.13: Unit root tests (ADF, PP and Zivot-Andrew)

Variables	ADF		PP		Remark	Zivot-Andrew Test		
	Levels	1st Diff	Levels	1st Diff.		Break	t-statistics	Remark
South Africa								
gdpgr	-4.411***	-	-4.397***	-	I(0)	2009	-5.443***	I(1)
to	-2.251	-3.642**	-2.281	-6.556***	I(1)	2009	-7.337***	I(1)
inf	-2.997	-6.439***	-2.797	-11.825***	I(1)	2001	-4.925**	I(1)
fdi	-0.841	-7.555***	-4.639***	-	I(1)	2001	-4.114**	I(0)
gfcf	-2.327	-4.387***	-2.221	-4.169**	I(1)	2006	-4.191***	I(0)
Algeria								
gdpgr	-5.081***	-	-4.302***	-	I(0)	1994	-7.967***	I(1)
to	-0.779	-6.069***	-0.574	-6.461***	I(1)	2005	-4.112***	I(0)
inf	-2.023	-5.081***	-2.202	-5.085***	I(1)	2000	-5.302***	I(1)
fdi	-2.806	-7.428***	-2.820	-7.428***	I (1)	2012	-4.520***	I(0)
gfcf	-2.485	-6.270***	-2.721	-4.894***	I(1)	1999	-3.525***	I(1)
Nigeria								
gdpgr	-4.061***		-3.916**	-	I(0)	2001	-4.318***	I(0)
to	-2.482	-7.561***	-2.742	-20.703***	I(1)	2013	-4.907***	I(0)
inf	-3.356*	-5.642***	-3.373*	-6.513***	I(1)	1996	-7.030***	I(1)
fdi	-4.349***	-	-4.280***	-	I(0)	1995	-5.826***	I(1)
gfcf	-1.948	-6.023***	-1.829	-8.071***	I(1)	2010	-4.480***	I(0)
Egypt								
gdpgr	-3.644***	-	-3.676**	-	I(0)		-4.836***	I(1)
to	-2.689*	-6.042**	-2.564	-5.061***	I(1)	2004	-4.589***	I(1)
inf	-1.858	-4.298**	1.690	-6.043***	I(1)	2014	-3.187***	I(0)
fdi	-3.284**	-	-2.421**	-	I(0)	2004	-4.586***	I(1)
gfcf	-3.986**	-	-1.898	-5.762***	I(1)	1998	-3.701***	I(1)

Note: gdpgr-GDP growth rate, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's Computation (2024).

Lead City University Ibadan DO NOT COPY

Table 4.13 for Zivot-Andrew unit root test revealed that all of the series were found to be stationary with structural breaks when the unit root test was run on the variables in their first differences. Subsequently, at the 1%, 5%, and 10% significance levels, the null hypothesis that there would be a unit root without a structural break was rejected. From the discussions above, the unit root test findings have shown that the some of the variables are non-stationary at the levels but stationary in their first differences. Therefore, they imply that none of the series are integrated above I (1).

Furthermore, the research examined the long run relationship using the ARDL bound approach, which is suitable due to the outcomes of the unit root test. The estimation approach is employed because it is appropriate for variables at mixed order of integration. The F-statistics estimates for testing the existence of long-run relationship between trade openness and economic growth in South Africa, Algeria, Nigeria and Egypt were presented in Table 4.14

For South Africa, Algeria, and Egypt, the outcomes of the test show that the estimated F-statistics of the normalized equations were found greater than the lower and upper critical bound at 1% significance level. It implies that the null hypothesis of no long-run relationship is rejected at 5% significance level. Thus, there is existence of long-run relationship between trade openness and economic growth in South Africa, Algeria, and Egypt. The model has equilibrium condition that keeps the variables together in the long run.

In contrast, the result for Nigeria's estimated F-statistics of the normalized equations were found lower than the upper critical bound at 1% significance level. This means that the null hypothesis of no long-run relationship is not rejected at 5% significance level. The implication of the above estimation is that there is no long-run relationship between the trade openness and economic growth in Nigeria.

Lead City University Ibadan DO NOT COPY

Table 4.14: Cointegration Test Results using ARDL Bound Test

Dependent variable: *y*	**Functions**				**F-statistics**	
South Afri Model 3 ARDL (2, 0, 1, 0, 1)	F(to, inf, fdi, gfcf)				8.814***	
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 4)	3.81	4.92	3.05	3.97	2.68	3.53
Algeria Model 3 ARDL (1, 0, 0, 0, 0)	F(to, inf, fdi, gfcf)				5.643***	
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 4)	3.07	4.44	2.26	3.48	1.90	3.01
Nigeria Model 3 ARDL (1, 0, 2, 2, 2)	F(to, inf, fdi, gfcf)				5.082***	
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 4)	4.4	5.72	3.47	4.57	3.03	4.06
Egypt Model 3 ARDL (1, 2, 2, 0, 0)	F(to, inf, fdi, gfcf)				9.1314***	
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 4)	3.07	4.44	2.26	3.48	1.9	3.01

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively to - Trade openness (% of GDP); inf – Inflation; fdi – foreign direct investment; gfcf – gross fixed capital formation
Source: Author's computation (2024).

4.2.3.2 Short run Estimation Results

The parameter estimates for the autoregressive distributed lag (ARDL) model in the short-run is shown in Tables 4.15. The null hypothesis is that there is no statistically significant correlation between trade openness and economic growth. First, the dynamic pattern in the model is shown by the short run analysis in this subsection. The error correction term (ECT), which quantifies the rate or degree of adjustment, is shown in Table 4.15's short run estimation findings. It displays the rate of adjustment at which modifications to the explanatory variables cause changes in the result variable.

Lead City University Ibadan DO NOT COPY

The Error Correction Term (ECT) coefficients are found to be statistically significant and negative. The model corrects its short-run disequilibrium by 65.0%, 52.0%, 64.5%, and 74.5% speed of adjustment to return to the long run equilibrium, as indicated by the ECT values of -0.6503, -0.5203, -0.6458, and -0.7452 for South Africa, Algeria, Nigeria, and Egypt, respectively.

The results of the short-run analysis for South Africa show that the current GDP growth rate is significantly and positively influenced by the first lag of GDP growth rate. It therefore confirms the a'priori expectation since it indicates that the volume of economic activity in the preceding time was adequate to guarantee an increase in economic activity in the current short term. Trade openness exerts a positive and statistically significant impact on economic growth. The findings show that trade openness can improve economic growth by ensuring resources allocation efficiency and boost the general productivity factor via dissemination of knowledge and technology. In terms of the control variables, the rate of inflation has a statistically significant negative impact on economic growth, while gross fixed capital formation significantly improves it.

Looking at the findings for Algeria, the result shows that trade openness has a non-significant adverse effect on economic growth but openness to trade in its first lag relates positively and non-significantly with economic growth. As the coefficient of inflation rate is significant and negative means that one unit increase in the inflation rate will cause economic growth to decrease by -0.2385 at 1% level of significance. Foreign direct investment is positively significant with economic growth at 1% level of significance. Both result of inflation rate and foreign direct investment are in line with the apriori expectation of the variables. However, gross fixed capital formation result contradicts the expected outcome as the linkage has a negative effect on economic growth.

Lead City University Ibadan DO NOT COPY

Considering the Nigeria result, it shows that the coefficient of trade openness is negative and significant which means that raising one unit of trade openness, the GDP growth rate will decrease by 0.4997 at 1% level of significance. For the control variables, Nigeria's short-term estimations showed a statistically significant negative coefficient of gross fixed capital formation both in the previous and current periods. However, inflation rate and gross fixed capital formation have significant negative relationships with economic growth in their present level and positive impact in their lag one.

Based on the result for Egypt, trade openness both in the recent period and its first lag significantly hinders economic growth. Inflation rate as a control variable has positive and significant impact on economic growth.

Lead City University Ibadan DO NOT COPY

Table 4.15: Short-run Estimates of Trade Openness and Economic Growth in South Africa, Algeria, Nigeria and Egypt.

Country	Variables	**Dependent Variable:** Economic Growth (*gdpgr*)			
		Coefficient	**Std Error**	**t-Statistic**	**Prob.**
South Africa	Δ(gdpgr)	0.3228	0.1342	2.4057	0.0239
	Δ(to)	0.4821	0.1440	3.3479	0.0304
	Δ(inf)	-0.3406	0.1308	-2.6025	0.0153
	Δ(gfcf)	0.5916	0.2609	2.2671	0.0323
	ECT(-1)	-0.6503	0.2071	-7.9665	0.0000
Algeria	Δ(to)	-0.0970	0.0926	-1.0572	0.3040
	Δ(to(-1)	0.3601	0.2512	1.4337	0.1643
	Δ(inf)	-0.2385	0.0678	-3.5311	0.0019
	Δ(fdi)	0.1791	0.0534	3.3485	0.0062
	Δ(gfcf)	-0.0904	0.0501	-1.7955	0.0863
	ECT(-1)	-0.5203	0.1807	-5.6444	0.0000
Nigeria	Δ(to)	-0.5829	0.2081	-2.8011	0.0017
	Δ(inf)	-0.2385	0.0419	-5.6803	0.0000
	Δ(inf(-1))	0.0904	0.0357	2.5290	0.0191
	Δ(fdi)	-1.7529	0.5244	-3.3426	0.0029
	Δ(fdi(-1))	1.2159	0.4527	2.6859	0.0135
	Δ(gfcf)	-0.5588	0.1940	-2.8797	0.0087
	Δ(gfcf(-1))	-0.6086	0.2124	-2.8644	0.0090
	ECT(-1)	-0.6458	0.1178	-5.4802	0.0000
Egypt	Δ(to)	-0.1138	0.0359	-3.1679	0.0039
	Δ(to(-1))	-0.0721	0.0347	-2.0766	0.0479
	Δ(inf)	0.1123	0.0394	2.8487	0.0085
	Δ(inf(-1))	0.1920	0.0449	4.2719	0.0002
	ECT(-1)	-0.7452	0.1440	-7.2581	0.0000

Note: to – trade openness, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's computation (2024).

Lead City University Ibadan DO NOT COPY

4.2.3.3 Long-run Estimation Results

The parameter estimates for the autoregressive distributed lag (ARDL) model in the long run is shown in Table 4.16. The long-run result presented in Table 4.16 indicates the relationship between the degree of openness of an economy in terms of trade and economic growth for South Africa. The outcome is a positive correlation with long-term economic growth, and this result is similar

with the short run findings. This indicates that the growth rate of the economy has benefited over time from trade with the rest of the world. Furthermore, statistical significance was revealed for the outcome. This finding is consistent with the idea of comparative advantage and the endogenous innovation-based growth model propounded by two economists, who stated that as an economy participates more in world trade, it gains access to a wider and better base of technological know-how that leads to increased production[19]. This model supports the framework for the growth effect of trade through incentives for innovation, the diffusion of technology, and the diffusion of knowledge. This result agrees with some research findings[20, 21,22,23].

All the three control variables have a negative association with economic growth, but in this model, only the inflation rate is statistically significant. Therefore, a unit increase in inflation is related to 0.4117 declines in economic growth. Inflation is seen as a robust determinant of economic growth in the long run. The negative association of gross fixed capital formation with economic growth disagrees with the Solow growth theory, which states a positive influence of capital stock on the growth of an economy through a production function. Specifically, a one percent increase in gross fixed capital formation is associated with a 0.053 decrease in economic growth. Gross fixed capital formation is not a robust determinant of economic growth in the long run, as the result changes compared to the short run.

Lead City University Ibadan DO NOT COPY

Table 4.16: Long-run Estimates of Trade Openness and Economic Growth in S.A.N.E. Countries

Variables	**Dependent Variable:** Economic Growth (*gdpgr*)			
	South Africa	**Algeria**	**Nigeria**	**Egypt**
to	0.1232**	0.0894***	-0.1502	-0.0259
	(0.0566)	(0.0239)	(0.1572)	(0.0214)
inf	-0.4117***	-0.0694	-0.2321	-0.0632***
	(0.1055)	(0.0487)	(0.1409)	(0.0198)
fdi	-0.0887	-0.1018	-1.4571	0.4716***
	(0.1944)	(0.6629)	(1.7539)	(0.1119)
gfcf	0.0536	-0.0649	-0.3918	0.2601***
	(0.1470)	(0.0411)	(0.3221)	(0.0495)
Adjusted R^2	0.6974	0.4761	0.6899	0.5973
F-Stat	20.591***	15.395***	10.457***	9.129***
Durbin Watson	2.225	1.967	2.321	1.926

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. gdpgr- GDP growth rate, to – trade openness, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's computation (2024).

Furthermore, the model had a high coefficient of determination (measured by the adjusted R^2) of 0.697; the adjusted R^2 of 69.7% suggests that the variables in the model accounted for roughly 69.7% of the overall changes in economic growth. The model is well-specified and statistically significant, as demonstrated by the overall test using the F-statistics, which is statistically significant at the 1% level of significance.

The result in Table 4.16 also indicates an association between trade openness and economic growth in Algeria, it reveals that trade was estimated to have a positive and statistically significant correlation with economic growth at the one percent significance level. Specifically, a 1% rise in trade with the rest of the world leads to a 0.177 increase in economic growth for Algeria. This result supports certain empirical findings and is consistent with the comparative trade advantage theory[24,25,26,27]. Turning attention to the control variables, gross fixed capital formation is estimated

Lead City University Ibadan DO NOT COPY

to be negative, indicating that it has harmful impacts on economic growth in the long run although it is not statistically significant. Increasing investment by one unit in the long run decreases economic growth by 0.0649. This runs contrary to the theoretical assumption that investment contributes positively to GDP growth. The results also suggest that inflation rate shows a negative association with economic growth in the long run that is statistically insignificant. This is consistent with theoretical predictions.

Similarly, foreign direct investment exerts a negative impact on economic growth but not statistically significant. This is contradictory to the a'priori expectation but agrees with some empirical findings. In addition, the model specified had a high coefficient of determination (measured by the adjusted R^2) of 0.4761; the adjusted R^2 of 47.6% suggests that the variables in the model accounted for about 47.6% of the overall changes in economic growth. The model is well-specified and statistically significant, as shown by the overall test using the F-statistics, which is statistically significant at the 1% level of significance.

The result in Table 4.16 for Nigeria suggests that openness to trade exhibit a negative and insignificant linkage with GDP growth rate. Also, all the control variables have harmful and insignificant impact on Nigerian economic growth. Likewise, the model specified had a high coefficient of determination (measured by the adjusted R^2) of 0.6899; the adjusted R^2 of 68.9% indicates that the variables in the model accounted for around 68.9% of the overall changes in economic growth. The model is well-specified and statistically significant, as shown by the overall test using the F-statistics, which is statistically significant at the 1% level of significance.

For long run estimate of Egypt shown in Table 4.16, the result is similar to Nigeria, as trade openness and GDP growth rate (or economic growth) continued to have a negative but

Lead City University Ibadan DO NOT COPY

insignificant association. This is not surprising given that the Egyptian economy has turned into a net importer over the past few years. As a result, high imports have a negative impact on the GDP growth rate and trade balance, rather than increasing GDP. It is consistent with the short run equilibrium results that were also obtained for both present level and first lag. For the three control variables, the inflation rate exerts a negative and statistically significant impact on the GDP growth rate. Foreign direct investment associates positively and significantly, and gross fixed capital formation is substantially beneficial to economic growth. All three control variables follow the a'priori expectation.

4.2.3.4. Diagnostic and Structural Stability Tests

To validate the calculated symmetric ARDL models, several diagnostic tests are estimated and listed in Table 4.17. The diagnostic tests indicated in the table include serial correlation, heteroskedasticity, normality, and functional form test statistics. The results of Table 4.17 did not support the null hypotheses of the Ramsey-Reset functional form test, the LM test for normalcy, the ARCH test for heteroskedasticity, and the Breusch-Godfrey serial correlation test. It demonstrates that there are no issues with normality, serial correlation, heteroscedasticity, misspecification error. As a result, the error terms have a normal distribution with a 5% significance level and no serial correlation. The functional form's results also demonstrate that the models' specifications were accurate.

Lead City University Ibadan DO NOT COPY

Table 4.17: Diagnostic and structural stability tests of the estimated model

Test Statistics	Dependent Variable: Trade Openness (*to*)			
	South Africa	**Algeria**	**Nigeria**	**Egypt**
Normality test	46.4351	4.0383	0.9818	0.6528
	(0.9000)	(0.1327)	(0.6120)	(0.7214)
Serial Correlation	1.6393	0.5117	1.7137	0.7838
	(0.2110)	(0.6046)	(0.1974)	(0.4658)
Heteroscedasticity	0.0399	0.0745	0.9917	0.2752
	(0.8428)	(0.7865)	(0.3263)	(0.6032)
Functional form	0.0118	1.0815	0.4821	0.4821
	(0.9140)	(0.3064)	(0.4926)	(0.4926)

Note: the statistics in parenthesis for the selected stability and diagnostic test techniques are the p-values of the previously disclosed test results. Histogram for the test of normalcy; The Ramsey RESET test is used for functionality form, the ARCH approach is used for heteroskedasticity testing, and the Breusch-Godfrey LM method is used for serial correlation.
Source: Author's computation, 2024

4.2.4 Analysis of the Fourth Objective

In this sub-section, the study presents the empirical outcomes with reference the role of financial sector development in the relationship between trade openness and economic growth in SANE countries.

4.2.4.1 Pre-Estimation Test (Unit Root and Cointegration Tests)

The pre-estimation approach used to estimate the stationary levels of the variables are Augmented Dickey Fuller (ADF), Phillip-Perron (PP) and Zivot-Andrew (ZA). The estimators are employed to test the stationary level of the financial sector development indicators with trade openness and economic growth variables to suggest the appropriate technique to estimate the parameter coefficients. Table 4.18 presents the results of the unit root for the indicators. The tau-statistic results for intercept and trend model were used to find the statistically significant of the variables at 1%, 5% and 10% critical point at levels and first difference.

Lead City University Ibadan DO NOT COPY

The unit root estimation approach follows the same decision on stationary level of variables of interest at varying significant levels which were not stationary at levels at 5% except for some few differences. Thus, the unit root test results were found not to reject the null hypothesis "not stationary at level" at 5% McKinnon significance level. These variables that are not stationary at levels were further tested at first differences which were found significant at 5% significance level. The results suggest that at first difference, the time series of the variables were stationary and integrated of order one and therefore suggests that after differencing at first levels the series, they converge to their long-run equilibrium or true mean. The results revealed that the variables of the model for South Africa, Algeria, Nigeria and Egypt are stationary at mixed order.

Lead City University Ibadan DO NOT COPY

Table 4.18: Unit root test (ADF, PP and Zivot-Andrew)

Model	Variables	ADF		PP		Remark	Zivot-Andrew Test		
		Levels	1st Diff	Levels	1st Diff.		Break	t-statistics	Remark
	South Africa								
1	gdpgr	-4.411***	-	-4.397***	-	I(0)	2009	-5.443***	I(1)
	to-dcps	-1.822	-3.904**	0.381	-4.764***	I(1)	2014	-3.100***	I(0)
	to	-2.251	-3.642**	-2.281	-6.556***	I(1)	2009	-7.337***	I(1)
	dcps	-0.242	-5.613***	0.559	6.218***	I(1)	2004	-6.172***	I(1)
	inf	-2.9979	-6.439***	-2.797	-11.825***	I(1)	2001	-4.925**	I(1)
	fdi	-0.8412	-7.555***	-4.639***	-	I(1)	2001	-4.114**	I(0)
	gfcf	-2.3274	-4.387***	-2.221	-4.169**	I(1)	2006	-4.191***	I(0)
2	gdpgr	-4.411***	-	-4.397***	-	I(0)	2009	-5.443***	I(1)
	to-bm	-1.274	-5.411***	-1.741	-5.347***	I(1)	2006	-4.271***	I(0)
	to	-2.251	-3.642**	-2.281	-6.556***	I(1)	2009	-7.337***	I(1)
	bm	-1.308	-4.686***	-1.563	-4.690***	I(1)	2009	-6.209***	I(1)
	inf	-2.9979	-6.439***	-2.797	-11.825***	I(1)	2001	-4.925**	I(1)
	fdi	-0.8412	-7.555***	-4.639***	-	I(1)	2001	-4.114**	I(0)
	gfcf	-2.3274	-4.387***	-2.221	-4.169**	I(1)	2006	-4.191***	I(0)
3	gdpgr	-4.411***	-	-4.397***	-	I(0)	2009	-5.443***	I(1)
	to-smc	-0.530	-5.361***	-3.990**	-	I(1)	2006	-5.382***	I(1)
	to	-2.251	-3.642**	-2.281	-6.556***	I(1)	2009	-7.337***	I(1)
	smc	-5.015***	-	-5.005***	-	I(0)	2004	-6.359***	I(0)
	inf	-2.997	-6.439***	-2.797	-11.825***	I(1)	2001	-4.925**	I(1)
	fdi	-0.841	-7.555***	-4.639***	-	I(1)	2001	-4.114**	I(0)
	gfcf	-2.327	-4.387***	-2.221	-4.169**	I(1)	2006	-4.191***	I(0)
	Algeria								
1	gdpgr	-5.081***	-	-4.302***	-	I(0)	1994	-7.967***	I(1)
	to-dcps	-2.150	-4.984***	-1.950	-4.884***	I(1)	1993	-4.353***	I(1)
	to	-0.779	-6.069***	-0.574	-6.461***	I(1)	2005	-4.112***	I(0)
	dcps	-2.517	-4.710***	-2.077	-4.710***	I(1)	1993	-10.240***	I(1)
	inf	-2.0232	-5.081***	-2.202	-5.085***	I(1)	2000	-5.302***	I(1)
	fdi	-2.8060	-7.428***	-2.820	-7.428***	I (1)	2012	-4.520***	I(0)
	gfcf	-2.4859	-6.270***	-2.721	-4.894***	I(1)	1999	-3.525***	I(1)
2	gdpgr	-5.081***	-	-4.302***	-	I(0)	1994	-7.967***	I(1)
	to-bm	-1.541	-3.858***	-1.166	-3.948**	I(1)	1997	-5.083***	I(1)
	to	-0.779	-6.069***	-0.574	-6.461***	I(1)	2005	-4.112***	I(0)
	bm	-2.108	-4.750***	-2.079	-4.691***	I(1)	1994	-3.482***	I(0)
	inf	-2.0232	-5.081***	-2.202	-5.085***	I(1)	2000	-5.302***	I(1)
	fdi	-2.8060	-7.428***	-2.820	-7.428***	I (1)	2012	-4.520***	I(0)
	gfcf	-2.4859	-6.270***	-2.721	-4.894***	I(1)	1999	-3.525***	I(1)
3	gdpgr	-5.081***	-	-4.302***	-	I(0)	1994	-7.967***	I(1)
	to-smc	1.494	-4.924***	-1739	-4.881***	I(1)	2001	-4.730***	I(0)
	to	-0.779	-6.069***	-0.574	-6.461***	I(1)	2005	-4.112***	I(0)
	smc	-2.666**	-	-1.609	-	I(0)	2001	-3.845***	I(1)
	inf	-2.0232	-5.081***	-2.202	-5.085***	I(1)	2000	-5.302***	I(1)
	fdi	-2.8060	-7.428***	-2.820	-7.428***	I (1)	2012	-4.520***	I(0)
	gfcf	-2.4859	-6.270***	-2.721	-4.894***	I(1)	1999	-3.525***	I(1)

Lead City University Ibadan DO NOT COPY

	Nigeria								
1	gdpgr	-4.061***		-3.916**	-	I(0)	2001	-4.318***	I(0)
	to-dcps	-1.921**	-	-1.596	-5.746***	I(1)	2007	-5.886***	I(0)
	to	-2.482	-7.561***	-2.742	-20.703***	I(1)	2013	-4.907***	I(0)
	dcps	-3.784**	-	-2.246	-5.953***	I(0)	2010	-6.348***	I(1)
	inf	-3.3563*	-5.642***	-3.373*	-6.513***	I(1)	1996	-7.030***	I(1)
	fdi	-4.3494***	-	-4.280***	-	I(0)	1995	-5.826***	I(1)
	gfcf	-1.9481	-6.023***	-1.829	-8.071***	I(1)	2010	-4.480***	I(0)
2	gdpgr	-4.061***		-3.916**	-	I(0)	2001	-4.318***	I(0)
	to-bm	-2.194	0.211***	-1.728	-5.446***	I(1)	2007	-4.244***	I(1)
	to	-2.482	-7.561***	-2.742	-20.703***	I(1)	2013	-4.907***	I(0)
	bm	-3.034	4.845***	-2.223	-6.788***	I(1)	2007	-5.697***	I(1)
	inf	-3.3563*	-5.642***	-3.373*	-6.513***	I(1)	1996	-7.030***	I(1)
	fdi	-4.3494***	-	-4.280***	-	I(0)	1995	-5.826***	I(1)
	gfcf	-1.9481	-6.023***	-1.829	-8.071***	I(1)	2010	-4.480***	I(0)
3	gdpgr	-4.061***		-3.916**	-	I(0)	2001	-4.318***	I(0)
	to-smc	-3.529***	-	-3.626**	-	I(0)	1995	-5.427***	I(1)
	to	-2.482	-7.561***	-2.742	-20.703***	I(1)	2013	-4.907***	I(0)
	smc	-4.317**	-	-4.264***	-	I(0)	1998	-7.036***	I(1)
	inf	-3.3563*	-5.642***	-3.373*	-6.513***	I(1)	1996	-7.030***	I(1)
	fdi	-4.3494***	-	-4.280***	-	I(0)	1995	-5.826***	I(1)
	gfcf	-1.9481	-6.023***	-1.829	-8.071***	I(1)	2010	-4.480***	I(0)
	Egypt								
1	gdpgr	-3.644***	-	-3.676**	-	I(0)	2009	-4.836***	I(1)
	to-dcps	-1.812	-4.181***	-1.735	-4.273***	I(1)	2009	-4.316***	I(1)
	to	-2.689*	-6.042**	-2.564	-5.061***	I(1)	2004	-4.589***	I(1)
	dcps	-1.565	-3.419**	-1.418	-3.384**	I(1)	1998	-3.282***	I(1)
	inf	-1.8582	-4.298**	1.690	-6.043***	I(1)	2014	-3.187***	I(0)
	fdi	-3.2842**	-	-2.421**	-	I(0)	2004	-4.586***	I(1)
	gfcf	-3.9863**	-	-1.898	-5.762***	I(1)	1998	-3.701***	I(1)
2	gdpgr	-3.644***	-	-3.676**	-	I(0)	2009	-4.836***	I(1)
	to-bm	-4.633***	-	-2.439	-4.517***	I(1)	2003	-5.343***	I(1)
	to	-2.689*	-6.042**	-2.564	-5.061***	I(1)	2004	-4.589***	I(1)
	bm	-3.690***	-	-2.435	-5.327***	I(1)	2017	-4.047***	I(1)
	inf	-1.8582	-4.298**	1.690	-6.043***	I(1)	2014	-3.187***	I(0)
	fdi	-3.2842**	-	-2.421**	-	I(0)	2004	-4.586***	I(1)
	gfcf	-3.9863**	-	-1.898	-5.762***	I(1)	1998	-3.701***	I(1)
3	gdpgr	-3.644***	-	-3.676**	-	I(0)	2009	-4.836***	I(1)
	to-smc	-1.764	-4.753***	-1.946	-4.717***	I(1)	2003	-3.479***	I(1)
	to	-2.689*	-6.042**	-2.564	-5.061***	I(1)	2004	-4.589***	I(1)
	smc	-1.904	-5.791***	-1.945	-5.738***	I(1)	2009	-3.225***	I(1)
	inf	-1.8582	-4.298**	1.690	-6.043***	I(1)	2014	-3.187***	I(0)
	fdi	-3.2842**	-	-2.421**	-	I(0)	2004	-4.586***	I(1)
	gfcf	-3.9863**	-	-1.898	-5.762***	I(1)	1998	-3.701***	I(1)

Note: gdpgr-GDP growth rate, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's Computation (2024).

Read Only University Ibadan DO NOT COPY

Subsequently, the ARDL bound approach is employed to examine the long run relationship as a result of the outcomes of the unit root test. The estimation approach is utilised because it is appropriate for variables at mixed order of integration. The F-statistics estimates for testing the existence of long-run relationship among financial sector development, trade openness and economic growth in South Africa, Algeria, Nigeria and Egypt were presented in Table 4.19.

The outcomes of the test show that the estimated F-statistics of the normalized equations were found greater than the lower and upper critical bound at 1% significance level. It implies that the null hypothesis of no long-run relationship is rejected at 5% significance level. Thus, there is existence of long-run relationship among financial sector development, trade openness and economic growth in South Africa, Algeria, and Egypt. The model has equilibrium condition that keeps the variables together in the long run.

However, the estimated F-statistics of the normalized equations were found lower than the upper critical bound at 1% significance level. This means that the null hypothesis of no long-run relationship is not rejected at 5% significance level. The implication of the above estimation is that there is no long-run relationship among financial sector development, trade openness and economic growth in Nigeria.

Lead City University Ibadan DO NOT COPY

Table 4.19: Cointegration Test Results using ARDL Bound Test

Dependent variable: *y*	**Functions**					**F-statistics**
South Afri Model 4 ARDL (1, 1, 2, 2, 1, 0, 1)	(gdpgr to-dcps, to, dcps, inf fdi gfcf) (gdpgr to-bm, to, bm, inf fdi gfcf) (gdpgr to-smc, to, smc, inf fdi gfcf)					6.779***
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	2.88	3.99	2.27	3.28	1.99	2.94
Algeria Model 4 ARDL (1, 2, 2, 0, 0, 0, 0)						5.412***
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	3.60	4.90	2.87	4.00	2.53	3.59
Nigeria Model 4 ARDL (1, 0, 1, 0, 2, 2, 2)						4.868***
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	3.60	4.90	2.87	4.00	2.53	3.59
Egypt Model 4 ARDL (2, 2, 0, 0, 2, 0, 0)						9.501***
	1%		**5%**		**10%**	
	I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Critical bound values for the models (k = 6)	3.60	4.90	2.87	4.00	2.53	3.59

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. to – trade openness, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, to-dcps – interaction of trade openness with domestic credit to private sector, to-bm – interaction of trade openness with broad money, to-smc – interaction of trade openness with stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's computation (2024).

Lead City University Ibadan DO NOT COPY

4.2.4.2 Short-run Estimation Results

Table 4.20 presents the estimates of the short-term impacts of financial development, trade openness and the control variables on economic growth. With regards to the short-run impacts of South Africa, the interaction of domestic credit to private sector and trade openness was estimated to have a weak positive and statistically significant correlation on economic growth at the 5 percent significance level. The interaction of broad money supply with trade openness exerts a positive and insignificant relationship with economic growth. That is, money supply tends to be beneficial

to economic growth in the short term. Also, stock market capitalization promotes the link between trade openness and economic growth and it is statistically significant at 1%. The coefficient of trade openness shows a beneficial and substantial influence on GDP growth rate in model 1 but statistically insignificant for model 2 and 3. Domestic credit to private sector relates positively with GDP growth rate at 10% significance level while broad money supply and stock market capitalization also relate positively but statistically insignificant for model 2 and 3 respectively.

Turning the focus to control variables, inflation rate relates positively and negatively with economic growth in model 1 and 2 respectively, although both are statically insignificant. Foreign direct investment has a significant negative influence on economic growth in model 2. The coefficients of gross fixed capital formation indicate positive and statistically significant relationships with economic growth in model 1 and 2 at 5% and 10% significance level respectively. In model 3, it displays a harmful and significant impact on economic growth at 10% significance level.

Lead City University Ibadan DO NOT COPY

Table 4.20: Short-run Estimates of the role of Financial Development in the relationship between Trade Openness and Economic Growth in South Africa, Algeria, Nigeria and Egypt.

Variables	**Dependent Variable:** Economic Growth (*gdpgr*)											
	South Africa			**Algeria**			**Nigeria**			**Egypt**		
	1	2	3	1	2	3	1	2	3	1	2	3
Δ(to_dcps)	0.0011**			0.0030***			0.0057			0.0008		
	(0.0004)			(0.0599)			(0.1748)			(0.0010)		
Δ(to_bm)		0.0074			-0.0006***			0.0003			0.0003	
		(0.0694)			(0.1694)			(0.0036)			(0.5321)	
Δ(to_smc)			0.0007***			0.0060			-0.0007**			0.0016***
			(0.5836)			(0.2189)			(0.4271)			(0.0274)
Δ(to)	0.7147***	0.1291	0.3506	0.8406**	0.3810		-0.218***	-0.5392	-0.4911	-0.0479	0.4822	-0.0683
	(0.1047)	(0.1502)	(0.7368)	(0.0492)	(0.3253)		(0.0582)	(0.0692)	(0.0617)	(0.0418)	(0.7328)	(0.6832)
Δ(dcps)	0.5400*			0.0496								
	(0.2897)			(0.0684)								
Δ(bm)		0.1607			-0..6328			-0.5208			0.7204***	
		(0.1100)			(0.2831)			(0.0838)			(0.4722)	
Δ(smc)			0.3295			7.8092			0.6291			-0.0572*
			(0.4520)			(13.019)			(0.2831)			(0.0384)
Δ(inf)	0.3920	-0.1124		0.0020	-0.3813***		-0.0698**	-0.0872**	-0.1142***			
	(0.0583)	(0.1262)		(0.0761)	(0.0036)		(0.0325)	(0.0325)	(0.0321)			
Δ(fdi)		-0.3086*		0.0006	0.0259	1.3495*				0.6739		0.2711***
		(0.1714)		(0.0186)	(0.4274)	(0.7084)				(0.8113)		(0.4285)
Δ(gfcf)	0.7505**	0.4180*	-0.4458*								0.2631	
	(0.3222)	(0.2546)	0.2400								(0.1273)	
ECT(-1)	-0.6147***	-0.7096***	-0.6815***	-0.9702***	-0.9888***	-0.9560***	-0.742***	-0.7950***	-0.8710***	-0.881***	-0.804***	-0.767***

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. to – trade openness, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, to-dcps – interaction of trade openness with domestic credit to private sector, to-bm – interaction of trade openness with broad money, to-smc – interaction of trade openness with stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's computation (2024).

Lead City University, Ibadan DO NOT COPY

The error correction term (ECT(-1)) in Table 4.20 measures how quickly each independent variable in the model adjusts to a long-run equilibrium after experiencing short-term shocks. In other words, it illustrates how much the endogenous variable adjusts to shifts in the independent variables while still reaching its long-term equilibrium. In other words, the model estimates the lag of the error correction term, which captures the adjustment of the GDP growth rate from the previous year's disequilibrium in the current year. The coefficients of the ECT are negative and statistically significant for all models in columns 1-3 of South Africa. The ECT values for the models are -0.6147, -0.7096 and -0.6815 which implies that the model corrects its short run disequilibrium by 61.47%, 70.96%, and 68.15% speed of adjustment to the long run.

Furthermore, the result for Algeria shows that the interaction of trade openness with domestic credit to private sector and interaction of trade openness with stock market capitalization influence GDP growth rate weakly and positively but significant at model 2 only while interaction of trade openness with broad money supply cause weak and negative significant influence on GDP growth rate. The coefficients of trade openness indicate positive link with economic growth but are statistically significant for model 1 only. Also, domestic credit to private sector and stock market capitalization are beneficial to economic growth while broad money supply is harmful, but they are statistically insignificant. The relationships of financial sector variables with economic growth in the short run in the presence of its interaction with trade openness are inconsistent with the findings in objective 3.

For the control variables, coefficient of inflation rate shows significant detrimental effect on economic growth in model 2. However, the inflation rate relates positively and insignificantly with economic growth in model 1. Foreign direct investment relates positively with GDP growth rate in model 1-3 but significant at model 3 only.

Lead City University Ibadan DO NOT COPY

Model 1-3 in Algeria have negative and statistically significant ECT coefficients. This is so as the models' ECT values are -0.9702, -0.9888, and -0.9560, indicating that the model corrects its short-term disequilibrium at a rate of 97.02%, 98.88%, and 95.60% faster than the long-term adjustment.

Considering the result in model 1-3 of Nigeria, it reveals that the interaction of trade openness with stock market capitalization exerts weakly harmful impact on GDP growth rate which is significant. However, the interaction of trade openness with domestic credit to private sector and interaction of trade openness with broad money supply have non-significant positive impact on economic growth. All the coefficients of trade openness in model 1 to 3 state negative influence on GDP growth rate but it is statistically significant for model 1 only. Also, broad money supply links economic growth negatively while stock market capitalization relates positively, although both are statistically insignificant.

Looking at results of control variables, the relationship between inflation rate and GDP growth rate is harmful and significant for model 1-3. Gross fixed capital formation has significant and negative impact on GDP growth rate at 1% level of significance. For every model in Nigeria, the ECT coefficients are statistically significant and negative; thereby the model corrects its short run disequilibrium by 74.24%, 79.50%, and 87.10% speed of adjustment to the long run.

In addition, the result for Egypt shows that the linkage between the interaction of trade openness with domestic credit to private sector, interaction of trade openness with broad money supply and interaction of trade openness with stock market capitalization show weak and positive impact on economic growth but it is statistically insignificant for model 3. Trade openness impact GDP growth rate negatively in model 1 and 3 but it relates positively in model 2, although it is statistically insignificant in all the models.

Lead City University Ibadan DO NOT COPY

Turning attention to the financial sector development variables, broad money supply is significantly beneficial to GDP growth rate at 1% level of significance while stock market capitalization is significantly deleterious to economic growth at 10% significance level.

For control variables, the coefficients of inflation rate indicate positive link with economic growth which is significant in model 3 only. Foreign direct investment is beneficial to the Egyptian economy in model 2. Also, gross fixed capital formation impact GDP growth rate negatively and statistically significant at 1% level of significance for model 1 to 3. The results indicate that the Error Correction Term (ECT) coefficients of Egypt are statistically significant and negative. Specifically, the ECT values of -0.8806, -0.8036 and -0.7671, for models 1-3 respectively indicate that the model corrects its short-run disequilibrium by 88.06%, 80.36%, and 76.71% speed of adjustment, to return to the long run equilibrium.

4.2.4.3. Long-run Estimation Results

The results presented in Table 4.21 indicate the role of financial sector development in the relationship between trade openness and economic growth in the long run. For South Africa, interaction of trade openness with domestic credit to private sector, interaction of trade openness with broad money supply and interaction of trade openness with stock market capitalization have weak negative correlation with economic growth that is statistically significant at 10% in model 1 only. Put specifically, when the interaction of trade openness with domestic credit to private sector, interaction of trade openness with broad money supply and the interaction of trade openness with stock market capitalization increases by 1%, economic growth also decreases by 0.0051, 0.0054 and 0.0010 respectively. Thus, the interaction of trade openness with financial sector development variables relatively causes negative associations between trade openness and economic growth

Lead City University Ibadan DO NOT COPY

when compared with the long run result of South Africa for model 3 in Table 4.21. Thus, the interaction of trade openness with the development of the financial sector negates the positive association.

Opening up the South African economy to foreign trade stimulate economic growth significantly for model 1 to 3. Specifically, a unit increase in trade openness causes 76.24%, 50.05% and 35.52% increase in GDP growth rate in model 1-3 respectively. Also, all the financial sector development variables impact economic growth positively and insignificantly. Furthermore, inflation rate and gross fixed capital formation employed as control variables in the models have negative association with economic growth. The negative association of inflation is in line with the a'priori expectation while gross fixed capital formation contradicts it. Also, foreign direct investment relates positively and significantly with GDP growth rate in model 2 only and insignificantly in model 1 and 3.

Additionally, the models of South Africa demonstrated a high degree of determination as indicated by the adjusted R^2 of 0.7060, 0.7216 and 0.6815 respectively; the adjusted R^2 of 70.60%, 72.16% and 68.15% indicates that approximately 70.60%, 72.16% and 68.15% of the overall variations in economic growth could be attributed to the variables in the model 1-3 respectively. The overall test using the F-statistics, which is statistically significant at the 1% level of significance, shows that the model is well-specified and statistically significant.

Lead City University Ibadan DO NOT COPY

Table 4.21: Long-run Estimates of the role of Financial Development in the relationship between Trade Openness and Economic Growth in SANE countries

Variables	**Dependent Variable:** Economic Growth (*gdpgr*)											
	South Africa			**Algeria**			**Nigeria**			**Egypt**		
	1	2	3	1	2	3	1	2	3	1	2	3
to_dcps	-0.0051*			-0.0020			0.0230			-0.0021		
	(0.0028)			(0.0029)			(0.0285)			(0.0033)		
to_bm		-0.0054			0.0030			0.0084			-0.0016	
		(0.0034)			(0.0039)			(0.0183)			(0.0054)	
to_smc			-0.0010			0.8876*			-0.0183			-0.0003
			(0.0009)			(0.4790)			(0.0147)			(0.0024)
to	0.7624**	0.5005*	0.3552*	0.0218	-0.1335	0.0197	-0.1507	-0.0929	0.2259	0.0714	0.1118	-0.0204
	(0.3517)	(0.2440)	(0.1747)	(0.0704)	(0.2725)	(0.0814)	(0.2859)	(0.3155)	(0.1958)	(0.1230)	(0.8165)	(0.0763)
dcps	0.2456			-0.1300			-0.5428			0.1263		
	(0.1569)			0.1383			(1.0937)			(0.1491)		
bm		0.4031			-0.1788			-0.3229			0.0339	
		(0.2416)			(0.1948)			(0.7837)			(0.2303)	
smc			0.0658			-41.8543			0.5766			0.0016
			(0.0502)			(25.3053)			(0.5896)			(0.1308)
inf	0.0699	-0.3313**	-0.2796**	-0.1281*	-0.0984	-0.0914	0.0544	-0.0192	-0.0221	-0.0304	-0.0062	-0.0223
	(0.1531)	(0.1573)	(0.1217)	(0.0689)	(0.0689)	(0.0611)	(0.088)	(0.0714)	(0.0603)	(0.0284)	(0.0291)	(0.0321)
fdi	0.0168	-0.6403	-0.0930	-0.3718	-0.3752	-0.5535	-2.5687*	-1.6815	-1.4562	0.4862**	0.6466**	0.6439*
	(0.2739)	(0.4133)	(0.2647)	(0.7298)	(0.7486)	(1.0380)	(1.2797)	(1.0207)	(0.8724)	(0.2080)	(0.2663)	(0.3928)
gfcf	-0.0846	-0.4183	-0.1985	-0.0308	-0.1054	-0.0228	-0.3679	-0.4280	-0.6024**	0.2620**	0.0723	0.1090
	(0.2573)	(0.2954)	(0.2014)	0.1303	(0.1640)	(0.1350)	(0.2939)	(0.3169	(0.2211)	(0.1272)	(0.1687)	(0.1605)
Adjusted R^2	0.7060	0.7216	0.6815	0.5546	0.5253	0.5408	0.5972	0.5774	0.5945	0.5941	0.5241	0.5176
F-Stat	15.439***	16.120***	25.959***	17.978***	16.723***	9.2423***	13.971***	12.956***	18.102***	13.8096***	20.272***	19.778***
D-Watson	1.926	2.052	2.041	2.009	2.020	2.043	1.904	1.711	1.912	2.208	1.965	2.005

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significance levels respectively. to – trade openness, dcps – domestic credit to private sector, bm – broad money supply, smc – stock market capitalization, to-dcps – interaction of trade openness with domestic credit to private sector, to-bm – interaction of trade openness with broad money, to-smc – interaction of trade openness with stock market capitalization, inf – inflation rate, fdi - foreign direct investment, gfcf - gross fixed capital formation.
Source: Author's computation (2024).

Lead City University Ibadan DO NOT COPY

For Algeria, the interactions of trade openness with broad money supply and stock market capitalization have a positive relationship with economic growth but it is statistically significant at 10% in model 3 only. Precisely, a unit increase in the interaction of trade openness with stock market capitalization caused economic growth to increase by 0.8876. This significant result is consistent with endogenous growth theorists, who emphasize the significance of the financial sector development in advancing innovations, income patterns, and the rate of technological progress[3].

A relatively low association is observed when compared with the long-run result of Algeria for model 3 in Table 4.21. A negative role of financial development measured as domestic credit to the private sector is observed in the relationship between trade openness and economic growth, but it is statistically insignificant. Trade openness has an adverse effect on economic growth in model 2, following the negative parameter of trade openness which is non-significant. However, in models 1 and 3, it relates positively and insignificantly. Overall, financial sector development has a detrimental influence on GDP growth rate in model 1 to 3 based on the negative coefficient of financial sector development which is non-significant. Looking at the control variables, they all show a harmful influence on economic growth, although they are not statistically significant except for the inflation rate in model 1 which is significant at 10%.

The adjusted R^2 of 0.5546, 0.5253 and 0.5408 in the models indicate that roughly 55.46%, 52.53% and 54.08% of the overall changes in economic growth could be attributed to the variables in model 1-3 respectively. These reflect that the models have high degree of determination. Also, the overall test using the F-statistics is statistically significant at the 1% level of significance, which means that the model is well-specified and statistically significant.

Lead City University Ibadan DO NOT COPY

The long run result of Nigeria indicates that the interaction of trade openness with domestic credit to private sector and interaction of trade openness with broad money supply have weakly beneficial but statistically insignificant influence on GDP growth rate. Contrarily, interaction of trade openness with stock market capitalization exhibits insignificant unfavourable effect on economic growth. This contrasts with a number of research that found a positive and significant association of financial sector development on the link between trade openness and economic growth[28,29,30,31].

Turning attention to the control variables, inflation rate is injurious to Nigerian economic growth in model 2 and 3, this support the apriori expectation that the higher the inflation rates the lower the economic growth, although they are statistically insignificant on the economy. For model 1, inflation rate relates positively and statistically insignificantly with GDP growth rate. Also, foreign direct investment is deleterious to the growth of Nigerian economy, but it is statistically significant at 10% in model 1 only. In like manner, gross fixed capital formation shows deleterious impact on economic growth at 10%, 5% and 1% significance level in model 1-3 respectively. The negative impact of foreign direct investment and gross fixed capital formation are contradictory to the apriori expectation.

In addition, the adjusted R^2 of 0.5972, 0.5774 and 0.5945 indicates that the models have high degree of determination; the adjusted R^2 of 59.72%, 57.74% and 59.45% also means that the variables in the model 1-3 respectively could account for roughly 59.72%, 57.74% and 59.45% of the overall changes in economic growth. The models are also well-specified and statistically significant, as demonstrated by the overall test using the F-statistics, which are statistically significant at the 1% level of significance.

Lead City University Ibadan DO NOT COPY

The long-run result of Egypt presented in Table 4.21 shows that financial sector development harms the association between trade openness and economic growth. The correlation is statistically insignificant, and this is not in line with the short run result of Egypt. Also, this result does not conform to the a'priori expectation that financial development fosters the link between trade openness and growth of an economy. The coefficients of trade openness indicate that it promotes GDP growth rate in model 1 to 2 but retards the Egyptian economic growth insignificantly in model 3. Overall, financial sector development relates insignificantly promote economic growth in model 1 to 3.

Turning to the control variables, inflation has a negative correlation with economic growth but statistically not significant. On the other hand, foreign direct investment and gross fixed capital formation associate positively with growth of Egyptian economy. Although foreign direct investment is significant in model 1 to 3 at 5% level of significance. All the control variables in the model follow the a'priori expectation. The model also exhibited a high degree of determination, as evidenced by the adjusted R^2 of 0.5941, 0.5241 and 0.5176; the adjusted R^2 of 59.41%, 52.41% and 51.76% means that the variables in the models could account for roughly 59.41%, 52.41% and 51.76% of the variations in economic growth. The model's statistical significance and well-specified nature are demonstrated by the overall test utilizing the F-statistics, which is statistically significant at the 1% level of significance.

Lead City University Ibadan DO NOT COPY

4.2.4.4 Diagnostic and Structural Stability Tests

The models' serial correlation, heteroskedasticity, and normalcy tests are assessed in connection to the diagnostic tests. Table 4.21 also displays the results of these testing. The models are found

to be successful in passing the heteroskedasticity, normality, serial correlation and stability tests, as evidenced by the observed R-squared greater than 0.05 and the likelihood of the test features.

Lead City University Ibadan DO NOT COPY

Table 4.22: Diagnostic and structural stability tests of the estimated models

Variables	**Dependent Variable:** Economic Growth (*gdpgr*)											
	South Africa			**Algeria**			**Nigeria**			**Egypt**		
	1	2	3	1	2	3	1	2	3	1	2	3
Normality test	8.3346	2.4235	3.4152	10.4825	5.6981	4.8694	13.0668	6.0813	6.2288	0.2457	0.9882	0.3236
	(0.5000)	(0.0900)	(0.8000)	(0.5287)	(0.0578)	(0.2965)	(0.1454)	(0.4780)	(0.4438)	(0.8844)	(0.6071)	(0.8506)
Serial Correlation	1.2766	1.0021	0.2596	0.6238	0.1764	0.1542	1.6848	2.3281	3.0335	0.9333	0.7280	1.0703
	(0.2937)	(0.3791)	(0.7730)	(0.5427)	(0.8392)	(0.8578)	(0.2026)	(0.1148)	(0.0631)	(0.4044)	(0.4912)	(0.3556)
Heteroscedasticity	0.0494	0.0582	0.1542	0.1435	0.2030	0.2665	0.3324	0.4888	0.5130	0.0656	0.4782	0.3697
	(0.8254)	(0.8108)	(0.6970)	(0.7071)	(0.6552)	(0.6090)	(0.5680)	(0.4892)	(0.4787)	(0.7994)	(0.4939)	(0.5472)
Functional form	0.3645	0.1575	0.0424	0.0065	0.7024	0.4974	1.0958	0.4854	0.2199	2.9378	2.3487	2.4339
	(0.5504)	(0.6942)	(0.8382)	(0.9365)	(0.4084)	(0.4859)	(0.3033)	(0.4912)	(0.6423)	(0.0965)	(0.1355)	(0.1289)

Note: the statistics in parenthesis for the selected stability and diagnostic test techniques are the p-values of the previously disclosed test results. Histogram for the test of normalcy; The Ramsey RESET test is used for functionality form, the ARCH approach is used for heteroskedasticity testing, and the Breusch-Godfrey LM method is used for serial correlation.
Source: Author's computation (2024).

Lead City University Ibadan DO NOT COPY

4.3 Discussion of the Findings

Concerning the first objective, the study found that significant long run relationship does not exist between financial sector development and trade openness in South Africa. The findings also showed that financial sector development in its first lag has positive impact on short run trade openness in South Africa. It implies that the development of the financial sector in the previous year has beneficial effects on trade openness in the short run. For Algeria, a long rnn relationship is established between financial sector development and trade openness. Domestic credit to the private sector is found to have a negative and significant effect on trade openness in the long run. Meanwhile, in the short run, domestic credit to the private sector still relates negatively but this is statistically non-significant. Similarly, broad money supply has negative and significant impact on trade openness both in the short and long-run. This is a matter of concern that increases in domestic credit available to the private sector and a rise in broad money supply in Algeria which is expected to have a positive and statistically significant contribution to trade openness is causing a decline which requires urgent attention. Contrarily, stock market capitalization in the long run is in line with a'priori expectation of substantially improving openness to trade.

For Nigerian economy, domestic credit to private sector was found to have positive impacts on trade openness in short and long-run, but these impacts are statistically insignificant in determining the degree of openness to trade. Broad money supply exerts harmful impact on trade openness of Nigeria both in short and long-run but statistically significant in the short run only. Meanwhile, stock market capitalization has significant positive influence on trade openness in the short run, while in the long run it has insignificant negative effect. This discrepancy is a cause for concern as the initial positive impact of stock market capitalization in the short run becomes negative in the long run, though not significant. This might be attributed to excessive reliance on foreign trade leading to increase in exchange rate. Considering Egypt, stock market capitalization has positive

Lead City University Ibadan DO NOT COPY

and significant effect on trade openness, both in the short and long run, indicating a rise in the level of openness to foreign trade. Broad money supply also associates positively and significantly with trade openness but domestic credit to the private sector has negative and significant influence.

Regarding the second objective, stock market capitalization positively and significantly influences economic growth in South Africa both in the short and long run. It suggests that maintaining adequate stock market capitalization can contribute to improved growth in the economy. Domestic credit to private sector relates positively and insignificantly with economic growth in the short run but retards the growth significantly in the long run. This significant negative impact in the long run raised critical concern as the long-term effects begins to reverse economic growth in South Africa. This could be due to excessive borrowing that leads to debt traps, reducing private sector investment and increasing vulnerability to economic shocks. On the other hand, it might be due to misallocation of domestic credit to unproductive sectors or projects, leading to inefficient allocation of resources and hindering economic growth.

For Algerian economy, domestic credit to private sector negatively and significantly influences economic growth in short and long run. This might be attributed to the fact that credit may be concentrated in a few sectors rather than supporting diversified economic growth. Broad money supply has a positive effect on economic growth both in the short and long run but statistically significant in the long run. This result is in line with the Keynesian theory, which holds that change in the money supply influence both prices and real output levels. In contrast, the monetarist theory holds that changes in the money supply only have an impact on prices, leaving actual output levels unchanged (money neutrality). A rise in the money supply often results in reduced interest rates, which promote long-term investment and growth. In like manner, stock market capitalization is substantially beneficial to economic growth in Algeria. This study corroborates research findings

Lead City University Ibadan DO NOT COPY

that conclude that domestic credit to private sector is harmful to economic growth while broad money supply fosters it[32].

As regards Nigerian economy, stock market capitalization is positively and significantly associated with economic growth in short and long run but statistically significant in the short run only, indicating a rise in economic growth as a result of a 1% increase in stock market capitalization. The direct influence suggests that a robust and growing stock market may contribute to overall growth. This result implies that a thriving stock market could be associated with broader economic growth in Nigeria. Other financial sector development variables show insignificant negative effect on economic growth. Similar research also found negative impact of financial sector development on economic growth and concludes that too much finance retards growth.[33,34]

For Egypt, both domestic credit to private sector and broad money supply positively relates with economic growth but only domestic credit to private sector is statistically significant. This result is in line with a'priori expectation and slso align with a number of studies that are of the opinion that developing the financial sector aids in mobilizing and allocating capital for projects with high productivity which results in growth of the economy.

As to the third objective, it revealed that openness to international trade substantially stimulate economic growth in the short and long run in South Africa. It suggests that increase in level of openness to trade has immediate and long-term beneficial effect on economic growth. This indicates that exposure to international competition drives businesses to innovate and improve efficiency, thereby resulting in high output.

Looking at Algerian economy, trade openness has insignificant negative influence on economic growth in the short run but significant positive impact in the long run. It is noteworthy that Algeria's

Lead City University Ibadan DO NOT COPY

specific context, including its dependence on hydrocarbon exports and state-owned enterprises, might amplify the short-run negative effects. However, with gradual liberalization, economic diversification, and institutional reforms, the country can transition to a more competitive and diverse economy, realizing the long-run positive effects of trade openness. Considering Nigeria and Egypt, openness to foreign trade negatively impact economic growth but statistically significant in the short run. This could be attributed to the fact that Nigeria and Egypt rely heavily on imports, leading to a trade deficit and limiting domestic production.

As regards objective four, the interaction of all variables of financial sector development with trade openness has positive impact on economic growth in the short term in South Africa and Egypt but becomes harmful in the long run. However, the long run detrimental effect prompted a critical concern although it is not statistically significant. If the long-term effect begins to reverse productivity, it could be attributed to capital flight thereby reducing domestic investment and economic growth. For Algeria, the interaction of broad money supply and stock market capitalization with trade openness has positive influence on economic growth. This indicates that financial sector development fosters the link between trade openness and economic growth. Similarly, the interaction of domestic credit to private sector and broad money supply with trade openness has insignificant positive impact on GDP growth rate of Nigeria. This shows that the existence of financial sector development increases the impact of trade openness on economic growth. This study aligns with a number of studies that conclude that financial development serves as complement to the link beteen openness to foreign trade and economic growth[35, 36,37].

Lead City University Ibadan DO NOT COPY

Endnotes

1 W. A. Babu, I. M. Pantaleo. & M. O. Ndanshau. *"Econometric analysis of the impact oftaxes on private investment in Sub-Sahara Africa."* ***African Journal of Economic Review***, 8(1), 2020, 176–197.

2 R. McKinnon *"Money and capital in economic development"*, Brookings Institution, Washington, DC., 1973

3 R. King & R. Levine. *"Finance and growth: Schumpeter might be right?"* **Quarterly Journal of Economics**,108(3), 1993a, 717-737.

4 Z. Denaux, M. Topcu & F. Emirmahmutoglu. *"Revisiting the financial development and economic growth nexus: South Korea"*, 2022.

5 F. Marques, P. Almeida & M. Silva. *"The finance-growth nexus: an empirical analysis from Brazil"*. **Journal of Accounting, Business and Finance Research** Vol. 10(1), 2020, 17-25. DOI:10.20448/2002.101.17.25.

6 T. Beck, R. Levine & N. Loayza. *"Finance and the sources of growth."* **Journal of Financial Economics,** 58, 2000, 261-300.

7 R. Mundell. *"Capital mobility and stabilization policy under fixed and flexible exchange rates."* **Canadian Journal of Economics and Political Science**, 29, 1963, 475-485.

8 J. Tobin. *"Money and economic growth."* **Econometrica**, Vol. 33(4), 1965, 671-684.

9 A. C. Stockman. *"Anticipated inflation and the capital stock in a cash inadvance economy."* **Journal of Monetary Economics**, Vol. 8(3), 1981, 387-393.

10 J. De Gregorio. *"Borrowing constraints, human capital accumulation, and growth."* **Journal of Monetary Economics**, Vol. 37(1), 1996, 49-71.

11 G. Ofori-Abebrese, R. Pickson, & B. Diabah. *"Financial development and economic growth: Additional Evidence from Ghana."* **Modern Economy**, 8, 2017, 282-297.

12 G. Adu, G. Marbuah, & J. Mensah. *"Financial development and economic growth in Ghana: does the measure of financial development matter?"* **Review of Development Finance**, 3, 2013, 192-203.

13 N. G. Mankiw, D. Romer & D. N. Weil. *"A contribution to the empirics of economic growth."* **The Quarterly Journal of Economics**, 107(2), 1992, 407-437

14 E. Aryeetey and A.K. Fosu. *"Economic growth in Ghana: 1960-2000."* Draft Chapter at African Economic Research Consortium (AERC) Growth Project Workshop. Cambridge, 2005.

15 P. Chaitip, K. Chokethaworn, C. Chaiboonri & M. Khounkhalax. *"Money supply influencing on Economic Growth-wide Phenomena of AEC Open Region."* **Procedia Economics and Finance**, 24, 2015, 108-115

Lead City University Ibadan DO NOT COPY

16 M. Ogunmuyiwa & F. Ekone. *"Money supply – economic growth nexus in Nigeria."* **Journal of Social Sciences,** 22(3), 2010, 199-204.

17 A. S. Alimi & I. A. Adediran. *"ICT diffusion and the finance-growth nexus: a panel analysis on ECOWAS countries."* **Future Business Journal**, 6(1), 2020.

18 T. Akinlo. *"Financial development, real sector and economic growth in Sub-Saharan Africa: the threshold effect."* **Journal of African Business,** 2020. DOI: 10.1080/15228916.2020.1773608

19 Grossman G.M. & Helpman E. "*Endogenous innovation in the theory of growth*." **The Journal of Economic Perspectives**, Vol. 8(1), 1994, 23-44

20 U. Banday, S. Murugan & J. Maryam. *"Foreign direct investment, trade openness and economic growth in BRICS countries: evidences from panel data."* Transnational Corporations Review, 2020. DOI: 10.1080/19186444.2020.1851162

21 S. Fatima, B. Chen, M. Ramzan & Q. Abbas. *"The nexus between trade openness and GDP growth: analyzing the role of human capital accumulation."* SAGE Open, 10(4), 2020, 1-18.

22 B. Jirbo, D. Jonathan & A. Atayi. *"The analysis of trade openness, foreign direct investment and economic growth ineconomic community of west african countries (ECOWAS)."* **American Journal of Multidisciplinary Research & Development (AJMRD)**, 04(01), 2022, 36-45.

23 M. Arvin, R. Pradhan & M. Nair. *"Uncovering interlinks among ICT connectivity and penetration, trade openness, foreign direct investment, and economic growth: the case of the G-20 countries."* **Telematics and Informatics**, 60, 2021, 101567

24 X. Yang & M. Shafiq. *"The impact of foreign direct investment, capital formation, inflation, money supply and trade openness on economic growth of Asian countries."* **iRASD, Journal of Economics**, Vol. 2(1), 2020, 25-34.

25 I. Ullah, M. Tufail & M. Rafiq. *"Effect of trade liberalization on economic growth in the panel of Asian economies."* **Journal of Business and Tourism**, Vol. 07(01), 2021

26 Q. Kong, D. Peng, Y. Ni, X. Jiang & Z. Wang. *"Trade openness and economic growth quality of china: empirical analysis using ARDL model."* Finance Research Letters, 2020. doi: https://doi.org/10.1016/j.frl.2020.101488.

27 A. Awan & U. Shahzad. *"Impact of trade openness on economic growth of Pakistan."* **Global Journal of Management, Social Sciences and Humanities**, Vol 7 (2), 2021, 298-323. DOI: https://orcid.org/0000-0001-5767-6229.

28 I. Sghaier. *"Trade openness, financial development and economic growth in North African countries."* **International Journal Finance and Economics**. 2021, 1–12

29 A. Aremo & O. Arambada. *"Effect of trade openness and financial openness on economic growth in Sub-Saharan African countries."* **African Journal of Economic Review**, Vol. 9(1), 2021.

Bauchi City University, Nadan DO NOT COPY

30 T. Fukuda. *"Finance-growth nexus and globalization in Brazil, India, Philippines, Thailand, and Turkey: evidence from VECM cointegration Analysis."* **Journal of Economics and Financial Analysis**, Vol. 4(1), 2020, 55-77.

31 M. Haq, L. Ahmad & J. Alyia. *"Financial sector development, trade openness and economic growth nexus: evidence from SAARC countries."* **Forman Journal of Economic Studies**, Vol. 17(1), 2021, 99-118. DOI: 10.32368/FJES.20211705

32 S. S. Vandana. *"Effect of financial development and foreign direct investments on economic growth in SAARC countries: a panel ARDL approach."* **Asian Journal of Management Studies,** Vol. 2(1), 2022, 72-97.

33 M. J. Abeka, E. Andoh, J.G. Gatsi & S. Kawor. *"Financial development and economic growth nexus in SSA economies: the moderating role of telecommunication development."* **Cogent Economics & Finance**, 9(1), 2021. DOI: 10.1080/23322039.2020.1862395.

34 L. Charfeddine & M. Kahia. *"Impact of renewable energy consumption and financial development on CO2 emissions and economic growth in the MENA region: A panelvector autoregressive (PVAR) analysis"* **Renewable Energy**, 139, 2019. doi: https://doi.org/10.1016/j.renene.2019.01.010.

35 I. Sghaier. *"Trade openness, financial development and economic growth in North African countries."* **International Journal Finance and Economics**, 2021, 1–12

36 I. Sghaier. *"Does financial development affect the economic growth gains from trade openness?"* **Economic Alternatives**, Issue 4, 2020, 666-682

35 M. Haq, L. Ahmad and J. Alyia. *"Financial sector development, trade openness and economic growth nexus: evidence from SAARC countries."* **Forman Journal of Economic Studies**, Vol. 17(1), 2021, 99-118. DOI: 10.32368/FJES.20211705

Lead City University Ibadan DO NOT COPY

Chapter Five

Conclusion

5.1 Summary of Findings

The concept of economic growth and the factors that influence it continue to be open to debate in literature. Trade openness and financial development have been largely recognized as two of the main drivers of economic growth recently. Numerous studies have been conducted in the literature to test the argument empirically across a broad range of economies. However, the methods employed, the sample period under consideration, the variables used as measurements of financial development and international trade economic development, and most importantly country-specific effects have all contributed to the varied and occasionally contradictory conclusions reached by these studies. In view of each economy's unique characteristics, the precise relationships that exist between these variables are yet unknown and necessitate a case-by-case analysis.

Accordingly, the main objective of this research is to conduct an empirical investigation of any potential long-term correlation between financial sector development, trade openness, and economic growth in South Africa, Algeria, Nigeria, and Egypt for the period 1986–2022. In this study, the GDP growth rate is used as a proxy of economic growth, total trade as a measure of trade openness, domestic credit to the private sector, broad money supply, and stock market capitalization as indicators of financial sector development. The study controls for the inflation rate, foreign direct investment, and gross fixed capital formation.

The relationship among the variables was analysed using the ARDL bounds testing approach to cointegration. The primary benefit of this approach is the ability to include variables with varying integration orders, such as I(0), I(1), or mutually cointegrated, as long as no variable has an

Lead City University Ibadan DO NOT COPY

integrated order of two (2). The Augmented Dickey-Fuller unit root test statistic was employed to confirm the order of integration of the variables, and the result indicated that the variables are integrated in the mixed order of I(0) and I(1).

The first objective of the research was to investigate the relationship between financial sector development and trade openness in SANE countries. The study found that financial sector development has no significant influence on trade openness in South Africa and Nigeria in the long run. In Algeria, when financial sector development is captured by domestic credit to private sector and broad money supply, it becomes significantly detrimental to trade openness whereas positive and significant relationship was found for stock market capitalization. This means that stock market is key to capitalize values of growth facilities that stimulate trade openness of Algerian economy. For Egypt, all measures of financial sector development significantly boost trade openness except when measured by domestic credit to private sector which is substantially detrimental to opening up the economy.

The second objective of the study was to examine the relationship between financial sector development and economic growth in SANE countries. The evidence from the econometric analysis also revealed there is a positive and significant long run relationship between financial sector development and economic growth in South Africa, Algeria, and Egypt, except Nigeria. The result supports the theory that financial sector development drives economic growth in developing countries. However, when financial sector development is captured as domestic credit to the private sector, it exhibits negative associations in South Africa, Algeria, and Nigeria, except in Egypt.

The third objective was to investigate the association between trade openness and economic growth in SANE countries. The result from the long run model indicated a positive and significant

Lead City University Ibadan DO NOT COPY

impact from trade openness to economic growth in South Africa and Algeria. Thus, it was concluded that opening up the economy for foreign trade was conducive for the countries' growth in the long run. However, trade openness indicates negative and insignificant relationship with GDP growth in Nigeria and Egypt. This is not surprising given that Nigeria and Egypt's economy has turned into a net importer over the years; as a result, excessive imports lower GDP growth rate and cause negative growth rather than improving the trade balance and GDP of the countries.

The fourth objective of the research was to examine the role of financial sector development in the relationship between trade openness and economic growth in SANE countries. The interaction of trade openness with financial sector development, measured as domestic credit to private sector, negatively and significantly influences the GDP growth rate in South Africa only in the long run. However, for Algeria, Nigeria and Egypt, when financial sector development is used as an intermediating factor on the link between trade openness and economic growth, it exerts no significant role in the relationships. It is noteworthy that the coefficients of trade openness show a higher impact on economic growth directly than in the presence of financial sector development for the SANE countries. In the short run, domestic credit to private sector positively and significantly enhances the relationship between trade openness and economic growth in South Africa and Algeria only.

The findings showed that broad money supply has no significant impact on the link between opening up the economy to foreign trade and economic growth across the S.A.N.E. countries in the long run. Meanwhile, it played a significant negative role on the relationship between trade openness and economic growth in Algeria only in the short run.

Furthermore, the study found that stock market capitalization significantly enhances the correlation between trade openness and economic growth in Algeria only in the long run. However,

Lead City University Ibadan DO NOT COPY

in the short run, financial sector development measured as stock market capitalization positively and significantly impacts the link between trade openness and economic growth in South Africa and Egypt and played a significantly negative role in Nigeria.

5.2 Conclusion

The study investigated the relationship among financial sector development, trade openness and economic growth in South Africa, Algeria, Nigeria and Egypt over the periods of 1986 to 2022 using the ARDL bound testing approach. The findings showed that, in the short run, stock market capitalization positively impact trade openness in Egypt and Nigeria, while broad money supply negatively influence trade openness in Algeria. In the long run, financial sector development significantly impacts trade openness in Algeria and Egypt but not statistically established in Nigeria and South Africa. Specifically, stock market capitalization ameliorates trade openness of Algeria and Egypt, while domestic credit to the private sector is found to exert mitigating effects in the long run. Also, broad money supply exerts positive impact on trade openness of Egypt but negatively impact trade openness in Algeria.

Furthermore, the influence of short run stock market capitalization on economic growth is found to be positive for South Africa but negative for Egypt. Broad money supply and domestic credit to private sector enter into short run economic growth model negatively in South Africa and Algeria respectively. In the long run, the mitigating effect of domestic credit of private sector is significant statistically, while the amplifying effect of stock market capitalization on economic growth in Algeria and South Africa is statistically confirmed. The reverse was the case for Egypt in terms of domestic credit to private sector and stock market capitalization. Meanwhile, broad money directly imparted the long run economic growth of Algeria.

Lead City University Ibadan DO NOT COPY

In addition, the study discovered that trade openness positively drives South Africa's output growth both in the short and long run. More so, the short run economic growth of Nigeria and Egypt are negatively influenced by trade openness, while trade openness drive Algeria's output growth positively in the long run.

The marginal impact of interacting trade openness with financial sector development on output growth are, for the most part, positive and statistically relevant in South Africa, Algeria, and Egypt, with exception of Nigeria which was negative in the short run. In the long run, the marginal impact of interaction between trade openness and financial sector development on economic growth is statistically positive in Algeria, but negative in South Africa. However, the interactive effect of both variables is not statistically confirmed in Egypt and Nigeria.

5.3 Recommendations

To enhance economic growth in SANE countries, the following policy measures are recommended to improve both financial sector development and trade openness:

a) The governments of Egypt and Nigeria should prioritize stock market development to harness the positive short-run link between stock market capitalization and trade openness. There is a need for regulatory reforms, investor education programs, and tax incentives for equity financing to boost market liquidity and attract foreign capital.

b) The Algerian government should reform monetary policy frameworks to address the negative influence of broad money supply on trade openness. This includes aligning liquidity distribution with productive sectors and tightening measures to control inflationary pressures that harm trade competitiveness.

Lead City University Ibadan DO NOT COPY

c) There is a need for Algeria and South Africa to expand private sector credit access by reducing public borrowing's crowding-out effects. Governments should mobilise lending to SMEs and high-value industries through credit guarantees and support for non-bank financial institutions to stimulate diversification and long-run productivity.

d) Governments in Nigeria and Egypt should implement safeguards alongside trade openness to counter its short-run negative growth effects. This includes subsidies for local industries and export diversification programs. Meanwhile, South Africa and Algeria must complement trade openness with infrastructure upgrades and skills development to sustain long-run gains.

e) The governments of Algeria and South Africa should strengthen policy coordination between financial sector development and trade strategies, such as introducing trade-linked financing tools. Nigeria requires urgent institutional reforms to address structural bottlenecks (e.g., corruption) that drive the negative short-run interaction between trade openness and financial development.

5.4 Contribution to Knowledge

This study advances the literature on trade openness, financial development, and economic growth through three key contributions:

a) The study diverges from existing research by explicitly modeling the interrelationships among trade openness, financial sector development, and economic growth within a unified conceptual framework, addressing a critical gap in understanding their synergistic relationships.

Lead City University Ibadan DO NOT COPY

b) Unlike studies relying on single proxies (e.g., broad money or domestic credit to the private sector by banks or stock markets), it provides a holistic assessment of financial development by integrating all three indicators, offering a comprehensive analysis of financial sector dynamics.

c) The study also conducts a country-specific focus on SANE economies, uncovering heterogeneous effects of trade openness in mediating the finance-growth nexus, a departure from aggregated regional analyses, and revealing context-specific policy insights absent in existing literature.

5.5 Suggestions for Further Studies

The study provides three areas for further studies pertaining to the links among financial sector development, trade openness, and economic growth. These include:

a) Investigating the role of institutional quality and governance in mediating the interaction between financial sector development, trade openness, and growth in SANE countries, as weak institutions (e.g., corruption, regulatory inefficiencies) may explain divergent outcomes like Nigeria's negative short-run interaction effects.

b) Exploring the impact of digital financial inclusion on enhancing financial sector development's growth linkages, particularly in underbanked economies like Algeria and Nigeria, where limited credit access and shallow stock markets persist despite formal financial reforms.

c) Conducting comparative cross-regional analyses to assess whether the SANE-specific dynamics (e.g., commodity dependence, deindustrialization) differ from other emerging

Lead City University Ibadan DO NOT COPY

economies, such as ASEAN or Latin American nations, to generalize findings on trade-finance-growth interdependencies.

Lead City University Ibadan DO NOT COPY

Bibliography

Abeka M.J., Andoh E., Gatsi J.G. & Kawor S. *"Financial development and economic growth nexus in SSA economies: The moderating role of telecommunication development."* **Cogent Economics & Finance**, 9(1), 2021. DOI: 10.1080/23322039.2020.1862395

Abendin S. & Duan P. *"International trade and economic growth in Africa: The role of the digital economy."* **Cogent Economics and Finance**, 9(1), 2021, 1911767, DOI: 10.1080/23322039.2021.1911767.

Adeel-Farooq R. M., Bakar N. A. A., & Raji J. O. *Financial sector development and economic growth: a co-integration analysis for ASEAN countries*. **International Journal of Economic Policy in Emerging Economies**, 13(3), 2020, 195-208.

Adegboye F., Mathew O., Ejemeyovwi J., Adesina O. & Osabohien R. *"Assessing the role of trade liberalization in facilitating trade flows and economic expansion: Evidence from ECOWAS countries."* **Advances in African Economic, Social and Political Development (AAESPD)** book, 2020.

Adesanya B., Adediji A. & Okenna N. *"Stock exchange market activities and economic development: Evidence from the Nigerian economy."* MPRA Munich Personal RePEc Archive December 2020 Bingham. **Journal of Economics and Allied Studies (BJEAS)**, Vol. 4(2), 2020 ISSN: 2645-3045 University of Abuja.

Adeyemi A. & Odefunsho A. *"Does trade openness influence economic growth in Nigeria?"* **Al-Hikmah Management Review**, Vol. 5(1), 2020.

Adeyemo O. & Tamunowariye C. *"The nexus between financial development, trade performance and growth in Nigeria"* **Global Journal of Arts, Humanities and Social Sciences**, Vol. 10(3), 2022, 1-17.

Adu G., Marbuah G., & Mensah J. *"Financial development and economic growth in Ghana: Does the measure of finaqncial development matter?"* **Review of Development Finance**, 3, 2013, 192-203.

Adu-Gyamfi G, Nketiah E., Obuobi B., & Adjei M. "*Trade openness, inflation and GDP growth: Panel data evidence from nine (9) West Africa countries."* **Open Journal of Business and Management,** 8, 2020, 314-328.

Afolabi J. *"Financial development, trade openness, and economic growth in Nigeria."* **Iranian Economic Review**, 26(1), 2022, 237-254 DOI: 10.22059/ier.2020.77972

African Development Bank. *African Economic Outlook 2020: Macroeconomic developments in Africa*. African Development Bank, 2020. Available at https://www.afdb.org/sites/default/files/documents/publications/afdb20-04_aeo_supplement_full_report_for_web_0705.pdfMcKinsey & Company. *Economic conditions outlook 2024*.

Lead City University Ibadan DO NOT COPY

African Development Bank Group. *African Economic Outlook 2020: Macroeconomic developments in Africa*. African Development Bank Group, 2020. https://www.afdb.org/en/knowledge/publications/african-economic-outlook

Akacem K. *"Economic reforms in Algeria: An overview and assessment."* **The Journal of North African Studies**, Vol. 9 (2), Summer 2004, 115-125.

Akinlo T. *"Financial development, real sector and economic growth in Sub-Saharan Africa: The threshold effect."* **Journal of African Business,** 2020. DOI: 10.1080/15228916.2020.1773608

Akinlo T. & Okunlola, C. *"Trade openness, institutions and economic growth in Sub-Saharan Africa."* **Journal of Regional Development and Financing Perspectives**, 8(6), 2021, 541-560.Available at: https://doi.org/10.22437/ppd.v8i6.10653.

Akintola A. A., Oji-Okoro I. & Itodo I.A. *"Financial sector development and economic growth in Nigeria: An empirical re-examination."* **Central Bank of Nigeria Economic and Financial Review**, 58(3), 2020, 59-84.

Alam K. J. & Sumon K. K. *"Causal Relationship between trade openness and economic growth: A panel data analysis of Asian Countries."* **International Journal of Economics and Financial Issues**, 10(1), 2020, 118-126

Alcala F. & Ciccone A. *"Trade and productivity."* **Quarterly Journal of Economics**, 119(2), 2004, 613-646.

Alessandrini M. & Batuo M. *"The trade specialisation of SANE: Evidence from manufacturing industries."* **The European Journal of Comparative Economics***,* 7(1), 2010, 145-178.

Algaeed A. *"Capital market development and economic growth: An ARDL approach for Saudi Arabia, 1985–2018."* **Journal of Business Economics and Management** Vol. 22(2), 2021, 388–409 https://doi.org/10.3846/jbem.2020.13569

Ali N., Hayat U., Khan M. & Khattak S. *"Sources of agricultural productivity growth in SAARC countries: The role of financial development, trade openness and human capital."* **Sarhad Journal of Agriculture**, 37(2), 2021, 586-593. DOI | https://dx.doi.org/10.17582/journal.sja/2021/37.2.586.593

Alimi A.S. & Adediran I.A. *"ICT diffusion and the finance-growth nexus: a panel analysis on ECOWAS countries."* **Future Business Journal**, 6(1), 2020.

Alimi O. Y., Ogbekene I., & Idowu O. A. *Public health financing and population health: What role do institutions play*? **Journal of Public Affairs**, 24(3), 2024, e2944.

Anetor F. *"Foreign capital inflows, financial development and growth in Nigeria: A structural VAR approach."* **The Journal of Developing Areas,** Vol. 54(3), Summer 2020.

Angaye P. & Frank B. *"Capital market development and economic growth in Nigeria."* **American International Journal of Business Management (AIJBM),** Vol. 3(7), 2020, 58-63.

Lead City University Ibadan DO NOT COPY

Aremo A. & Arambada O. *"Effect of trade openness and financial openness on economic growth in Sub-Saharan African countries."* **African Journal of Economic Review**, Vol. 9(1), January 2021

Arvin M., Pradhan R. & Nair M. *"Uncovering interlinks among ICT connectivity and penetration, trade openness, foreign direct investment, and economic growth: The case of the G-20 countries."* **Telematics and Informatics**, 60, 2021, 101567

Arsyad L. "*Ekonomi Pembangunan*." Edisi 5. UPP STIM YKPN, Yogyakarta. 2010

Aryeetey E. & Fosu A. K. *"Economic growth in Ghana: 1960-2000."* Draft Chapter at African Economic Research Consortium (AERC) Growth Project Workshop. Cambridge, 2005.

Asamoah L. A., Mensah E. K., & Bondzie E. A. *Trade openness, FDI and economic growth in sub-Saharan Africa: do institutions matter*? **Transnational Corporations Review**, 11(1), 2019, 65-79.

Atayi A, Nkire N., Akanmu A. & Ojo B. *"The nexus between trade openness and economic growth in Nigeria."* **United International Journal for Research and Technology**, Vol. 02(07), 2021

Awan A. & Shahzad U. *"Impact of trade openness on economic growth of Pakistan."* **Global Journal of Management, Social Sciences and Humanities**, Vol 7(2), 2021, 298-323. DOI: https://orcid.org/0000-0001-5767-6229.

Ayadi R., Naceur S. & Goaied M. *"Financial development and employment: New panel evidence."* **Review of Banking, Finance and Monetary Economics,** Vol. 50(2), July 2021, e12185

Azeem M., & Mohammad A. *"Money and Physical Capital Relationship: McKinnon's complementarity hypothesis on Turkey's economy.* **Expert Journal of Finance**, Vol. 3, 2015, 21-30.

Babu, W. A., Pantaleo, I. M. & Ndanshau, M. O. *"Econometric analysis of the impact of taxes on private investment in Sub-Sahara Africa."* ***African Journal of Economic Review***, 8(1), 2020, 176–197.

Bala U, Ambi H., Hadith N. & Baba Y. *"Impact of trade openness on economic development in Nigeria."* **International Journal of Intellectual Discourse**, Vol. 4(2), June 2021

Banday U., Murugan S. & Maryam J. *"Foreign direct investment, trade openness and economic growth in BRICS countries: evidences from panel data."* **Transnational Corporations Review**, 2020. DOI: 10.1080/19186444.2020.1851162

Barro R. *"Economic growth in a cross section of countries."* **The Quarterly Journal of Economics**, Vol. 106(2), 1991, 407-443.

Barro R. & Sala-i-Martin X. *"The economic growth."* BINOM. The Knowledge Laboratory, Moscow, 2014.

Lead City University Ibadan DO NOT COPY

Bawazir H., Kumar M., Celik S., Abdulla K. & Aktan B. *"The interdependence between stock market development and economic growth: a multi-country examination"* **Zb. rad. Ekon. fak. Rij.**, Vol. 38(2), 2020, 619-652.

Beck T., Levine R. & Loayza N. *"Finance and the sources of growth."* **Journal of Financial Economics,** 58, 2000, 261-300.

Bekkers E. & Schroeter S. *"An economic analysis of the US-China trade conflict."* WTO Staff Working Paper, No. ERSD-2020-04, World Trade Organization (WTO), Geneva, 2020

Belazreg W., & Mtar K. *Modelling the causal linkages between trade openness, innovation, financial development and economic growth in OECD countries*. **Applied Economics Letters**, 27(1), 2020, 5-8.

Bencivenga V. & Smith B. *"Financial intermediation and endogenous growth."* RCER Working Papers 24, University of Rochester- Center for Economic Research, 1991.

Benita F. *"Trade openness, economic growth and the global financial crisis of 2007–2009 in Latin America."* **Journal of International Development**, 31(5), 2019, 411-431.

Bhattacharjea A. *"Trade and competition policy."* Indian Council for Research on International Economic Relations, Working paper No. 146, consulting: January2016, URL:http://www.eldis.org/vfile/upload/1/document/070 8/DOC19484.pdf

Biemudo K., Antonio R. & Agustin N. *"An empirical analysis on the impact of international trade in philippine economic growth."* **Journal of Economics, Finance and Accounting Studies**, Vol. 4(1), 2022, 607-628.

Biringanine A. & Muzee K. *"Financial development and economic growth in the CEPGL region: evidence based on panel data."* 2020. DOI: http://dx.doi.org/10.25115/eea.v39i1.3254

Blonigen B. A. *A review of the empirical literature on FDI determinants*. **Atlantic Economic Journal**, 33, 2005, 383-403.

Boyes W. & Melvin M. *"Economics, 2nd edition."* Houghton Mifflin Company, Boston, USA, 1994.

Bunje M., Abendin S., & Wang Y. *"The effects of trade openness on economic growth in Africa."* **Open Journal of Business and Management**, 10, 2022, 614-642. https://doi.org/10.4236/ojbm.2022.102035

Byrns R.T. & Stone G.W. *"Economics (5th ed.)."* New York: Harper Collin Publishers, 1992.

Calderón C. & Cantú C. *Trade integration and growth Evidence from Sub-Saharan Africa*. World Bank Group Policy Research Working Paper 8859, (2019). Available at https://documents1.worldbank.org/curated/en/222931558366737099/pdf/Trade-Integration-and-Growth-Evidence-from-Sub-Saharan-Africa.pdf

Lead City University Ibadan DO NOT COPY

Campos N., Glebkina E., Karanasos M. & Koutroumpis P. *"Financial development, political instability, trade openness and growth in Brazil: Evidence from a new dataset, 1890–2003."* **Open Economies Review**, 2022 https://doi.org/10.1007/s11079-022-09684-4

Centre for International Governance Innovation. *The financial sector and the SDGs: Interconnections and future directions*. Centre for International Governance Innovation paper no. 201 (27th November, 2018). Available at https://www.cigionline.org/publications/financial-sector-and-sdgs-interconnections-and-future-directions/

Cevik S. & Rahmati M. "*Searching for the finance–growth nexus in Libya*." **Empirical Economics**, 58(2), 2020, 567-581.

Chaitip P., Chokethaworn K., Chaiboonri C. & Khounkhalax M. *"Money supply influencing on Economic Growth-wide Phenomena of AEC Open Region."* **Procedia Economics and Finance**, 24, 2015, 108-115

Chandrashekar R. & Krishna C. *"Financial development, energy consumption, and economic growth: Some recent evidence for India."* **International Journal of Financial Economics**, 2020, 1-12.

Charfeddine L. & Kahia M. *"Impact of renewable energy consumption and financial development on CO2 emissions and economic growth in the MENA region: A panelvector autoregressive (PVAR) analysis"* **Renewable Energy**, 2019. doi: https://doi.org/10.1016/j.renene.2019.01.010.

Chen H., Hongo D., Ssali M., Nyaranga M. & Nderitu C. *"The Asymmetric influence of financial development on economic growth in Kenya: Evidence from NARDL."* SAGE open January-March 2020, 1-17 DOI: 10.1177/2158244019894071

Cheung J. & Ljungqvist Z. *"The impact of trade openness on economic growth a panel data analysis across advanced OECD countries."* Bachelor's thesis Södertörn University, 2021

Claudius G., Philipp H., Jakob K. & Florian S. *"Understanding economic openness: A review of existing measures."* **Review of World Economics**, 157(1), 2021, 87–120. https://doi.org/10.1007/s10290-020-00391-1

Çoban O., Onifade S. T., Yussif A. R. B., & Haouas I. *"Reconsidering trade and investment-led growth hypothesis: new evidence from Nigerian economy."* **J Int Stud**, 13(3), 2020, 98-110.

Dada S. *"Impact of capital market development on economic growth in Nigeria."* **International Journal of Research and Innovation in Social Science (IJRISS)**, Vol. 5(6), June 2021. ISSN 2454-6186

Dan'Asabe D. & Mustapha A. *"Financial development, trade openness and economic growth: Evidence from Nigeria."* **Journal of Economics and Allied Research,** Vol. 8(1), March 2023

Davis D. & Dingel J. *"The comparative advantage of cities."* **Journal of International Economics,** 123, 2020, 103291.

Lee's City University Ibadan DO NOT COPY

De Gregorio J. *"Borrowing constraints, human capital accumulation, and growth."* **Journal of Monetary Economics**, Vol. 37(1), February 1996, 49-71.

de Haan J., Pleninger R. & Sturm J. *"Does financial development reduce the poverty gap?"* **Social Indicators Research** 161, 2022, 1–27 https://doi.org/10.1007/s11205-021-02705-8

Demirguc-Kunt A. & Levine R. *"Stock market development and financial intermediaries: Stylized facts."* **World Bank Economic Review**, 1996

Deloitte. *Global economic outlook 2024*. Deloitte Insights 2024. Available at https://www2.deloitte.com/us/en/insights/economy/global-economic-outlook-2024.html

Denaux Z., Topcu M. & Emirmahmutoglu F. *"Revisiting the financial development and economic growth nexus: South Korea"*, 2022.

Dollar D., Kleineberg T. & Kraay A. *"Growth still is good for the poor."* **European Economic Review**, 81(1), 2016, 68-85.

Domar E. *"Capital expansion, rate of growth and employment: econometrica."* **Journal of the Econometric Society,** Vol. 14(2), April 1946, 137-147.

Duodu E., & Baidoo S. T. *How does quality of institutions affect the impact of trade openness on economic growth of Ghana*? **Cogent Economics & Finance**, 8(1), 2020, 1812258.

Duru I.U., Okafor B.O., Adikwu F.O. & Njoku F.C. *"Trade liberalization and economic growth: An Assessment of Nigerian Experience."* **Asian Development Policy Review**, 8(3), 2020, 194-213.

Economic Freedom of the World, Annual Report. Fraser Institute, 2020

Egger P., Nigai S. & Strecker N. *"The taxing deed of globalization."* **American Economic Review**, 109(2), 2019, 353-390.

Emehelu C. *"Effects of international trade on economic growth of Nigeria."* **International Journal of Innovative Finance and Economics Research**, 9(1):144-157, 2021

Farahane M. & Heshmati A. *"Trade and economic growth: theories and evidence from the Southern African development community."* IZA discussion paper no. 13679, 2020.

Farhan A., Shazia K., Ambe P. & Shabbir. A *"Do institutional quality and financial development affect sustainable economic growth? Evidence from South Asian countries."* **Borsa Istanbul Review**, 22(1), 2022, 189–196. https://doi.org/10.1016/j.bir.2021.03.005

Farzanegan M.R.& Badreldin A.M. *"Shadow economy and political stability: A blessing or a curse? Lost in translation: New Paradigms for the Arab Spring."* Sussex Academic Press, 2017, Available at SSRN: https://ssrn.com/abstract=3749261

Fathima Rinosha K. & Mohamed Mustafa A. *"Nexus between financial development and economic growth: Evidence from Sri Lanka."* **Journal of Asian Finance, Economics and Business,** 8(3), 2021, 0165-0170.

Lead City University Library DO NOT COPY

Fatima S., Chen B., Ramzan M. & Abbas Q. *"The nexus between trade openness and GDP growth: analyzing the role of human capital accumulation."* **SAGE Open**, 10(4), 2020, 1-18.

Feenstra R., Inklaar R. & Timmer M. *"The next generation of the penn world table."* **American Economic Review**, 105(10), 2015, 3150-3182. DOI: 10.1257/aer.20130954

Ferreira M., Dias J. & Serafim J. *"Stock Market and Economic Growth: Evidence from Africa."* Research in Economics and Mathematics (REM) Working Paper 0228-2022 May 2022

Fischer S. "*The role of macroeconomic factors in growth.*" **Journal of Monetary Economics**, 32(3), 1993, 485-512.

Friedman M. & Schwartz A. *"A Monetary history of the United States, 1867 – 1960."* Princeton: Princeton University Press, 1963

Fuji E. *"What does trade openness measure?*" **Oxford Bulletin of Economics and Statistics**", 81(4), 2019, 868–888. https://doi.org/10.1111/obes.12275

Fukuda T. *"Finance-growth nexus and globalization in Brazil, India, Philippines, Thailand, and Turkey: Evidence from VECM cointegration analysis."* **Journal of Economics and Financial Analysis**, Vol. 4(1), 2020, 55-77

Ghosh B. N. *Dependency theory revisited*. Routledge, 2019.

Global Financial Development Report. *"Bank regulation and supervision a decade after the global financial crisis*," 2020.

Gnangnon S. K. "*Trade openness and diversification of external financial flows for development: An empirical analysis*." **South Asian Journal of Macroeconomics and Public Finance**, 9(1), 2020, 22-57.

Golder U., Sultana F, Hossain M., Hossen M. & Hossain M. *"Finance-growth nexus in Bangladesh: Is it important to quantify financial development?"* **Universal Journal of Accounting and Finance,** Vol. 9(5), 2021, 961 – 971. DOI: 10.13189/ujaf.2021.090507.

Grossman G. & Helpman, E. *"Quality ladders in the theory of growth."* **Review of Economic Studies**, 58, 1991, 43-61.

Grossman G. & Helpman E. *"Innovation and growth in the global economy."* Cambridge MA: MIT Press. 1992.

Grossman G.M. & Helpman E. *"Endogenous innovation in the theory of growth."* **The Journal of Economic Perspectives**, Vol. 8(1), 1994, 23-445

Greenaway D. & Milner C. *"Trade and industrial policy in developing countries: A Manual of Policy Analysis."* London: Macmillan, 1993

Greenwood J. & Jovanovic B. *"Financial development, growth, and income distribution."* **Journal of Political Economy**, 98, 1990, 1076–1107.

Lead City University Ibadan DO NOT COPY

Haq M., Ahmad I. & Alyia J. *"Financial sector development, trade openness and economic growth nexus: evidence from SAARC Countries."* **Forman Journal of Economic Studies**, Vol. 17(1), 2021, 99-118 DOI: 10.32368/FJES.20211705

Harrod R. *"Towards a dynamic economics. some recent developments of economic theory and their application to policy."* Foreign Literature Publishing House, Moscow, 1959,

Harrod R. *"An essay in Dynamic Theory."* **The Economic Journal**, Vol. 49(193),1939, 14-33.

Ho C. H., Pham N. N., & Nguyen K. T. *Economic growth, financial development, and trade openness of leading countries in ASEAN*. **The Journal of Asian Finance, Economics and Business**, 8(3), 2021, 191-199.

Hoan C.C. *"Examining the relationship between electricity consumption, financial development and economic growth in ASEAN Countries: Evidence from a Bayesian analysis."* **International Journal of Energy Economics and Policy**, 11(2), 2021, 49-56.

Hoang L. *"The energy-growth nexus revisited: the role of financial development, institutions, government expenditure and trade openness."* **Heliyon** 6(7), 2020.

Hobelsberger K. "An empirical re-assessment of the finance-growth nexus", 2020.

Hossain T. & Maitra B. *"Monetary policy, trade openness and economic growth in india under monetary-targeting and multiple-indicator approach regimes."* **Journal of Economic Theory and Practice,** 19(1), 2020, 108–124.

Hume D. Essays: moral, political and literary, ed. Miller, Indianapolis: Liberty Fund [1752] 1985

Hussain A., Ammar O., Munir A., Muhammad I., & Farhan S. *"Do financial development and economic openness matter for economic progress in an emerging country? Seeking a sustainable development path."* **Journal of Risk and Financial Management**, 2021, 14: 237. https:// doi.org/10.3390/jrfm14060237

Ibrahim R., Yu Z., Hassan S., Ajide K., Tanveer M.& Khan A. *Trade facilitation and agriculture sector performance in Sub-Saharan Africa: Insightful policy implications for economic sustainability.* Front. Environ. Sci. 10:962838. 2022 Doi: 10.3389/fenvs.2022.962838

Idris M. "*Analysis of capital market development and economic growth in Nigeria*." **Global Journal of Applied, Management and Social Sciences (GOJAMSS);** Vol.20, September 2020, 156 – 172

Ifa K. & Yahdi M. *"Trade Openness and Economic Growth in Indonesia." Wiga:* ***Jurnal Penelitian Ilmu Ekonomi***, *10*(2), 2020, 163-170. https://doi.org/10.30741/wiga.v10i2.599

Imoagwu C. & Ezeanyeji C. *"Financial development and economic growth nexus in Nigeria."* **International Journal of Business and Management Invention**, 8(03), 2019, 50-63.

International Agricultural Trade Report. "*China's Growing Demand for Agricultural Imports."* United States Department of Agriculture, 2020

Lead City University Ibadan DO NOT COPY

International Monetary Fund. Global Financial Stability Report. International Monetary Fund, 2022. Available at https://www.imf.org/en/Publications/GFSR

International Monetary Fund (IMF). *World economic outlook: Challenges to steady growth*. IMF, 2018. Available at https://www.imf.org/-/media/Files/Publications/WEO/2018/October/English/main-report/Text.ashx

International Monetary Fund (IMF). *World Economic Outlook: A long and difficult ascent*. IMF, 2020. Available at https://www.imf.org/en/Publications/WEO

Intisar R., Yaseen M., Kousar R., Usman M. & Makhdum M. *"Impact of trade openness and human capital on economic growth: A Comparative investigation of Asian countries."* **Sustainability**, 12, 2020, 29-30; doi:10.3390/su12072930

Jalil A., & Rauf A. *Revisiting the link between trade openness and economic growth using panel methods*. **The Journal of International Trade & Economic Development**, 30(8), 2021, 1168-1187.

Jaumotte F., Lall S. & Papageorgiou C. *"Rising income inequality: Technology, or trade and financial globalization?"* **IMF Economic Review**, 61(2), 2013, 271-309.

John M. *Brace! Risks stack up for the global economy in 2025*. Thomson Reuters (December 23rd, 2024). Available at https://www.thedailystar.net/business/global-economy/news/brace-risks-stack-global-economy-2025-3784031

Jones C. *"Paul Romer: Ideas, nonrivalry and endogenous growth."* **The Scandinavian Journal of Economics**, Vol. 121(3), 2019, 859-883. DOI: 10.1111/sjoe.12370

Jirbo B., Jonathan D. & Atayi A. *"The analysis of trade openness, foreign direct investment and economic growth ineconomic community of west african countries (ECOWAS)."* **American Journal of Multidisciplinary Research & Development (AJMRD)**, Volume 04(01), 2022, 36-45.

Juma C. *How Africa can transition from extractive industries to learning economies*. Harvard Kennedy School: Belfer Center for Science and International Affairs (May 5th, 2016). Available at https://www.belfercenter.org/publication/how-africa-can-transition-extractive-industries-learning-economies

Kalayci Salih S. & Özden C. *"The nexus between international trade, financial development and economic growth: The Case of South Korea."* **Revista Argentina de Clinica Psicologica**, Vol. 29, 2020, 715-725.

Kallal S. and Gueta I. *"Fiscal stance, election year and 2007 crisis, evidence from OECD countries (1980–2017)."* The Journal of Economic Asymmetries, 21June, e00163, 2020.

Kalam A. & Utsho M. *"How financial development affects economic growth: Evidence from some SAARC countries."* **African Journal of Economics and Sustainable Development** Vol. 3(3), 2020, 52-66

Kapaya S. *"Stock market development and economic growth in tanzania: an ARDL and bound testing approach."* **Review of Economics and Political Science** Vol. 5(3), 2020, 187-206. Emerald Publishing Limited DOI 10.1108/REPS-11-2019-0150

Kawa P., Wajda-Lichy M., Fijorek K. & Denkowska S. *"Do finance and trade foster economic growth in the new eu member states: Granger panel bootstrap causality approach."* **Eastern European Economics**, 2020. DOI:10.1080/00128775.2020.1762497

King R. & Levine R. *"Finance and growth: Schumpeter might be right?"* **Quarterly Journal of Economics**,108(3), 1993, 717-737.

Keho Y. *"Financial development, trade openness and economic growth: The Evidence from West African countries revisited."* **International Research Journal of Finance and Economics**, Issue 179, June 2020

Khan I., Rehman F., Pyplacz P., Khan M., Wiśniewska A. & Liczmańska-Kopcewicz K. *"A dynamic linkage between financial development, energy consumption and economic growth: evidence from an asymmetric and nonlinear ARDL."* **Model Energies**, 2021, 14, 5006. https://doi.org/10.3390/en14165006

Kitonyo P. & Kathanje M. *"Foreign direct investment and growth in the COMESA region: Is trade openness important?"* **Journal of Emerging Issues in Economics, Finance and Banking,** Vol. 9(1), 2020.

Kong Q., Peng D., Ni Y., Jiang X., & Wang Z. *"Trade openness and economic growth quality of China: Empirical analysis using Ardl model."* Finance Research Letters, 2020. doi: https://doi.org/10.1016/j.frl.2020.101488

Krueger A. *"Foreign trade regimes and economic development: Liberalisation attempts and consequences."* Ballinger Publishing Co. for National Bureau of Economic Research, Cambridge, MA. 1978

Krugman P., Melitz M. & Obstfeld M. *"International Economics, Theory and Policy."* eleventh edition, Pearson Education Limited, 2018.

Kumar K. & Paramanik R. *"Nexus between Indian economic growth and financial development: a non-linear ARDL approach."* **Journal of Asian Finance, Economics and Business**, Vol. 7(6), 2020, 109-116.

Kurtzleben J. *"The economic policies of Jean-Baptiste Colbert,"* Draftings In: 9(3), Article 4, 1997.

Kuznets S. *"Economic growth and income inequality".* **The American Economic Review** Vol. 45, 1955, 1-28.

Lucas R. *"On the mechanics of economic development."* **Journal of Monetary Economics**, Vol. 22, 1988, 3-42.

Leichenko R.M. *"Exports, employment and production: A causal assessment of U.S states and regions."* **Economic Geography,** vol. 76(4), 2000, 303-25.

Lead City University Ibadan DO NOT COPY

Levine R. *"Financial development and economic growth: Views and agenda."* **Journal of Economic Literature**, 35, 1997, 688–726

Levine R. *"Finance and growth: Theory and evidence."* NBER Working paper series, 2004, pp. 10:766.

Li K., Morck R., Yang F. & Yeung B. *"Firm specific variation and openness in emerging markets."* **Review of Economics and Statistics**, 86(3), 2004, 658-669.

İlgar S. *"Trade openness and economic growth: Evidence from Azerbaijan."* **Problems and Perspectives in Management**, 20(1), 2022, 564-572.

Lucas R. E. *On the mechanics of economic development*. **Journal of Monetary Economics**, 22(1), 1988, 3–42.

Machumu P. *"The effect of international trade on economic growth of the East African community."* Master of Business Administration Dissertation Mzumbe University, 2020

Maciejewski M., & Głodowska A. *Economic development versus the growing importance of the financial sector: Global insight*. **International Entrepreneurship Review**, 6(3), 2020, 77-90.

Makun K. *"External debt and economic growth in Pacific Island countries: A linear and nonlinear analysis of Fiji Islands."* **The Journal of Economic Asymmetries**, Vol. 23, June 2021, Article e00197

Malefane M. R. *Trade openness and economic growth in Botswana: Evidence from cointegration and error-correction modelling*. **Cogent Economics & Finance**, 8(1), 2020, 1783878.

Mankiw, N. G., Romer, D. and Weil, D. N. *"A contribution to the empirics of economic growth."* **The Quarterly Journal of Economics**, 107(2), 1992, 407-437

Marques F., Almeida P. and Silva M. *"The finance-growth nexus: An empirical analysis from Brazil"*. **Journal of Accounting, Business and Finance Research** Vol. 10(1), 2020, 17-25. DOI:10.20448/2002.101.17.25

Martin R. and Sunley P. *"Slow convergence? The new endogeneous growth theory and regional development."* **Economic Geography**, Vol. 74, 1998, 201-27.

Mashimbye L. and Fanta A. *"Trade openness and economic growth in Mozambique."* **Regional and Sectoral Economic Studies**, Vol. 21(2), 2021.

Matei I. *"Is financial development good for economic growth? Empirical insights from emerging European countries."* **Quantitative Finance and Economics**, Vol. 4(4), 2020, 653-678.

McKinnon R.I. *"Financial liberalization in retrospectt interest rate policies in LDCs"* in Gustav Ranis and T. Paul Schults, eds. The State of Development Economics: Progress and Perspectives, Oxford, Basil Blackwell, 1988, 386-410.

McKinnon R. *"Money and Capital in Economic Development"*, Brookings Institution, Washington, DC., 1973

Lead City University Ibadan - NOT COPY

McKinsey & Company. *Economic Conditions Outlook 2024* (McKinsey & Company, 2024). Available at https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/economic-conditions-outlook-2024#/

Mehyaoul Q. "*Country analysis: Algeria."* **East Asian Journal of Business Management**, 5(3) 2015, 29-31

Miller T., Kim A., Roberts J. & Tyrell P. *"2018 Index of economic freedom."* Washington, D.C. The Heritage Foundation, 2020

Mtar K., & Belazreg W. *On the nexus of innovation, trade openness, financial development and economic growth in European countries: New perspective from a GMM panel VAR approach*. **International Journal of Finance & Economics**, 28(1), 2023, 766-791.

Mugableh M. *"Cointegration and causal relationships: the case of Jordanian and developed stock markets."* **International Journal of Financial Research,** Vol. 11(6), 2020.

Muhammed S., Okafor V. & Itodo C. *"Trade liberalization and its economic growth impact: A case study of Nigeria."* **Indiana Journal of Humanities and Social Sciences**, 3(2), 2022, 30-35.

Mundell R. *"Capital mobility and stabilization policy under fixed and fixed and flexible exchange rates."* **Canadian Journal of Economics and Political Science**, 29, 1963, 475-485.

Muwanga G. *"Economic growth and financial sector development: long-run structural break cointegration and short-run equilibrium relationships in the East African community international."* **Journal of Applied Economics, Finance and Accounting**, Vol. 9(2), 2021, 48-62. DOI: 10.33094/8.2017.2021.92.48.62

Myint H. *"The classical theory of international trade and the underdeveloped countries."* **The Economic Journal,** 68, 1958, 317-337. https://doi.org/10.2307/2227598

Nageri K.I., Ajayi O., Olodo H.B. & Abina B.M. *"An empirical study of growth through trade: Nigeria evidence."* **Arabian Journal of Business & Management Review** (OMAN Chapter), Vol. 3(5), 2013.

Narayan P. *Reformulating critical values for the bounds F-statistics approach to cointegration: An application to the tourism demand model for Fiji*. Department of Economics Discussion Paper No.: 02/04. Australia: Monash University, 2004.

Narula R., Asmussen C.G., Chi T. & Kundu S. *"Applying and advancing internalization theory: The multinational enterprise in the twenty-first century."* **Journal of International Business Studies**, 50, 2019, 1231-1252.

Ngouhouo I., Nchofoung T. & Messo K. *"Effect of trade openness on economic growth: Does institutional quality influence the link in Sub-Saharan Africa.?* **Empirical Economics Review,** 10(4), December 2020.

Lead City University Library DO NOT COPY

Nguyen M. & Bui T. *"Trade openness and economic growth: A study on Asean-6"*. **Economies**, 9: 113, 2021. https:// doi.org/10.3390/economies9030113.

Nthangu N. & Bokana Koye K. *"Foreign capital inflows, trade openness and output performance in selected sub-Saharan African countries."* **Investment Management and Financial Innovations**, Volume 19(1), 2022, 236-246 doi:10.21511/imfi.19(1).2022.18

Nwagu E. *"Research on the impact of stock market development on real economic growth in Nigeria."* **Saudi Journal of Economics and Finance**, 4(9), September 2020, 471-480.

Nwakoh F. *"Effect of trade liberalization on the economic growth of Nigeria."* Master thesis, Delta State University, Abraka, 2017

Nyamwero N. *"Relationship between capital market development and economic growth in India"*, 2021. Available at SSRN: https://ssrn.com/abstract=4018258 or http://dx.doi.org/10.2139/ssrn.4018258

Obeng-Amponsah W., Sun Z., Havidz H. & Dey E. *"Determinants of domestic credit to the private sector in Ghana: Application of vector auto-regressive method."* **The First International Symposium on Management and Social Sciences** (ISMSS 2019). Atlantis Press, 2019.

Ofori-Abebrese G., Pickson R., & Diabah B. *"Financial Development and Economic Growth: Additional Evidence from Ghana."* **Modern Economy**, 8, 2017, 282-297.

Ogbonna U. G. & Ejem C.A. *"Financial deepening and capital market returns in Nigeria."* **Journal of Finance and Accounting** Vol. 8(4), 2020, 182-189. doi: 10.11648/j.jfa.20200804.13

Ogbuagu M., Olunkwa C. & Ogunniyi B. *"Dissecting the threshold effects of financial deepening on industrial sector performance in Nigeria."* **Tanzanian Economic Review**, Vol. 11(1), June 2021, 57–72.

Ogbuji I. A., Mesagan E. P., & Alimi O. Y. *The dynamic linkage between money market, capital market and economic growth in Ghana: New lessons relearned*. **Econometric Research in Finance**, 5(2), 2020, 59-78.

Ogujiuba K., Oji G. & Adenuga A. *"Is trade openness valid for Nigeria's long run growth: a co integration approach."* A Paper Presented to the USAID-Nigeria, 2004.

Ogunmuyiwa M. & Ekone F. *"Money supply – economic growth nexus in Nigeria."* **Journal of Social Sciences,** 22(3), 2010, 199-204.

Ogunniyi M. B., Iwegbu O., & Adekoya K. I. *A comparative analysis of the impact of current account balances on economic growth of SANE countries*. **International Journal of Development and Sustainability**, 7(3), 2018, 1220 – 1237.

Oladitan S. & Bello A. *"The trilogy of entrepreneurship education, human capital development and economic growth in Nigeria."* **International Journal of Research in Business, Economics and Management,** 5(3), 2021.

Lead City University Ibadan DO NOT COPY

Oloyede B., Osabuohien E. & Ejemeyovwi J. *"Trade openness and economic growth in Africa's regional economic communities: empirical evidence from ECOWAS and SADC."* **Heliyon**, 7, 2021 e06996.

Omankhanlen A., Samuel-Hope D. & Ehikioya B. *"The effect of financial development on economic growth in Nigeria."* **Academy of Strategic Management Journal** Vol. 21(4), 2022.

Omodero C.O. *"The financial and economic implications of underground economy: The Nigerian perspective."* **Academic Journal of Interdisciplinary Studies,** Vol. 8(2), 2019, 155-167.

Onifade S., Khatir A., Ay A. & Canitez M. *"Reviewing the trade openness, domestic investment, and economic growth nexus: Contemporary policy implications for the MENA."* **Region Revista Finanzas y Política Económica**, Vol. 14(2), julio-diciembre 2022, 489-512. https://doi.org/10.14718/revfinanzpolitecon.v14.n2.2022.7

Oppong-Baah T, Bo Y., Twi-Brempong C., Amoah E., Prempeh N. & Addai M. *"The impact of trade openness on economic growth: the case of Ghana and Nigeria."* **Journal of Human Resource and Sustainability Studies**, 10, 2022, 142-160 https://www.scirp.org/journal/jhrss

Orji Anthony A., Ogbuabor J.E., Okolomike C.F. & Anthony-Orji O.I. *"Capital inflows, financial development and growth in countries: a new empirical insight."* 2021 DOI: https://doi.org/10.21203/rs.3.rs-304218/v1

Osei-Assibey K. & Dikgang O. *"International trade and economic growth: the nexus, the evidence, and the policy implications for South Africa."* **The International Trade Journal**, 2020. DOI: 10.1080/08853908.2020.1737598.

Oxford Economics. *"The US-China economic relationship: A crucial partnership at a critical juncture."*. Washington, DC: U.S.-China Business Council, January 2021

Patrick H. "*Financial development and economic growth in underdeveloped countries*, in: Economic development and cultural change," Vol. 14, 1966, 174-199.

Paudel R. & Sun J. *"Financial development, export performance and economic growth in BRICS: New evidence from panel unit root and ARDL cointegration."* **IOSR Journal of Economics and Finance** (IOSR-JEF), Vol. 11(6), Ser. V, 2020, 36-49.

Pentecost E. *"Macroeconomics: An open economy approach."* 1st Edition, **Macmillan Press Ltd**, New York, 2000.

Pesaran M. H., Shin Y., & Smith R. J. "*Bounds testing approaches to the analysis of level relationships*." **Journal of Applied Econometrics**, 16(3), 2001, 289-326.

Pesaran M.H., & Y. Shin. "*Generalized impulse response analysis in linear multivariate models*. Economics Letters, 58(1), 1998, 17-29.

Pestel E. *"Beyond the limits to growth: A report to the club of Rome."* Universe Pub, 1989.

Lead City University Ibadan DO NOT COPY

Phiri C. *"Trade openness and economic growth: The Zambian case."* Master thesis Bursa Uludag University, 2021.

Pinas J., Wei S., Oppong-Baah T., Kim E., Addai M., Owusu I., Gyamfi E., Ofosu D., Nsaful A., Poliduts A. & Kapkaev Y. *"Economic growth: Types and factors."* International Conference on Eurasian Economies, 2015, 62-66.

Qi M., Xu J., Amuji N., Wang S., Xu F. & Zhou H. *"The nexus among energy consumption, economic growth and trade openness: evidence from West Africa."* **Sustainability**, 2022, 14, 3630.https://doi.org/10.3390/su14063630

Radmehr R., Ali E. B., Shayanmehr S., Saghaian S., Darbandi E., Agbozo E., & Sarkodie S. A. "*Assessing the global drivers of sustained economic development: the role of trade openness, financial development, and FDI*." **Sustainability**, 14(21), 2022, 14023.

Raghutla C. "*The effect of trade openness on economic growth: Some empirical evidence from emerging market economies*." **Journal of Public Affairs**, 20(3), 2020, e2081.

Rajan R. G., & Zingales L. "*The great reversals: The politics of financial development in the twentieth century*." **Journal of Financial Economics**, 69(1), 2003, 5-50.

Ramírez-Rondán N. R., Terrones M. E., & Vilchez A. "*Does financial sector development affect the growth gains from trade openness*?" **Review of World Economics**, 156(3), 2020, 475-515.

Rani R., & Kumar N. "*Panel data analysis of financial development, trade openness, and economic growth: Evidence from BRICS countries*." **Emerging Economy Studies**, 4(1), 2018, 1-18.

Rebelo, S. *"Long run policy analysis and long-run growth."* **Journal of Political Economy**, 99(3), 1991, 500-521.

Robinson J. "*The rate of interest and other essays*." MacMillan, London. 1952

Romer P. *"Increasing returns and long-run growth."* **Journal of Political Economy**, 94, 1986, 1002-1037.

Romer P. M. "*Endogenous technological change*." **Journal of Political Economy**, 98(5), 1990, S71–S102.

Roubini N. & Sala-i-Martin X. *"Financial repression and economic growth."* **Journal of Development Economics,** 39(1), 1992.

Sachs J. & Warner A. *"Economic reform and the process of global integration."* Brookings Paper on Economic Activity, 1, 1995, 222-238.

Sala-i Martin X. *"Lecture notes on economic growth (I): Introduction to the literature and neoclassical models."* NBER Working Paper, No.3563, 1990.

Lead City University Ibadan DO NOT COPY

Sala-i Martin, X. *"Lecture notes on economic growth (II): Five prototype models of endogenous growth."* NBER Working Paper, No.3564, 1990

Salik A. & Aras O. *"The effects of trade openness, FDI and exchange rate fluctuations on non-oil GDP growth in Nigeria."* **Journal of Management, Economics, and Industrial Organization**, 6(1), 2022, 98-117. http://doi.org/10.31039/jomeino.2022.6.1.6

Samuelson P. & Nordhaus W. *"Economics."* 19th Edition.Richard D Irwin Inc New York, 2010

Sanaphanh V. & Sethapramote Y. *"Financial development and economic growth in Asia."* **ABAC Journal,** 41(2), 2021, 61–81. https://doi.org/10.2139/ ssrn.3832920

Salvatore D. *"International Economics: Trade and Finance."* (Eighth Edition). Hoboken, New Jersey: John Wiley & Sons, Inc. 2014

Savchenko, 2005. *"The exogenous factors of sustainable economic growth in Russia: the scientific research."* The Kuban State University, 2005, 197.

Selcuk P. & Vasishtha G. *The global economy in five charts: The outlook for 2025–26*. World Bank (January 23rd, 2025). Available at https://blogs.worldbank.org/en/developmenttalk/the-global-economy-in-five-charts--the-outlook-for-2025-26

Sennuga A., Adenaike S., Adedayo G. & Sennuga O. *"Financial development and economic growth in Nigeria: The Case Study of Nigeria."* **International Journal of Business Management**, Vol. 4(4), 2021, 21-39.

Seyidoğlu H. *"International economics: theory-politics-practice."* **Güzem Can Publications**, 2007.

Sghaier I. M. "*Does financial development affect the economic growth gains from trade openness*." **Economic Alternatives**, 4, 2020, 666-682.

Sghaier I. *"Trade openness, financial development and economic growth in North African countries."* **International Journal of Finance and Economics**, 2021, 1–12

Sghaier I. M. "*Trade openness, financial development and economic growth in North African countries*." **International Journal of Finance & Economics**, 28(2), 2021, 1729-1740.

Shaw E. S. "*Financial deepening in economic development*." Oxford University Press, 1973.

Sheikh M. A., & Malik M. A. "*The nexus of trade openness, institutions and economic growth: An empirical investigation of BRICS countries*." **Foreign Trade Review**, 56(2), 2021, 206-215.

Siddikee M. & Rahman M. *"Foreign direct investment, financial development, and economic growth nexus in Bangladesh."* **The American Economist**, 00(0), 2020, 1–16.

Sikobi A.P. *"The impact of international trade of commodities on the economic growth of South Africa."* Master of Science Dissertation, World Maritime University, 2021

Leadership University Ibadan - NOT COPY

Silajdzic S., & Mehic E. "*Trade openness and economic growth: Empirical evidence from transition economies*." In Trade and global market. IntechOpen 2018.

Singh P.P. *"Economies of growth and development."* Lovely Professional University Dec0501, USI publications

Siyan P. "*Empirical investigation of exports and economic growth: Evidence from SANE countries, 1980-2016*." Asian Development Policy Review, 7(4), 2019, 318-354.

Smith A. *"The wealth of nation."* New York, N.Y: Bantam Classic 1776

Soomro A., Kumar J. & Kumari J. *"The Dynamic Relationship between FDI, ICT, Trade Openness, and Economic Growth: Evidence from BRICS countries."* **Journal of Asian Finance, Economics and Business**, Vol 9(2), 2022, 0295–0303

Squalli J. & Wilson K. *"A new measure of trade openness."* **The World Economy**, 34(10), 2011, 1745-1770.

Sriyana J. & Afandi A. *"Asymmetric effects of trade openness on economic growth in selected ASEAN countries."* **E&M Economics and Management**, 23(2), 2020, 66–82. https://doi.org/10.15240/tul/001/2020-2-005

Stiglitz J. & Weiss A. "Credit rationing in markets with imperfect Information." **American review of Economics**, 71 (3), 1981, 393-410.

Stockman A. C. "Anticipated inflation and the capital stock in a cash inadvance economy." **Journal of Monetary Economics**, Vol. 8(3), 1981, 387-393.Sudan F. *"Trade Openness and Economic Growth in China and India in Comparative Perspective: An Exploratory Study."* **Regional Economic Development Research**, Vol. 3(1), 2022.

Sunday A. *"ECOWAS trade liberalisation scheme administration, benefits and challenges."* Nigerian Export Promotion Council, 2021

Redmond T. & Nasir M. *"Role of natural resource abundance, international trade and financial development in the economic development of selected countries."* Resources policy, 66, 2020. 101591 https://doi.org/10.1016/j.resourpol.2020.101591

Tallman E.W. & Wang P. *"Human capital investment and economic growth: New routes in theory address old questions."* **Economic Review**, September/October 1992, 1-11.

Tang K. *"Correcting the size bias in trade openness and globalization measures."* **Global Economy Journal**, 11(3), 2011, 1-24.

Tariq R., Khan M. & Rahman A. *"How does financial development impact economic growth in Pakistan?: New evidence from threshold model."* **Journal of Asian Finance, Economics and Business** Vol. 7(8), 2020, 161–173.

Tatar H., Konat G & Temiz M. *"The relationship between financial development, trade openness and economic growth in Turkey: Evidence from Fourier Tests."* **Statistika**, 102 (2), 2022.

Lead City University Ibadan DO NOT COPY

Temile S. & Owoeye A. *"An empirical analysis of the stock market and economic growth nexus in Nigeria and South Africa."* **International Journal of Economics, Commerce and Management, United Kingdom**, Vol. 10(10), 2022.

Thach N. & Huy D. *"Trade openness and economics growth in Vietnam."* **Palarch's Journal of Archaralogy of Egypt/Egyptogy**, 17(1), 2020, 12-22.

The Guardian. *Trump policies make US 'scary place to invest' and risk stagflation, says Stiglitz*. The Guardian (February 17th, 2025). Retrieved from https://www.theguardian.com/business/2025/feb/17/joseph-stiglitz-economist-donald-trump-policies-tariffs-stagflation-risk-us-investment

Tobin J. *"Money and economic growth."* **Econometrica**, Vol. 33(4), 1965, 671-684.

Todaro M.P. & Smith S.C. *"Economic development (10th ed.)."* Harlow: Addison Wesley Publication, 2009

Todaro M.P. & Smith S.C. *"Economic development."* 11th Edition, Prentice Hall, Harlow, 2011

Twenefour M. *"Financial development, international trade and economic growth: The case of Ghana."* Master Art Thesis, University of Lethbridge, 2021.

Ude D.K. & Agodi J.E. *"Does Trade Openness Make Sense? Investigation of Nigeria trade policy."* **International Journal of Academic Research in Economics and Management Sciences,** 4(1), 2015.

Udeme O.E., Chinelo O.O. & Georgina O.U. *"The impact of financial deepening on the economy of Nigeria."* **Asian Journal of Economics, Business and Accounting,** 15(1), 2020, 12-21.

Ullah I., Tufail M. & Rafiq M. *"Effect of trade liberalization on economic growth in the panel of ASIAN economies."* **Journal of Business and Tourism**, Vol. 07(01), 2021

Ullah S. & Tahir M. *"Linkages between trade openness and economic growth: Evidence from SAARC member countries."* **International Journal of Finance, Insurance and Risk Management**, 10(4), 2020, 81-94.

United Nations Conference on Trade and Development (UNCTAD). *Africa's $3.4 trillion opportunity: Turning vulnerabilities into resilience*. UNCTAD, (10th February, 2025). Available at https://unctad.org/news/africas-34-trillion-opportunity-turning-vulnerabilities-resilience

United Nations. *Financing and funding the SDGs: Challenges vs. solutions*. United Nation (7th December, 2022). Available at https://www.un.org/en/academic-impact/financing-and-funding-sdgs-challenges-vs-solutions

United Nations Economic Commission for Africa (UNECA). *Effective financial markets, key to sustainable development in Africa*. UNECA (24th October, 2024). Available at https://www.uneca.org/stories/effective-financial-markets%2C-key-to-sustainable-development- in-africa-0

City University Ibadan DO NOT COPY

Vandana S.S. *"Effect of financial development and foreign direct investments on economic growth in SAARC countries: A panel ARDL approach."* **Asian Journal of Management Studies,** Vol. 2(1), 2022, 72-97.

Wanigasuriya J. *"Impact of trade openness on economic growth: The long run and short run analysis of Sri Lanka."* **Asian Journal of Advances in Research**, 13(3), 2022, 1-7.

Wiredu J, Nketiah E. & Adjei M. *"The relationship between trade openness, foreign direct investment and economic growth in West Africa: Static panel data model."* **Journal of Human Resource and Sustainability Studies**, 8, 2020, 18-34. https://doi.org/10.4236/jhrss.2020.81002

World Bank. *Global economic prospects: Slow growth, rising inequality*. World Bank (2021). Available at https://www.worldbank.org/en/publication/global-economic-prospects

World Bank. *World Bank Development Indicators database*. World Bank 2019

World Bank. *World Bank Development Indicators database*. World Bank 2020

World Bank. *World Bank Development Indicators database*. World Bank 2024.

World Bank. *World Integrated Trade Solution (WITS) database*. Washington, DC: World Bank 2020

World Bank. *World development report 2020*: Trading for development in the age of global value chains. World Bank (2020). Available at https://www.worldbank.org/en/publication/wdr2020

World Bank. *Stronger open trade policies enable economic growth for all*. World Bank (April 3rd, 2018). Available at https://www.worldbank.org/en/results/2018/04/03/stronger-open-trade-policies-enables-economic-growth-for-all

World Trade Organization (WTO). *World trade report 2015*. Available at https://www.wto.org/english/res_e/booksp_e/world_trade_report15_e.pdf

Xu G. & Gui B. *"From financial repression to financial crisis? The case of China."* **Asian Pacific Economic Literature,** Vol. 33(1), 2019.

Yahyaoui Abdelkarim A., Samet K. & Amirat A. *"Examining the financial development-economic growth nexus from an institutional approach: Evidence from non-oil Arab countries."* **Asian Economic and Financial Review**, 11(6), 2021, 457-470 DOI: 10.18488/journal.aefr.2021.116.457.470

Yakubu Z., Loganathan N. & Hassan A. *"Financial development, foreign direct investment and trade openness impact in the economic growth of Nigeria."* 2nd International Conference on Accounting and Finance (ICAF-IMDS 2020), 24-27 February 2020, Kuching, Malaysia, Borneo

Universiti Utara Malaysia DO NOT COPY

Yakubu Z., Loganathan N., Sethi N. & Hassan A. A. *"Do financial development, trade openness and political stability complement for Egypt's economic growth?"* **Journal of international commerce, Economics and Policy**, 12(1), 2021.

Yameogo C.E. & Omojolaibi J.A. *"Trade liberalisation, economic growth and poverty level in Sub-Saharan Africa."* **Economic Research-Ekonomska Istraživanja**, 34(1), 2021, 754-774. DOI: 10.1080/1331677X.2020.1804428

Yang X. & Shafiq M. *"The Impact of Foreign Direct Investment, Capital Formation, Inflation, Money Supply and Trade Openness on Economic Growth of Asian Countries."* **iRASD, Journal of Economics**, 2(1), 2020, 25-34.

Yndrini M. & Batuo M. "*The trade specialization of SANE: Evidence from manufacturing industries*." **European Journal of Comparative Economics**, 7(1), 2010, 145-178.

Yusheng K., Bawuah J., Nkwannntabisa A., Atuahene S. & Djan G. *"Financial development and economic growth: empirical evidence from Sub-Saharan Africa."* **International Journal of Finance & Economics**, 26(3), 2020, 3396-3416

Lead City University Ibadan DO NOT COPY

APPENDIX

SOUTH AFRICA

Error Correction Regression
Dependent Variable: D(TO)
Selected Model: ARDL(1, 2, 2, 0, 0, 1, 2)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/09/24 Time: 11:49
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.98932	2.285083	5.246775	0.0000
@TREND	0.394719	0.057639	6.848116	0.0000
D(DCPS)	0.005335	0.030600	0.174344	0.8634
D(DCPS(-1))	0.171777	0.031034	5.535195	0.0000
D(BM)	-0.080996	0.112719	-0.718570	0.4812
D(BM(-1))	0.343032	0.123150	2.785470	0.0118
D(FDI)	0.871839	0.219844	3.965711	0.0008
D(GFCF)	2.287188	0.322514	7.091756	0.0000
D(GFCF(-1))	-1.068820	0.299260	-3.571547	0.0020
CointEq(-1)*	-0.542370	0.083526	-6.493384	0.0000

R-squared	0.900762	Mean dependent var	0.104857
Adjusted R-squared	0.865036	S.D. dependent var	4.615949
S.E. of regression	1.695782	Akaike info criterion	4.129122
Sum squared resid	71.89194	Schwarz criterion	4.573507
Log likelihood	-62.25963	Hannan-Quinn criter.	4.282523
F-statistic	25.21321	Durbin-Watson stat	2.461539
Prob(F-statistic)	0.000000		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.577810	10%	2.53	3.59
K	6	5%	2.87	4
		2.5%	3.19	4.38
		1%	3.6	4.9

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.493384	10%	-3.13	-4.37
		5%	-3.41	-4.69
		2.5%	-3.65	-4.96
		1%	-3.96	-5.31

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(TO)
Selected Model: ARDL(1, 2, 2, 0, 0, 1, 2)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/09/24 Time: 11:50
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.98932	4.323699	2.772930	0.0121
@TREND	0.394719	0.160065	2.466000	0.0234
TO(-1)*	-0.542370	0.127635	-4.249390	0.0004
DCPS(-1)	0.012517	0.036795	0.340193	0.7374
BM(-1)	0.057065	0.133219	0.428359	0.6732
SMC**	-0.015331	0.012954	-1.183478	0.2512
INF**	0.052189	0.240210	0.217265	0.8303
FDI(-1)	1.689039	0.686331	2.460968	0.0236
GFCF(-1)	0.281676	0.478802	0.588294	0.5633
D(DCPS)	0.005335	0.047294	0.112805	0.9114
D(DCPS(-1))	0.171777	0.053342	3.220277	0.0045
D(BM)	-0.080996	0.157258	-0.515053	0.6125
D(BM(-1))	0.343032	0.171881	1.995747	0.0605
D(FDI)	0.871839	0.421119	2.070290	0.0523
D(GFCF)	2.287188	0.483923	4.726347	0.0001
D(GFCF(-1))	-1.068820	0.448403	-2.383613	0.0277

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCPS	0.023079	0.066430	0.347416	0.7321
BM	0.105215	0.242129	0.434541	0.6688
SMC	-0.028267	0.025013	-1.130108	0.2725
INF	0.096224	0.445750	0.215871	0.8314
FDI	3.114184	1.284261	2.424884	0.0255
GFCF	0.519343	0.851103	0.610200	0.5490

EC = TO - (0.0231*DCPS + 0.1052*BM -0.0283*SMC + 0.0962*INF + 3.1142 *FDI + 0.5193*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.577810	10%	2.53	3.59
K	6	5%	2.87	4
		2.5%	3.19	4.38

Lead City University Ibadan. DO NOT COPY

		1%	3.6	4.9
Actual Sample Size	35		Finite Sample: n=35	
		10%	2.879	4.114
		5%	3.426	4.79
		1%	4.704	6.537

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.249390	10%	-3.13	-4.37
		5%	-3.41	-4.69
		2.5%	-3.65	-4.96
		1%	-3.96	-5.31

Lead City University Ibadan DO NOT COPY

ALGERIA

ARDL Error Correction Regression
Dependent Variable: D(TO)
Selected Model: ARDL(1, 2, 1, 0, 2, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/09/24 Time: 11:57
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	64.56125	9.409876	6.861009	0.0000
@TREND	-0.103704	0.046023	-2.253305	0.0351
D(DCPS)	-0.020856	0.066940	-0.311562	0.7584
D(DCPS(-1))	0.196948	0.060925	3.232606	0.0040
D(BM)	-0.518758	0.070939	-7.312717	0.0000
D(INF)	-0.091506	0.084629	-1.081256	0.2918
D(INF(-1))	0.336442	0.088989	3.780694	0.0011
CointEq(-1)*	-0.559616	0.088694	-6.309534	0.0000

R-squared	0.821856	Mean dependent var	0.353731
Adjusted R-squared	0.775671	S.D. dependent var	4.307183
S.E. of regression	2.040029	Akaike info criterion	4.461437
Sum squared resid	112.3664	Schwarz criterion	4.816945
Log likelihood	-70.07514	Hannan-Quinn criter.	4.584158
F-statistic	17.79471	Durbin-Watson stat	2.106866
Prob(F-statistic)	0.000000		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.423357	10%	2.53	3.59
K	6	5%	2.87	4
		2.5%	3.19	4.38
		1%	3.6	4.9

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.309534	10%	-3.13	-4.37
		5%	-3.41	-4.69
		2.5%	-3.65	-4.96
		1%	-3.96	-5.31

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(TO)
Selected Model: ARDL(1, 2, 1, 0, 2, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/09/24 Time: 11:58
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	64.56125	16.27871	3.965994	0.0007
@TREND	-0.103704	0.151272	-0.685550	0.5005
TO(-1)*	-0.559616	0.148437	-3.770057	0.0011
DCPS(-1)	-0.130158	0.069422	-1.874894	0.0748
BM(-1)	-0.301446	0.181829	-1.657859	0.1122
SMC**	-31.80924	11.62918	-2.735296	0.0124
INF(-1)	-0.321360	0.138437	-2.321350	0.0304
FDI**	-0.233751	0.966975	-0.241734	0.8113
GFCF**	0.084241	0.252219	0.334000	0.7417
D(DCPS)	-0.020856	0.100642	-0.207229	0.8378
D(DCPS(-1))	0.196948	0.077648	2.536424	0.0192
D(BM)	-0.518758	0.148901	-3.483911	0.0022
D(INF)	-0.091506	0.120614	-0.758669	0.4565
D(INF(-1))	0.336442	0.109174	3.081699	0.0057

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCPS	-0.232584	0.120251	-1.934166	0.0667
BM	-0.538665	0.242208	-2.223980	0.0373
SMC	-56.84115	9.298396	-6.113006	0.0000
INF	-0.574250	0.217953	-2.634745	0.0155
FDI	-0.417699	1.771628	-0.235771	0.8159
GFCF	0.150534	0.427061	0.352488	0.7280

EC = TO - (-0.2326*DCPS -0.5387*BM -56.8412*SMC -0.5743*INF -0.4177 *FDI + 0.1505*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.423357	10%	2.53	3.59
K	6	5%	2.87	4
		2.5%	3.19	4.38
		1%	3.6	4.9

Lead City University Ibadan DO NOT COPY

Actual Sample Size	35		Finite Sample: n=35	
		10%	2.879	4.114
		5%	3.426	4.79
		1%	4.704	6.537

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-3.770057	10%	-3.13	-4.37
		5%	-3.41	-4.69
		2.5%	-3.65	-4.96
		1%	-3.96	-5.31

Lead City University Ibadan DO NOT COPY

NIGERIA

ARDL Error Correction Regression
Dependent Variable: D(TO)
Selected Model: ARDL(1, 2, 1, 2, 1, 1, 2)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/09/24 Time: 12:00
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-23.76363	3.359717	-7.073106	0.0000
@TREND	0.622932	0.113609	5.483103	0.0000
D(DCPS)	0.158501	0.422302	0.375327	0.7121
D(DCPS(-1))	-0.952954	0.355559	-2.680161	0.0158
D(BM)	-0.851324	0.407922	-2.086978	0.0523
D(SMC)	0.463382	0.120621	3.841645	0.0013
D(SMC(-1))	0.226065	0.131328	1.721373	0.1033
D(INF)	-0.505535	0.081889	-6.173397	0.0000
D(FDI)	0.469143	0.867648	0.540706	0.5957
D(GFCF)	0.940639	0.332263	2.831010	0.0115
D(GFCF(-1))	-3.171808	0.374886	-8.460727	0.0000
CointEq(-1)*	-0.712860	0.082153	-8.677232	0.0000

R-squared	0.847969	Mean dependent var	-0.202895
Adjusted R-squared	0.775258	S.D. dependent var	8.507816
S.E. of regression	4.033299	Akaike info criterion	5.892907
Sum squared resid	374.1525	Schwarz criterion	6.426169
Log likelihood	-91.12587	Hannan-Quinn criter.	6.076989
F-statistic	11.66222	Durbin-Watson stat	2.411690
Prob(F-statistic)	0.000001		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	7.950336	10%	2.53	3.59
K	6	5%	2.87	4
		2.5%	3.19	4.38
		1%	3.6	4.9

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-8.677232	10%	-3.13	-4.37
		5%	-3.41	-4.69
		2.5%	-3.65	-4.96
		1%	-3.96	-5.31

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(TO)
Selected Model: ARDL(1, 2, 1, 2, 1, 1, 2)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/09/24 Time: 12:01
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-23.76363	29.43121	-0.807430	0.4306
@TREND	0.622932	0.620798	1.003437	0.3297
TO(-1)*	-0.712860	0.143247	-4.976427	0.0001
DCPS(-1)	1.188029	0.782181	1.518867	0.1472
BM(-1)	-0.242999	0.503342	-0.482771	0.6354
SMC(-1)	-0.206178	0.340254	-0.605952	0.5526
INF(-1)	-0.712145	0.148250	-4.803664	0.0002
FDI(-1)	6.453379	1.811848	3.561766	0.0024
GFCF(-1)	1.060320	0.503906	2.104203	0.0505
D(DCPS)	0.158501	0.782263	0.202619	0.8418
D(DCPS(-1))	-0.952954	0.559888	-1.702046	0.1070
D(BM)	-0.851324	0.594915	-1.431002	0.1706
D(SMC)	0.463382	0.192854	2.402758	0.0280
D(SMC(-1))	0.226065	0.211417	1.069285	0.2999
D(INF)	-0.505535	0.118993	-4.248428	0.0005
D(FDI)	0.469143	1.336361	0.351060	0.7299
D(GFCF)	0.940639	0.516179	1.822311	0.0860
D(GFCF(-1))	-3.171808	0.548840	-5.779110	0.0000

* p-value incompatible with t-Bounds distribution.

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCPS	1.666568	1.277311	1.304747	0.2094
BM	-0.340879	0.733012	-0.465039	0.6478
SMC	-0.289226	0.489954	-0.590313	0.5627
INF	-0.998998	0.201402	-4.960217	0.0001
FDI	9.052803	2.288185	3.956326	0.0010
GFCF	1.487417	0.891571	1.668311	0.1136

EC = TO - (1.6666*DCPS -0.3409*BM -0.2892*SMC -0.9990*INF + 9.0528
*FDI + 1.4874*GFCF)

F-Bounds Test Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	7.950336	10%	2.53	3.59
K	6	5%	2.87	4
		2.5%	3.19	4.38

Lead City University Ibadan DO NOT COPY

		1%	3.6	4.9
Actual Sample Size	35		Finite Sample: n=35	
		10%	2.879	4.114
		5%	3.426	4.79
		1%	4.704	6.537

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.976427	10%	-3.13	-4.37
		5%	-3.41	-4.69
		2.5%	-3.65	-4.96
		1%	-3.96	-5.31

Lead City University Ibadan DO NOT COPY

EGYPT

ARDL Error Correction Regression
Dependent Variable: D(TO)
Selected Model: ARDL(1, 0, 2, 1, 0, 1, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/13/24 Time: 10:21
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.62462	1.388332	9.813664	0.0000
@TREND	-0.629134	0.064746	-9.717026	0.0000
D(BM)	-0.061644	0.078004	-0.790263	0.4378
D(BM(-1))	-0.167333	0.108414	-1.543466	0.1370
D(SMC)	0.096115	0.041095	2.338871	0.0288
D(FDI)	0.168537	0.356312	0.473004	0.6409
CointEq(-1)*	-0.857945	0.077912	-11.01170	0.0000

R-squared	0.881479	Mean dependent var	0.429066
Adjusted R-squared	0.856081	S.D. dependent var	6.325044
S.E. of regression	2.399508	Akaike info criterion	4.765261
Sum squared resid	161.2139	Schwarz criterion	5.076331
Log likelihood	-76.39207	Hannan-Quinn criter.	4.872642
F-statistic	34.70740	Durbin-Watson stat	2.316302
Prob(F-statistic)	0.000000		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	13.61055	10%	2.53	3.59
K	6	5%	2.87	4
		2.5%	3.19	4.38
		1%	3.6	4.9

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-11.01170	10%	-3.13	-4.37
		5%	-3.41	-4.69
		2.5%	-3.65	-4.96
		1%	-3.96	-5.31

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(TO)
Selected Model: ARDL(1, 0, 2, 1, 0, 1, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/13/24 Time: 10:21
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.62462	16.12241	0.845074	0.4072
@TREND	-0.629134	0.216826	-2.901558	0.0083
TO(-1)*	-0.857945	0.107207	-8.002691	0.0000
DCPS**	-0.282419	0.075869	-3.722439	0.0012
BM(-1)	0.536626	0.140094	3.830478	0.0009
SMC(-1)	0.375986	0.080477	4.671943	0.0001
INF**	0.219782	0.068735	3.197525	0.0042
FDI(-1)	-1.136212	0.672975	-1.688342	0.1055
GFCF**	-0.385974	0.350041	-1.102653	0.2821
D(BM)	-0.061644	0.106094	-0.581032	0.5671
D(BM(-1))	-0.167333	0.143888	-1.162943	0.2573
D(SMC)	0.096115	0.064618	1.487441	0.1511
D(FDI)	0.168537	0.533266	0.316046	0.7549

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCPS	-0.329181	0.083805	-3.927921	0.0007
BM	0.625479	0.158465	3.947107	0.0007
SMC	0.438240	0.094062	4.659046	0.0001
INF	0.256173	0.076193	3.362178	0.0028
FDI	-1.324342	0.828688	-1.598119	0.1243
GFCF	-0.449883	0.385693	-1.166428	0.2559

EC = TO - (-0.3292*DCPS + 0.6255*BM + 0.4382*SMC + 0.2562*INF -1.3243 *FDI -0.4499*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	13.61055	10%	2.53	3.59
k	6	5%	2.87	4
		2.5%	3.19	4.38
		1%	3.6	4.9
			Finite Sample:	
Actual Sample Size	35		n=35	

LeadCity University Ibadan DO NOT COPY

10%	2.879	4.114
5%	3.426	4.79
1%	4.704	6.537

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-8.002691	10%	-3.13	-4.37
		5%	-3.41	-4.69
		2.5%	-3.65	-4.96
		1%	-3.96	-5.31

Lead City University Ibadan DO NOT COPY

OBJECTIVE 2

SOUTH AFRICA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 1, 2, 2, 1, 2, 1)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 11/26/23 Time: 12:59
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.34197	1.498294	9.572198	0.0000
@TREND	-0.607852	0.063780	-9.530491	0.0000
d(dcps)	0.009070	0.026455	0.342841	0.7359
d(bm)	-0.328185	0.095596	-3.433053	0.0032
d(bm(-1))	-0.192703	0.092647	-2.079969	0.0530
d(smc)	0.020506	0.006566	3.123003	0.0062
d(smc(-1))	-0.014139	0.006405	-2.207505	0.0413
d(inf)	-0.187749	0.132167	-1.420551	0.1735
d(fdi)	0.275430	0.193207	1.425570	0.1721
d(fdi(-1))	-0.665618	0.203670	-3.268128	0.0045
d(gfcf)	1.356488	0.286632	4.732514	0.0002
CointEq(-1)*	-0.849444	0.130421	-10.34680	0.0000

R-squared	0.865279	Mean dependent var	-0.001732
Adjusted R-squared	0.800848	S.D. dependent var	2.900578
S.E. of regression	1.294425	Akaike info criterion	3.619871
Sum squared resid	38.53736	Schwarz criterion	4.153134
Log likelihood	-51.34775	Hannan-Quinn criter.	3.803953
F-statistic	13.42943	Durbin-Watson stat	2.025349
Prob(F-statistic)	0.000000		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	11.30407	10%	2.53	3.59
k	6	5%	2.87	4
		2.5%	3.19	4.38
		1%	3.6	4.9

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-10.34680	10%	-3.13	-4.37
		5%	-3.41	-4.69
		2.5%	-3.65	-4.96
		1%	-3.96	-5.31

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 1, 2, 2, 1, 2, 1)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 11/26/23 Time: 13:01
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.34197	3.331763	4.304618	0.0005
@TREND	-0.607852	0.148839	-4.083963	0.0008
gdpgr(-1)*	-1.349444	0.184761	-7.303709	0.0000
dcps(-1)	-0.064525	0.025041	-2.576805	0.0196
bm(-1)	0.116432	0.102157	1.139742	0.2702
smc(-1)	0.052098	0.018060	2.884680	0.0103
inf(-1)	-0.915141	0.233042	-3.926934	0.0011
fdi(-1)	1.696821	0.667460	2.542206	0.0210
gfcf(-1)	-0.254199	0.333974	-0.761135	0.4570
d(dcps)	0.009070	0.037707	0.240530	0.8128
d(bm)	-0.328185	0.146099	-2.246323	0.0383
d(bm(-1))	-0.192703	0.118595	-1.624878	0.1226
d(smc)	0.020506	0.010452	1.961947	0.0664
d(smc(-1))	-0.014139	0.009175	-1.541016	0.1417
d(inf)	-0.187749	0.189339	-0.991606	0.3353
d(fdi)	0.275430	0.304613	0.904197	0.3785
d(fdi(-1))	-0.665618	0.326670	-2.037583	0.0575
d(gfcf)	1.356488	0.420749	3.223983	0.0050

* p-value incompatible with t-Bounds distribution.

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCPS	-0.047816	0.018769	-2.547642	0.0208
BM	0.086282	0.076575	1.126757	0.2755
SMC	0.038607	0.014114	2.735408	0.0141
INF	-0.678161	0.175150	-3.871881	0.0012
FDI	1.257422	0.477547	2.633085	0.0174
GFCF	-0.188374	0.252669	-0.745535	0.4661

EC = GDPGR - (-0.0478*DCPS + 0.0863*BM + 0.0386*SMC -0.6782*INF +
1.2574*FDI -0.1884*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	11.30407	10%	2.53	3.59
k	6	5%	2.87	4

Lead City University Ibadan DO NOT COPY

		2.5%	3.19	4.38
		1%	3.6	4.9
			Finite Sample:	
Actual Sample Size	35		n=35	
		10%	2.879	4.114
		5%	3.426	4.79
		1%	4.704	6.537

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-7.303709	10%	-3.13	-4.37
		5%	-3.41	-4.69
		2.5%	-3.65	-4.96
		1%	-3.96	-5.31

Lead City University Ibadan DO NOT COPY

ALGERIA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 2, 1, 0, 0, 0, 1)
Case 1: No Constant and No Trend
Date: 11/26/23 Time: 14:32
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
d(dcps)	-0.180376	0.046191	-3.904998	0.0007
d(dcps(-1))	0.153227	0.045003	3.404828	0.0023
d(bm)	0.022894	0.058277	0.392843	0.6979
d(gfcf)	-0.082438	0.134914	-0.611040	0.5469
CointEq(-1)*	-0.915844	0.142885	-6.409642	0.0000

R-squared	0.653309	F-statistic	11.91538
Adjusted R-squared	0.607084	Prob(F-statistic)	0.000003
S.E. of regression	1.819006	Akaike info criterion	4.166021
Sum squared resid	99.26351	Schwarz criterion	4.388214
Log likelihood	-67.90537	Hannan-Quinn criter.	4.242722
Durbin-Watson stat	2.342685		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.695259	10%	1.75	2.87
K	6	5%	2.04	3.24
		2.5%	2.32	3.59
		1%	2.66	4.05

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.409642	10%	-1.62	-3.7
		5%	-1.95	-4.04
		2.5%	-2.24	-4.34
		1%	-2.58	-4.67

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 2, 1, 0, 0, 0, 1)
Case 1: No Constant and No Trend
Date: 11/26/23 Time: 14:34
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
gdpgr(-1)*	-0.915844	0.165698	-5.527186	0.0000
dcps(-1)	-0.134654	0.041367	-3.255071	0.0034
bm(-1)	0.223925	0.066144	3.385436	0.0024
smc**	7.032268	2.640247	2.663489	0.0136
inf**	-0.045333	0.069060	-0.656426	0.5178
fdi**	-0.421699	0.677540	-0.622397	0.5396
gfcf(-1)	-0.331774	0.116840	-2.839562	0.0091
d(dcps)	-0.180376	0.072169	-2.499363	0.0197
d(dcps(-1))	0.153227	0.056561	2.709054	0.0122
d(bm)	0.022894	0.080844	0.283185	0.7795
d(gfcf)	-0.082438	0.179418	-0.459474	0.6500

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCPS	-0.147027	0.040445	-3.635228	0.0013
BM	0.244501	0.063631	3.842505	0.0008
SMC	7.678458	2.800976	2.741350	0.0114
INF	-0.049499	0.074373	-0.665545	0.5120
FDI	-0.460448	0.735815	-0.625766	0.5374
GFCF	-0.362260	0.120293	-3.011479	0.0060

EC = GDPGR - (-0.1470*DCPS + 0.2445*BM + 7.6785*SMC -0.0495*INF
-0.4604*FDI -0.3623*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.695259	10%	1.75	2.87
K	6	5%	2.04	3.24
		2.5%	2.32	3.59
		1%	2.66	4.05
			Finite Sample: n=35	
Actual Sample Size	35	10%	-1	-1
		5%	-1	-1

Lead City University Ibadan DO NOT COPY

		1%	-1	-1

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.527186	10%	-1.62	-3.7
		5%	-1.95	-4.04
		2.5%	-2.24	-4.34
		1%	-2.58	-4.67

Lead City University Ibadan DO NOT COPY

NIGERIA

ARDL Error Correction Regression
Dependent Variable: D(gdpgr)
Selected Model: ARDL(2, 0, 2, 2, 2, 2, 2)
Case 1: No Constant and No Trend
Date: 11/26/23 Time: 15:46
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
d(gdpgr(-1))	-0.350582	0.100107	-3.502093	0.0027
d(bm)	-0.368127	0.174853	-2.105351	0.0504
d(bm(-1))	0.449502	0.176662	2.544417	0.0209
d(smc)	0.120358	0.067615	1.780031	0.0930
d(smc(-1))	-0.217480	0.074955	-2.901469	0.0099
d(inf)	-0.166069	0.032193	-5.158619	0.0001
d(inf(-1))	0.070584	0.034441	2.049416	0.0562
d(fdi)	-1.978075	0.486946	-4.062209	0.0008
d(fdi(-1))	1.771428	0.460435	3.847289	0.0013
d(gfcf)	-0.874055	0.184910	-4.726911	0.0002
d(gfcf (-1))	-0.471279	0.169568	-2.779296	0.0129
CointEq(-1)*	-0.909616	0.018387	-5.961572	0.0000

R-squared	0.847418	F-statistic	9.689497
Adjusted R-squared	0.774444	Prob(F-statistic)	0.000003
S.E. of regression	2.082610	Akaike info criterion	4.570981
Sum squared resid	99.75710	Schwarz criterion	5.104244
Log likelihood	-67.99218	Hannan-Quinn criter.	4.755064
Durbin-Watson stat	2.296228		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	3.752706	10%	1.75	2.87
K	6	5%	2.04	3.24
		2.5%	2.32	3.59
		1%	2.66	4.05

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.961572	10%	-1.62	-3.7
		5%	-1.95	-4.04
		2.5%	-2.24	-4.34
		1%	-2.58	-4.67

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(gdpgr)
Selected Model: ARDL(2, 0, 2, 2, 2, 2, 2)
Case 1: No Constant and No Trend
Date: 11/26/23 Time: 15:46
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
gdpgr(-1)*	-0.109616	0.232659	-0.471145	0.6435
dcps**	-0.206198	0.314384	-0.655878	0.5207
bm(-1)	-0.019404	0.135540	-0.143159	0.8878
smc(-1)	0.505366	0.216035	2.339282	0.0318
inf(-1)	0.061742	0.106472	0.579884	0.5696
fdi(-1)	-2.949799	1.027192	-2.871713	0.0106
gfcf(-1)	-0.015442	0.083381	-0.185200	0.8553
d(gdpgr(-1))	-0.350582	0.161320	-2.173216	0.0442
d(bm)	-0.368127	0.274304	-1.342040	0.1972
d(bm(-1))	0.449502	0.276845	1.623661	0.1228
d(smc)	0.120358	0.097225	1.237924	0.2326
d(smc(-1))	-0.217480	0.130399	-1.667806	0.1137
d(inf)	-0.166069	0.058399	-2.843721	0.0112
d(inf(-1))	0.070584	0.051657	1.366388	0.1896
d(fdi)	-1.978075	0.699669	-2.827156	0.0116
d(fdi(-1))	1.771428	0.579025	3.059328	0.0071
d(gfcf)	-0.874055	0.274754	-3.181229	0.0055
d(gfcf(-1))	-0.471279	0.248998	-1.892702	0.0756

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCPS	-1.881089	5.996292	-0.313709	0.7576
BM	-0.177016	1.249471	-0.141673	0.8890
SMC	4.610329	10.98160	0.419823	0.6799
INF	0.563253	2.038403	0.276321	0.7856
FDI	-26.91027	62.87715	-0.427982	0.6740
GFCF	-0.140875	1.000060	-0.140867	0.8896

EC = GDP - (-1.8811*DCPS -0.1770*BM + 4.6103*SMC + 0.5633*INF
-26.9103*FDI -0.1409*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	3.752706	10%	1.75	2.87

Lead City University Ibadan. DO NOT COPY

K	6	5%	2.04	3.24
		2.5%	2.32	3.59
		1%	2.66	4.05
			Finite Sample:	
Actual Sample Size	35		n=35	
		10%	-1	-1
		5%	-1	-1
		1%	-1	-1

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-0.471145	10%	-1.62	-3.7
		5%	-1.95	-4.04
		2.5%	-2.24	-4.34
		1%	-2.58	-4.67

Lead City University Ibadan DO NOT COPY

EGYPT

ARDL Error Correction Regression
Dependent Variable: D(GDP)
Selected Model: ARDL(2, 0, 2, 2, 0, 2, 1)
Case 1: No Constant and No Trend
Date: 11/26/23 Time: 16:43
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
d(gdpgr(-1))	0.386177	0.158212	2.440882	0.0241
d(bm)	-0.040956	0.024927	-1.643020	0.1160
d(bm(-1))	-0.064009	0.025209	-2.539088	0.0195
d(smc)	-0.070837	0.015206	-4.658602	0.0002
d(smc(-1))	0.065775	0.017268	3.809023	0.0011
d(fdi)	0.798185	0.134332	5.941872	0.0000
d(fdi(-1))	-0.893273	0.250636	-3.564021	0.0019
d(gfcf)	-0.134516	0.078486	-1.713898	0.1020
CointEq(-1)*	-0.681193	0.225559	-7.453449	0.0000

R-squared	0.832310	F-statistic	12.83487
Adjusted R-squared	0.780712	Prob(F-statistic)	0.000000
S.E. of regression	0.755632	Akaike info criterion	2.494511
Sum squared resid	14.84549	Schwarz criterion	2.894457
Log likelihood	-34.65394	Hannan-Quinn criter.	2.632572
Durbin-Watson stat	2.344898		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.104825	10%	1.75	2.87
K	6	5%	2.04	3.24
		2.5%	2.32	3.59
		1%	2.66	4.05

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-7.453449	10%	-1.62	-3.7
		5%	-1.95	-4.04
		2.5%	-2.24	-4.34
		1%	-2.58	-4.67

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: d(gdpgr)
Selected Model: ARDL(2, 0, 2, 2, 0, 2, 1)
Case 1: No Constant and No Trend
Date: 11/26/23 Time: 16:43
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
gdpgr(-1)*	-1.681193	0.266679	-6.304179	0.0000
dcps**	0.185346	0.034681	5.344258	0.0000
bm(-1)	0.013637	0.014995	0.909386	0.3740
smc(-1)	-0.170611	0.034368	-4.964222	0.0001
inf**	-0.044893	0.016190	-2.772864	0.0117
fdi(-1)	2.007478	0.375503	5.346110	0.0000
gfcf(-1)	0.031979	0.040680	0.786112	0.4410
d(gdpgr(-1))	0.386177	0.186521	2.070418	0.0516
d(bm)	-0.040956	0.030677	-1.335058	0.1969
d(bm(-1))	-0.064009	0.031102	-2.058048	0.0529
d(smc)	-0.070837	0.019632	-3.608256	0.0018
d(smc(-1))	0.065775	0.023600	2.787071	0.0114
d(fdi)	0.798185	0.197347	4.044575	0.0006
d(fdi(-1))	-0.893273	0.333023	-2.682316	0.0143
d(gfcf)	-0.134516	0.110440	-1.218003	0.2374

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCPS	0.110246	0.013223	8.337408	0.0000
BM	0.008111	0.008858	0.915657	0.3708
SMC	-0.101482	0.016572	-6.123591	0.0000
INF	-0.026703	0.009233	-2.892183	0.0090
FDI	1.194080	0.154740	7.716665	0.0000
GFCF	0.019022	0.023962	0.793831	0.4366

EC = GDP - (0.1102*DCPS + 0.0081*BM -0.1015*SMC -0.0267*INF + 1.1941 *FDI + 0.0190*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	6.104825	10%	1.75	2.87
K	6	5%	2.04	3.24
		2.5%	2.32	3.59
		1%	2.66	4.05

Lead City University Ibadan DO NOT COPY

Actual Sample Size	35		Finite Sample: n=35	
		10%	-1	-1
		5%	-1	-1
		1%	-1	-1

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.304179	10%	-1.62	-3.7
		5%	-1.95	-4.04
		2.5%	-2.24	-4.34
		1%	-2.58	-4.67

Lead City University Ibadan DO NOT COPY

OBJECTIVE 3

SOUTH AFRICA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(2, 0, 1, 0, 1)
Case 4: Unrestricted Constant and Restricted Trend
Date: 11/26/23 Time: 13:36
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 4: Unrestricted Constant and Restricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.262681	0.394628	5.733705	0.0000
D(GDPGR(-1))	0.322870	0.134205	2.405794	0.0239
D(TO)	0.482104	0.144003	3.347901	0.0304
D(INF)	-0.340662	0.130896	-2.602548	0.0153
D(GFCF)	0.591623	0.260960	2.267105	0.0323
CointEq(-1)*	-0.650322	0.207156	-7.966554	0.0000

R-squared	0.733011	Mean dependent var	-0.001732
Adjusted R-squared	0.697412	S.D. dependent var	2.900578
S.E. of regression	1.595549	Akaike info criterion	3.903876
Sum squared resid	76.37330	Schwarz criterion	4.126069
Log likelihood	-63.31784	Hannan-Quinn criter.	3.980577
F-statistic	20.59104	Durbin-Watson stat	2.225122
Prob(F-statistic)	0.000000		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	8.814721	10%	2.68	3.53
k	4	5%	3.05	3.97
		2.5%	3.4	4.36
		1%	3.81	4.92

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(2, 0, 1, 0, 1)
Case 4: Unrestricted Constant and Restricted Trend
Date: 11/26/23 Time: 13:36
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.606526	3.883846	0.671120	0.5083
@TREND	-0.343845	0.083948	-4.095925	0.0004
gdpgr(-1)*	-1.650322	0.273239	-6.039838	0.0000
to**	0.203426	0.096589	2.106099	0.0454
inf(-1)	-0.679533	0.196565	-3.457045	0.0020
fdi**	-0.146399	0.314056	-0.466156	0.6451
gfcf(-1)	0.088475	0.248255	0.356388	0.7245
d(gdpgr(-1))	0.322870	0.177278	1.821261	0.0806
d(inf)	-0.340662	0.172515	-1.974687	0.0594
d(gfcf)	0.591623	0.431986	1.369541	0.1830

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 4: Unrestricted Constant and Restricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO	0.123264	0.056690	2.174337	0.0394
INF	-0.411758	0.105571	-3.900314	0.0006
FDI	-0.088709	0.194440	-0.456230	0.6522
GFCF	0.053611	0.147052	0.364571	0.7185
@TREND	-0.208350	0.040972	-5.085153	0.0000

EC = GDPGR - (0.1233*TO -0.4118*INF -0.0887*FDI + 0.0536*GFCF
-0.2084*@TREND)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	8.814721	10%	2.68	3.53
k	4	5%	3.05	3.97
		2.5%	3.4	4.36
		1%	3.81	4.92
			Finite Sample: n=35	
Actual Sample Size	35	10%	3.035	3.997
		5%	3.578	4.668
		1%	5.147	6.617

Lead City University Ibadan DO NOT COPY

ALGERIA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 1: No Constant and No Trend
Date: 11/26/23 Time: 14:39
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TO)	-0.097025	0.092632	-1.057241	0.3040
D(TO(-1)	0.360144	0.251203	1.433677	0.1643
D(INF)	-0.238507	0.067788	-3.531105	0.0019
D(FDI)	0.179162	0.053504	3.348572	0.0062
D(GFCF)	-0.090437	0.050161	-1.795506	0.0863
CointEq(-1)*	-0.520389	0.180777	-5.644466	0.0000

R-squared	0.476150	Mean dependent var	0.075000
Adjusted R-squared	0.476150	S.D. dependent var	2.867239
S.E. of regression	2.075236	Akaike info criterion	4.325412
Sum squared resid	150.7312	Schwarz criterion	4.369398
Log likelihood	-76.85741	Hannan-Quinn criter.	4.340764
Durbin-Watson stat	1.967049		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.643770	10%	1.9	3.01
k	4	5%	2.26	3.48
		2.5%	2.62	3.9
		1%	3.07	4.44

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.644466	10%	-1.62	-3.26
		5%	-1.95	-3.6
		2.5%	-2.24	-3.89
		1%	-2.58	-4.23

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 1: No Constant and No Trend
Date: 11/26/23 Time: 14:40
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
gdpgr(-1)*	-1.020389	0.197151	-5.175677	0.0000
to**	0.091275	0.031899	2.861371	0.0075
linf**	-0.070823	0.054269	-1.305034	0.2015
fdi**	-0.103955	0.680043	-0.152865	0.8795
gfcf**	-0.066263	0.043957	-1.507443	0.1418

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO	0.089451	0.023910	3.741142	0.0007
INF	-0.069408	0.048791	-1.422543	0.1649
FDI	-0.101878	0.662911	-0.153682	0.8789
GFCF	-0.064939	0.041112	-1.579570	0.1244

EC = GDPGR - (0.0895*TO -0.0694*INF -0.1019*FDI -0.0649*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.643770	10%	1.9	3.01
k	4	5%	2.26	3.48
		2.5%	2.62	3.9
		1%	3.07	4.44
			Finite Sample: n=40	
Actual Sample Size	36			
		10%	-1	-1
		5%	-1	-1
		1%	-1	-1
			Finite Sample: n=35	
		10%	-1	-1
		5%	-1	-1
		1%	-1	-1

Lead City University Ibadan DO NOT COPY

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.175677	10%	-1.62	-3.26
		5%	-1.95	-3.6
		2.5%	-2.24	-3.89
		1%	-2.58	-4.23

Lead City University Ibadan DO NOT COPY

NIGERIA

ARDL Error Correction Regression
Dependent Variable: D(GDP)
Selected Model: ARDL(1, 0, 2, 2, 2)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 11/26/23 Time: 15:54
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.38919	5.241640	5.034530	0.0000
@TREND	-0.499731	0.107440	-4.651273	0.0001
D(TO)	-0.582937	0.208105	-2.801168	0.0017
D(INF)	-0.238531	0.041992	-5.680347	0.0000
D(INF(-1))	0.090497	0.035783	2.529042	0.0191
D(FDI)	-1.752944	0.524412	-3.342686	0.0029
D(FDI(-1))	1.215987	0.452715	2.685987	0.0135
D(GFCF)	-0.558873	0.194068	-2.879771	0.0087
D(GFCF(-1))	-0.608608	0.212466	-2.864492	0.0090
CointEq(-1)*	-0.645840	0.117848	-5.480260	0.0000

R-squared	0.762904	Mean dependent var	0.001425
Adjusted R-squared	0.689951	S.D. dependent var	4.385115
S.E. of regression	2.441720	Akaike info criterion	4.840317
Sum squared resid	155.0119	Schwarz criterion	5.240263
Log likelihood	-75.70554	Hannan-Quinn criter.	4.978378
F-statistic	10.45753	Durbin-Watson stat	2.320736
Prob(F-statistic)	0.000002		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.082549	10%	3.03	4.06
k	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.480260	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDP)
Selected Model: ARDL(1, 0, 2, 2, 2)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 11/26/23 Time: 15:54
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.38919	13.42017	1.966383	0.0620
@TREND	-0.499731	0.302753	-1.650623	0.1130
gdpgr(-1)*	-0.645840	0.174816	-3.694394	0.0013
to**	-0.097022	0.092176	-1.052572	0.3040
inf(-1)	-0.149905	0.082163	-1.824494	0.0817
fdi(-1)	-0.941071	1.156889	-0.813450	0.4247
gfcf(-1)	-0.253047	0.229104	-1.104505	0.2813
d(inf)	-0.238531	0.067488	-3.534411	0.0019
d(inf(-1))	0.090497	0.050401	1.795542	0.0863
d(fdi)	-1.752944	0.634711	-2.761797	0.0114
d(fdi(-1))	1.215987	0.588228	2.067205	0.0507
d(gfcf)	-0.558873	0.238405	-2.344213	0.0285
d(gfcf(-1))	-0.608608	0.370897	-1.640908	0.1150

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO	-0.150226	0.157210	-0.955576	0.3497
INF	-0.232109	0.140959	-1.646644	0.1138
FDI	-1.457127	1.753922	-0.830782	0.4150
GFCF	-0.391810	0.322184	-1.216106	0.2368

EC = GDP - (-0.1502*TO -0.2321*INF -1.4571*FDI -0.3918*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.082549	10%	3.03	4.06
k	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
			Finite Sample: n=35	
Actual Sample Size	35	10%	3.374	4.512
		5%	4.036	5.304
		1%	5.604	7.172

Lead City University Ibadan DO NOT COPY

t-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-3.694394	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

EGYPT

ARDL Error Correction Regression
Dependent Variable: D(GDP)
Selected Model: ARDL(1, 2, 2, 0, 0)
Case 1: No Constant and No Trend
Date: 11/26/23 Time: 16:47
Sample: 1986 2022
Included observations: 35

ECM Regression
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TO)	-0.113835	0.035933	-3.167938	0.0039
D(TO(-1))	-0.072159	0.034747	-2.076691	0.0479
D(INF)	0.112337	0.039434	2.848723	0.0085
D(INF(-1))	0.192019	0.044948	4.271984	0.0002
CointEq(-1)*	-0.745258	0.144011	-7.258197	0.0000

R-squared	0.644722	Mean dependent var	0.053356
Adjusted R-squared	0.597352	S.D. dependent var	1.613629
S.E. of regression	1.023921	Akaike info criterion	3.016719
Sum squared resid	31.45241	Schwarz criterion	3.238911
Log likelihood	-47.79258	Hannan-Quinn criter.	3.093420
Durbin-Watson stat	1.926944		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	9.131447	10%	1.9	3.01
K	4	5%	2.26	3.48
		2.5%	2.62	3.9
		1%	3.07	4.44

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-7.258197	10%	-1.62	-3.26
		5%	-1.95	-3.6
		2.5%	-2.24	-3.89
		1%	-2.58	-4.23

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDP)
Selected Model: ARDL(1, 2, 2, 0, 0)
Case 1: No Constant and No Trend
Date: 11/26/23 Time: 16:48
Sample: 1986 2022
Included observations: 35

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
gdpgr(-1)*	-1.045258	0.170037	-6.147224	0.0000
to(-1)	-0.027150	0.021957	-1.236496	0.2273
inf(-1)	-0.066077	0.024225	-2.727679	0.0113
fdi**	0.493003	0.112617	4.377684	0.0002
gfcf**	0.271967	0.064966	4.186299	0.0003
d(to)	-0.113835	0.046916	-2.426338	0.0225
d(to(-1))	-0.072159	0.038393	-1.879478	0.0714
d(inf)	0.112337	0.052864	2.125026	0.0433
d(inf(-1))	0.192019	0.066030	2.908054	0.0073

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 1: No Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO	-0.025974	0.021474	-1.209549	0.2373
INF	-0.063216	0.019840	-3.186306	0.0037
FDI	0.471657	0.111991	4.211558	0.0003
GFCF	0.260192	0.049506	5.255780	0.0000

EC = GDP - (-0.0260*TO -0.0632*INF + 0.4717*FDI + 0.2602*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	9.131447	10%	1.9	3.01
K	4	5%	2.26	3.48
		2.5%	2.62	3.9
		1%	3.07	4.44
			Finite Sample: n=35	
Actual Sample Size	35	10%	-1	-1
		5%	-1	-1
		1%	-1	-1

t-Bounds Test — Null Hypothesis: No levels relationship

Lead City University Ibadan DO NOT COPY

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.147224	10%	-1.62	-3.26
		5%	-1.95	-3.6
		2.5%	-2.24	-3.89
		1%	-2.58	-4.23

Lead City University Ibadan DO NOT COPY

OBJECTIVE 4A
SOUTH AFRICA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 1, 0, 0, 1)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:30
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.787200	1.093090	5.294349	0.0000
@TREND	-0.092727	0.034268	-2.705908	0.0117
D(TO_DCPS)	0.001122	0.000425	2.641268	0.0136
D(INF)	0.392018	0.058399	1.205572	0.6720
D(GFCF)	0.750583	0.322268	2.329068	0.0276
CointEq(-1)*	-0.614697	0.163724	-7.113797	0.0000

R-squared	0.665803	Mean dependent var	0.056174
Adjusted R-squared	0.622680	S.D. dependent var	2.879876
S.E. of regression	1.769003	Akaike info criterion	4.106955
Sum squared resid	97.01047	Schwarz criterion	4.326888
Log likelihood	-68.92519	Hannan-Quinn criter.	4.183717
F-statistic	15.43989	Durbin-Watson stat	1.920251
Prob(F-statistic)	0.000000		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	8.815256	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-7.113797	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 1, 0, 0, 1)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:31
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.787200	3.205335	1.805490	0.0822
@TREND	-0.092727	0.069608	-1.332131	0.1940
GDPGR(-1)*	-1.164697	0.191519	-6.081363	0.0000
TO_DCPS(-1)	0.000131	0.000339	0.388137	0.7010
TO(-1)	0.875073	0.397223	2.202975	0.0370
DCPS**	0.281848	0.179904	1.566655	0.1298
INF**	-0.231676	0.177361	-1.306239	0.2025
FDI**	0.014247	0.338289	0.042114	0.9667
GFCF(-1)	-0.040262	0.244130	-0.164922	0.8702
D(TO_DCPS)	0.001122	0.000518	2.165294	0.0394
D(TO)	0.714668	0.399349	1.789581	0.0856
D(GFCF)	0.750583	0.386293	1.943041	0.0625

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_DCPS	0.000113	0.000289	0.390866	0.6990
INF	-0.198915	0.150830	-1.318801	0.1983
FDI	0.012232	0.289992	0.042181	0.9667
GFCF	-0.034569	0.210188	-0.164467	0.8706

EC = GDPGR - (0.0001*TO_DCPS -0.1989*INF + 0.0122*FDI -0.0346*GFCF
)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	8.815256	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
			Finite Sample: n=40	
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092

Lead City University Ibadan DO NOT COPY

	Finite Sample: n=35	
10%	3.374	4.512
5%	4.036	5.304
1%	5.604	7.172

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.081363	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ALGERIA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 1, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:13
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.470178	1.500500	4.978460	0.0000
@TREND	0.014311	0.034160	0.418953	0.6784
D(TO_DCPS)	0.003051	0.059925	0.057282	0.0000
D(INF)	0.002027	0.076084	0.026638	0.9789
D(FDI)	0.000618	0.018612	0.007106	0.3520
CointEq(-1)*	-0.970242	0.175605	-5.525142	0.0000

R-squared	0.501418	Mean dependent var	0.075000
Adjusted R-squared	0.554676	S.D. dependent var	2.867239
S.E. of regression	2.117344	Akaike info criterion	4.442641
Sum squared resid	143.4606	Schwarz criterion	4.618587
Log likelihood	-75.96754	Hannan-Quinn criter.	4.504051
F-statistic	10.72733	Durbin-Watson stat	2.059544
Prob(F-statistic)	0.000049		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.342259	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.525142	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 1, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:15
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.470178	2.887224	2.587322	0.0152
@TREND	0.014311	0.113070	0.126571	0.9002
GDPGR(-1)*	-0.970242	0.198034	-4.899381	0.0000
TO_DCPS**	-0.001339	0.000822	-1.629164	0.1145
TO**	0.024039	0.077838	0.308834	0.7598
DCPS**	-0.143561	0.155379	-0.923939	0.3637
INF(-1)	-0.142857	0.081665	-1.749310	0.0912
FDI**	-0.528863	0.830599	-0.636725	0.5295
GFCF**	-0.074213	0.139509	-0.531958	0.5990
D(INF)	0.002027	0.090998	0.022272	0.9824

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_DCPS	-0.001380	0.000877	-1.572582	0.1270
INF	-0.147239	0.081439	-1.807972	0.0814
FDI	-0.545084	0.834104	-0.653497	0.5188
GFCF	-0.076489	0.139219	-0.549414	0.5871

EC = GDPGR - (-0.0014*TO_DCPS -0.1472*INF -0.5451*FDI -0.0765*GFCF
)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.342259	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
			Finite Sample: n=40	
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092

Lead City University Ibadan DO NOT COPY

	Finite Sample: n=35	
10%	3.374	4.512
5%	4.036	5.304
1%	5.604	7.172

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.899381	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

NIGERIA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 1, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:44
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.86632	4.045814	6.640522	0.0000
@TREND	-0.594904	0.096646	-6.155510	0.0000
D(TO_DCPS)	0.005732	0.174851	0.648294	0.5274
D(INF)	-0.083535	0.032505	-2.569879	0.0158
CointEq(-1)*	-0.781227	0.116823	-6.687283	0.0000

R-squared	0.599878	Mean dependent var	0.088585
Adjusted R-squared	0.562367	S.D. dependent var	4.353541
S.E. of regression	2.880036	Akaike info criterion	5.057922
Sum squared resid	265.4274	Schwarz criterion	5.233868
Log likelihood	-87.04259	Hannan-Quinn criter.	5.119332
F-statistic	15.99187	Durbin-Watson stat	1.971330
Prob(F-statistic)	0.000002		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	7.825958	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.687283	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 1, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:45
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.86632	10.55991	2.544180	0.0168
@TREND	-0.594904	0.220055	-2.703432	0.0115
GDPGR(-1)*	-0.781227	0.159225	-4.906433	0.0000
TO_DCPS**	0.003647	0.004803	0.759286	0.4540
INF(-1)	0.012192	0.058672	0.207801	0.8369
FDI**	-1.630614	0.733910	-2.221817	0.0346
GFCF**	-0.385375	0.188046	-2.049362	0.0499
D(INF)	-0.083535	0.045141	-1.850544	0.0748

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_DCPS	0.004669	0.006182	0.755147	0.4565
INF	0.015606	0.076385	0.204311	0.8396
FDI	-2.087247	1.114850	-1.872222	0.0717
GFCF	-0.493294	0.248023	-1.988906	0.0566

EC = GDPGR - (0.0047*TO_DCPS + 0.0156*INF -2.0872*FDI -0.4933*GFCF
)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	7.825958	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
			Finite Sample: n=40	
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092
			Finite Sample: n=35	
		10%	3.374	4.512

Lead City University Ibadan DO NOT COPY

5%	4.036	5.304
1%	5.604	7.172

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.906433	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

EGYPT

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 16:00
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.387578	0.434667	-3.192277	0.0034
@TREND	0.056997	0.019722	2.890033	0.0072
D(TO_DCPS)	-0.000174	0.058904	0.275509	0.5312
D(FDI)	0.673959	0.811351	0.734495	0.6325
CointEq(-1)*	-0.851806	0.138476	-6.151274	0.0000

R-squared	0.535285	Mean dependent var	0.026547
Adjusted R-squared	0.507120	S.D. dependent var	1.598523
S.E. of regression	1.122250	Akaike info criterion	3.148203
Sum squared resid	41.56166	Schwarz criterion	3.280163
Log likelihood	-53.66765	Hannan-Quinn criter.	3.194260
F-statistic	19.00562	Durbin-Watson stat	1.948113
Prob(F-statistic)	0.000003		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.650346	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.151274	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan Do NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 16:01
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.387578	3.315543	-0.418507	0.6787
@TREND	0.056997	0.068741	0.829155	0.4138
GDPGR(-1)*	-0.851806	0.164149	-5.189222	0.0000
TO_DCPS**	0.000350	0.000426	0.822690	0.4174
INF**	-0.015080	0.020935	-0.720328	0.4771
FDI**	0.272352	0.140039	1.944824	0.0616
GFCF**	0.153628	0.124069	1.238243	0.2256

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_DCPS	0.000411	0.000481	0.854281	0.4000
INF	-0.017704	0.023972	-0.738521	0.4661
FDI	0.319735	0.180074	1.775579	0.0863
GFCF	0.180356	0.134445	1.341478	0.1902

EC = GDPGR - (0.0004*TO_DCPS -0.0177*INF + 0.3197*FDI + 0.1804*GFCF
)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	6.650346	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
			Finite Sample: n=40	
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092
			Finite Sample: n=35	
		10%	3.374	4.512
		5%	4.036	5.304

Lead City University Ibadan DO NOT COPY

		1%	5.604	7.172

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.189222	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

OBJECTIVE 4B
SOUTH AFRICA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 1)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:22
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.58579	1.475512	7.174312	0.0000
@TREND	-0.256964	0.042852	-5.996573	0.0000
D(TO_BM)	0.007392	0.069427	2.549905	0.5417
D(INF)	0.846219	0.359255	3.118593	0.1942
D(GFCF)	0.448683	0.261831	1.713636	0.0976
CointEq(-1)*	-0.709143	0.156260	-7.738041	0.0000

R-squared	0.657044	Mean dependent var	0.056174
Adjusted R-squared	0.624891	S.D. dependent var	2.879876
S.E. of regression	1.763812	Akaike info criterion	4.077271
Sum squared resid	99.55305	Schwarz criterion	4.253218
Log likelihood	-69.39088	Hannan-Quinn criter.	4.138681
F-statistic	20.43543	Durbin-Watson stat	2.123520
Prob(F-statistic)	0.000000		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	10.47852	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-7.738041	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 1)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:23
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.58579	3.427924	3.088104	0.0045
@TREND	-0.256964	0.077506	-3.315408	0.0025
GDPGR(-1)*	-1.209143	0.189487	-6.381129	0.0000
TO_BM**	0.001796	0.000895	2.006719	0.0545
INF**	-0.323960	0.157297	-2.059541	0.0488
FDI**	-0.144783	0.317292	-0.456306	0.6517
GFCF(-1)	-0.369838	0.286034	-1.292989	0.2066
D(GFCF)	0.448683	0.449893	0.997310	0.3272

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_BM	0.001485	0.000752	1.973522	0.0584
INF	-0.267925	0.129032	-2.076418	0.0472
FDI	-0.119740	0.268268	-0.446344	0.6588
GFCF	-0.305868	0.244530	-1.250842	0.2213

EC = GDPGR - (0.0015*TO_BM -0.2679*INF -0.1197*FDI -0.3059*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	10.47852	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
		Finite Sample: n=40		
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092
		Finite Sample: n=35		
		10%	3.374	4.512
		5%	4.036	5.304

Lead City University Ibadan DO NOT COPY

		1%	5.604	7.172

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.381129	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ALGERIA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:41
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.366467	1.385364	4.595520	0.0001
@TREND	0.113824	0.041588	2.736979	0.0105
D(TO_BM)	-0.000625	0.169372	-4.523512	0.0002
D(INF)	-0.381246	0.531295	-1.223681	0.0036
D(FDI)	0.025921	0.427431	2.584173	0.7312
CointEq(-1)*	-0.988879	0.187295	-5.279802	0.0000

R-squared	0.558165	Mean dependent var	0.075000
Adjusted R-squared	0.525326	S.D. dependent var	2.867239
S.E. of regression	2.173575	Akaike info criterion	4.470279
Sum squared resid	155.9061	Schwarz criterion	4.602239
Log likelihood	-77.46502	Hannan-Quinn criter.	4.516336
F-statistic	13.95206	Durbin-Watson stat	2.046262
Prob(F-statistic)	0.000041		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.899473	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.279802	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:41
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.366467	3.064923	2.077203	0.0467
@TREND	0.113824	0.095419	1.192888	0.2426
GDPGR(-1)*	-0.988879	0.205686	-4.807701	0.0000
TO_BM**	0.000450	0.000565	0.797225	0.4318
INF**	-0.035284	0.066399	-0.531396	0.5992
FDI**	-0.331984	0.841887	-0.394333	0.6962
GFCF**	-0.232091	0.119654	-1.939685	0.0622

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_BM	0.000455	0.000562	0.810645	0.4242
INF	-0.035681	0.065649	-0.543512	0.5909
FDI	-0.335717	0.835941	-0.401604	0.6909
GFCF	-0.234702	0.106046	-2.213203	0.0349

EC = GDPGR - (0.0005*TO_BM -0.0357*INF -0.3357*FDI -0.2347*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	4.899473	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
		Finite Sample: n=40		
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092
		Finite Sample: n=35		
		10%	3.374	4.512
		5%	4.036	5.304
		1%	5.604	7.172

Lead City University Ibadan DO NOT COPY

t-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.807701	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

NIGERIA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 1, 1, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:49
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28.73879	4.343130	6.617068	0.0000
@TREND	-0.635762	0.100964	-6.296904	0.0000
D(TO_BM)	-0.004511	0.003395	-1.328925	0.1950
D(INF)	-0.096868	0.032504	-2.980203	0.0060
CointEq(-1)*	-0.777924	0.119022	-6.535959	0.0000

R-squared	0.622499	Mean dependent var	0.088585
Adjusted R-squared	0.573789	S.D. dependent var	4.353541
S.E. of regression	2.842202	Akaike info criterion	5.055282
Sum squared resid	250.4215	Schwarz criterion	5.275215
Log likelihood	-85.99507	Hannan-Quinn criter.	5.132044
F-statistic	12.77973	Durbin-Watson stat	1.760469
Prob(F-statistic)	0.000003		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	7.441333	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.535959	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 1, 1, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:50
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28.73879	10.41990	2.758067	0.0103
@TREND	-0.635762	0.211537	-3.005435	0.0057
GDPGR(-1)*	-0.777924	0.157722	-4.932247	0.0000
TO_BM(-1)	0.001483	0.003533	0.419700	0.6780
INF(-1)	-0.019708	0.054977	-0.358471	0.7228
FDI**	-1.311587	0.676764	-1.938029	0.0631
GFCF**	-0.407139	0.183681	-2.216551	0.0353
D(TO_BM)	-0.004511	0.004216	-1.070170	0.2940
D(INF)	-0.096868	0.043213	-2.241639	0.0334

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_BM	0.001906	0.004533	0.420569	0.6774
INF	-0.025334	0.068749	-0.368493	0.7154
FDI	-1.686009	1.007809	-1.672944	0.1059
GFCF	-0.523366	0.246604	-2.122294	0.0431

EC = GDPGR - (0.0019*TO_BM -0.0253*INF -1.6860*FDI -0.5234*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	7.441333	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
			Finite Sample: n=40	
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092
			Finite Sample: n=35	
		10%	3.374	4.512

Lead City University Ibadan DO NOT COPY

5%	4.036	5.304
1%	5.604	7.172

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.932247	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

EGYPT

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 16:04
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.132697	0.518015	4.117056	0.0003
@TREND	0.006999	0.017755	0.394213	0.6963
D(TO_BM)	0.000315	0.532102	2.752901	0.1025
D(GFCF)	0.263104	0.127315	3.267481	0.2639
CointEq(-1)*	-0.798117	0.126428	-6.312831	0.0000

R-squared	0.548130	Mean dependent var	0.026547
Adjusted R-squared	0.520744	S.D. dependent var	1.598523
S.E. of regression	1.106631	Akaike info criterion	3.120173
Sum squared resid	40.41288	Schwarz criterion	3.252133
Log likelihood	-53.16312	Hannan-Quinn criter.	3.166231
F-statistic	20.01491	Durbin-Watson stat	1.999891
Prob(F-statistic)	0.000002		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	7.004261	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.312831	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 16:04
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.132697	3.453569	0.617534	0.5417
@TREND	0.006999	0.070037	0.099934	0.9211
GDPGR(-1)*	-0.798117	0.154296	-5.172648	0.0000
TO_BM**	-0.000351	0.000284	-1.233052	0.2275
INF**	-0.007785	0.021749	-0.357926	0.7230
FDI**	0.477214	0.155325	3.072353	0.0046
GFCF**	0.082911	0.119913	0.691429	0.4948

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_BM	-0.000439	0.000371	-1.182643	0.2466
INF	-0.009754	0.026766	-0.364398	0.7182
FDI	0.597925	0.220796	2.708041	0.0112
GFCF	0.103884	0.144024	0.721291	0.4765

EC = GDPGR - (-0.0004*TO_BM -0.0098*INF + 0.5979*FDI + 0.1039*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	7.004261	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
			Finite Sample: n=40	
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092
			Finite Sample: n=35	
		10%	3.374	4.512
		5%	4.036	5.304
		1%	5.604	7.172

Lead City University Ibadan DO NOT COPY

t-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.172648	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

OBJECTIVE 4C

SOUTH AFRICA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 1)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:34
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.643794	1.306175	6.617640	0.0000
@TREND	-0.244625	0.043348	-5.643282	0.0000
D(TO_SMC)	0.000721	0.583629	4.036628	0.0008
D(GFCF)	0.851879	0.294836	2.889327	0.0074
CointEq(-1)*	-0.867458	0.158178	-7.380661	0.0000

R-squared	0.635615	Mean dependent var	0.056174
Adjusted R-squared	0.601454	S.D. dependent var	2.879876
S.E. of regression	1.818081	Akaike info criterion	4.137879
Sum squared resid	105.7734	Schwarz criterion	4.313826
Log likelihood	-70.48183	Hannan-Quinn criter.	4.199289
F-statistic	18.60638	Durbin-Watson stat	2.041007
Prob(F-statistic)	0.000000		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	9.532978	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-7.380661	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 1)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:35
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.643794	3.234495	2.672379	0.0124
@TREND	-0.244625	0.088283	-2.770920	0.0098
GDPGR(-1)*	-1.167458	0.194280	-6.009169	0.0000
TO_SMC**	0.000263	0.000180	1.464063	0.1543
INF**	-0.374130	0.158875	-2.354873	0.0258
FDI**	0.191201	0.302707	0.631637	0.5327
GFCF(-1)	-0.108091	0.230202	-0.469547	0.6423
D(GFCF)	0.851879	0.381644	2.232129	0.0338

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_SMC	0.000226	0.000159	1.419695	0.1667
INF	-0.320465	0.135103	-2.372014	0.0248
FDI	0.163775	0.251091	0.652255	0.5196
GFCF	-0.092586	0.200612	-0.461520	0.6480

EC = GDPGR - (0.0002*TO_SMC -0.3205*INF + 0.1638*FDI -0.0926*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	9.532978	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
		Finite Sample: n=40		
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092
		Finite Sample: n=35		
		10%	3.374	4.512
		5%	4.036	5.304

Lead City University Ibadan DO NOT COPY

1%	5.604	7.172	

t-Bounds Test		Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.009169	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ALGERIA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:17
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.579125	1.443406	4.558055	0.0001
@TREND	0.118894	0.042637	2.788545	0.0093
D(TO_SMC)	-0.005033	0.000692	3.882591	0.0000
D(INF)	-0.482517	0.253483	-4.203722	0.3751
D(FDI)	0.519232	0.420936	1.452813	0.0042
CointEq(-1)*	-0.956017	0.184641	-5.177721	0.0000

R-squared	0.548493	Mean dependent var	0.075000
Adjusted R-squared	0.515069	S.D. dependent var	2.867239
S.E. of regression	2.192887	Akaike info criterion	4.487970
Sum squared resid	158.6889	Schwarz criterion	4.619930
Log likelihood	-77.78346	Hannan-Quinn criter.	4.534028
F-statistic	13.41805	Durbin-Watson stat	2.082926
Prob(F-statistic)	0.000054		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.711848	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.177721	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:20
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.579125	3.288289	2.000775	0.0549
@TREND	0.118894	0.096559	1.231309	0.2281
GDPGR(-1)*	-0.956017	0.204246	-4.680722	0.0001
TO_SMC**	0.018323	0.053826	0.340414	0.7360
INF**	-0.057156	0.067740	-0.843756	0.4057
FDI**	-0.317856	0.849141	-0.374327	0.7109
GFCF**	-0.194964	0.122305	-1.594082	0.1218

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_SMC	0.019166	0.056629	0.338451	0.7375
INF	-0.059786	0.068216	-0.876415	0.3880
FDI	-0.332480	0.872500	-0.381066	0.7059
GFCF	-0.203934	0.114783	-1.776696	0.0861

EC = GDPGR - (0.0192*TO_SMC -0.0598*INF -0.3325*FDI -0.2039*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.711848	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
			Finite Sample: n=40	
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092
			Finite Sample: n=35	
		10%	3.374	4.512
		5%	4.036	5.304
		1%	5.604	7.172

Lead City University Ibadan DO NOT COPY

t-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.680722	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

NIGERIA

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 1, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:55
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	37.73813	5.489169	6.875018	0.0000
@TREND	-0.793274	0.120423	-6.587371	0.0000
D(TO_SMC)	-0.000714	0.427118	-2.538825	0.0246
D(INF)	-0.121797	0.033157	-3.673274	0.0010
CointEq(-1)*	-0.800898	0.116588	-6.869458	0.0000

R-squared	0.612357	Mean dependent var	0.088585
Adjusted R-squared	0.576015	S.D. dependent var	4.353541
S.E. of regression	2.834770	Akaike info criterion	5.026238
Sum squared resid	257.1495	Schwarz criterion	5.202184
Log likelihood	-86.47228	Hannan-Quinn criter.	5.087648
F-statistic	16.85003	Durbin-Watson stat	1.835163
Prob(F-statistic)	0.000001		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	8.258153	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.869458	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 1, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 15:56
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	37.73813	9.211996	4.096629	0.0003
@TREND	-0.793274	0.209258	-3.790891	0.0007
GDPGR(-1)*	-0.800898	0.157885	-5.072667	0.0000
TO_SMC**	-0.002626	0.002147	-1.223283	0.2314
INF(-1)	-0.020474	0.051890	-0.394563	0.6962
FDI**	-1.231792	0.636299	-1.935871	0.0630
GFCF**	-0.553530	0.161172	-3.434402	0.0019
D(INF)	-0.121797	0.046420	-2.623809	0.0139

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_SMC	-0.003279	0.002676	-1.225496	0.2306
INF	-0.025564	0.062573	-0.408544	0.6860
FDI	-1.538013	0.930591	-1.652726	0.1096
GFCF	-0.691137	0.214795	-3.217655	0.0033

EC = GDPGR - (-0.0033*TO_SMC -0.0256*INF -1.5380*FDI -0.6911*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	8.258153	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
			Finite Sample: n=40	
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092
			Finite Sample: n=35	
		10%	3.374	4.512
		5%	4.036	5.304

Lead City University Ibadan DO NOT COPY

		1%	5.604	7.172

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.072667	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

EGYPT

ARDL Error Correction Regression
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 16:09
Sample: 1986 2022
Included observations: 36

ECM Regression
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.999003	0.419045	2.384000	0.0239
@TREND	0.018841	0.017968	1.048583	0.3030
D(TO_SMC)	0.001593	0.027426	3.473202	0.0017
D(FDI)	0.271051	0.428538	4.710372	0.0000
CointEq(-1)*	-0.755027	0.121104	-6.234539	0.0000

R-squared	0.541953	Mean dependent var	0.026547
Adjusted R-squared	0.514193	S.D. dependent var	1.598523
S.E. of regression	1.114169	Akaike info criterion	3.133749
Sum squared resid	40.96526	Schwarz criterion	3.265709
Log likelihood	-53.40749	Hannan-Quinn criter.	3.179807
F-statistic	19.52253	Durbin-Watson stat	1.988570
Prob(F-statistic)	0.000003		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.831606	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.234539	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDPGR)
Selected Model: ARDL(1, 0, 0, 0, 0)
Case 5: Unrestricted Constant and Unrestricted Trend
Date: 05/29/24 Time: 16:09
Sample: 1986 2022
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.999003	3.131304	0.319037	0.7520
@TREND	0.018841	0.068186	0.276314	0.7843
GDPGR(-1)*	-0.755027	0.163643	-4.613866	0.0001
TO_SMC**	-0.000327	0.000311	-1.053030	0.3010
INF**	-0.020979	0.021154	-0.991712	0.3295
FDI**	0.533684	0.213078	2.504643	0.0181
GFCF**	0.076313	0.124123	0.614818	0.5435

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 5: Unrestricted Constant and Unrestricted Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TO_SMC	-0.000433	0.000450	-0.962004	0.3440
INF	-0.027786	0.027461	-1.011820	0.3200
FDI	0.706841	0.347466	2.034275	0.0412
GFCF	0.101073	0.156096	0.647508	0.5224

EC = GDPGR - (-0.0004*TO_SMC -0.0278*INF + 0.7068*FDI + 0.1011*GFCF)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	6.831606	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
		Finite Sample: n=40		
Actual Sample Size	36	10%	3.334	4.438
		5%	3.958	5.226
		1%	5.376	7.092
		Finite Sample: n=35		
		10%	3.374	4.512
		5%	4.036	5.304
		1%	5.604	7.172

Lead City University Ibadan DO NOT COPY

t-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.613866	10%	-3.13	-4.04
		5%	-3.41	-4.36
		2.5%	-3.65	-4.62
		1%	-3.96	-4.96

Lead City University Ibadan DO NOT COPY

Biodata

Personal Information

Full Name:	Victoria Olutofunmi OGUNDAIRO
Email:	olutofunmivictoria@gmail.com
Home Address:	1, Orange Street, Gloryland Estate, Ile-Ise Awo, Abeokuta, Ogun State
Place and Date of Birth:	Agege, Lagos State / 28th May, 1981
Nationality/ State of Origin/L.G.A:	Ado-Odo/Ota L.G. Ogun State, Nigeria
Name and Address of Next of Kin:	Ogundairo Samuel Olawale 1, Orange Street, Gloryland Estate, Ile-Ise Awo, Abeokuta, Ogun State

Educational Qualifications	**Dates**
Lead City University, Ibadan, Oyo State	2020 - 2025
Federal University of Agriculture, Abeokuta	2010 - 2012
Olabisi Onabanjo University, Ago-Iwoye	2004 - 2009
Eyinni Comprehensive High School, Iboro, Ogun State.	2000 - 2001

Academic Qualifications Obtained	**Date**
PhD (Economics)	2025
M. Agric. (Agric. Econs)	2012
B. Agric (Agric Econs)	2009
S.S.C.E.	2001

Working Experience with Dates	**Date**
McPherson University, Seriki Sotayo, Ogun State, Dept of Economics	2024-till date

Lead City University Ibadan DO NOT COPY

McPherson University, Seriki Sotayo, Ogun State, Registry Unit	2018-2024
Christ Kingdom Citadel Int'l College, Asero, Abeokuta.	2013-2018

Member of Academic Professional Bodies

Nigerian Economic Society	2025

Professional Qualification	**Date**
National Institute of Management of Nigeria (NIM)	2010
Association of Nigerian University Professional Administrators (ANUPA)	2023

Publication

- **Ogundairo V.O.** and Obisanya R.O. (2023). Human Capital Development and Economic Growth in Southern African Customs Union Member States. Lead City Journal of Economics, Vol.3 No. 1 pp. 156-171 https://journals.lcu.edu.ng/index.php/LCJE
- Obisanya R. O, Campbell O., Adesina O., Fashina, O.E, & **Ogundairo, V.O** (2023). The Relationship Among Poverty, Inequality and Economic Growth in Nigeria {1990-2020). International Journal of African Sustainable Development Research. Vol. 15 No. 2 ISSN: 2067-412
- M.U. Agbonlahor, S.A Adewuyi and **V.O. Ogundairo** (2016). Do Rural Smallholder Farmers Subsidize Farm Investments with Non-farm Income? A study of Vegetable Farmers. International Journal of Vegetable Science 22:3, 231-242

Conference attended with Dates

- Multidisciplinary International Academic Conference held at Lead City University, Ibadan. Theme: Innovative Research and Quality Education for Sustainable Development Oct 16-19, 2023
- 1st International Conference of College of Social & Management Sciences, McPherson University, Seriki Sotayo, Ogun State, Nigeria, 2020

Referees

1. Name: Dr. P.O. Afolabi
   Address: Registry Unit, Glorious Vision University, Ogwa, Edo State.
   Phone Number: 08027395105

Lead City University Ibadan DO NOT COPY

2. Name: Mr. Mobolaji Orobiyi
   Address: Bursary Unit, D.S. Adegbenro ICT Polytechnic, Itori, Ogun State.
   Phone Number: 08069291971

…… ……

Signature **Date**

Lead City University Ibadan DO NOT COPY

The University Compliance Certification

This is to certify that thesis written by Victoria Olutofunmi OGUNDAIRO with matriculation number LCU/PG/1865 in the Department of Economics, Faculty of Management and Social Sciences, Lead City University, Ibadan, is in full compliance with the approved University format and style.

…….. …….

Signature Date

Lead City University Ibadan DO NOT COPY