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ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
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**FINANCIAL DEVELOPMENT AND EXTERNAL TRADE IN SUB-
SAHARAN AFRICA: ARE THERE CAUSALITY
RELATIONSHIPS?**

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JUNE, 2023

ADDIS ABABA, ETHIOPIA

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DECLARATION

This is to certify that the thesis prepared by Yemisrach Lemma entitled: FINANCIAL DEVELOPMENT AND EXTERNAL TRADE IN SUB-SAHARAN AFRICA: ARE THERE CAUSALITY RELATIONSHIPS? and submitted in Partial Fulfillment of the Requirements for the award of Master of Science Degree in Economics (International Economics) complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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ACKNOWLEDGMENTS

First and foremost, I would like to thank the almighty God for he has given me grace, health, commitment and the strength to undertake such an important study and in all my endeavors. Second, I would like to express my sincere gratitude to my advisor, **Jonse Bane (PhD)** for his friendly advice, guidance, support encouragement, and discussion during my study. He helped me to come up with the thesis topic and guided me over almost a year of development. Thirdly, I would like to thank my friends **Fikire Mulugeta & Kedir Bekru** for encouraging me to pursue this study. Fourthly, I am as ever, especially indebted to my parents for their love, encouragement and for supporting me spiritually throughout my life. Lastly, but not least, I would like to thank **Addis Ababa University Department of Economics staff** for providing me good educational environment.

ABSTRACT

The relationship between financial development and external trade has become the interest of many scholars. This paper then explores the causality between them. Using data from a sample of 42 sub-Saharan African countries, the researcher estimated the causality between financial development and external trade using a dynamic panel data model. The findings uncover that financial development has a positive and significant impact on countries in Sub-Saharan Africa's external trade after controlling for the lag of external trade, foreign direct investment, government consumption, and population. It means that financial development encourages external trade, and its contribution is currently significant in sub-Saharan African nations. Although there is a low level of financial access, financial depth, and financial efficiency in the study region, its contribution is paramount. Similarly, the external trade for the current year is statistically significantly dependent on the external trade for the preceding year in sub-Saharan African nations. Moreover, foreign direct investment and government spending have a significant positive impact on the region's external trade. Besides, our findings also indicate a bidirectional causal relationship between financial development and foreign trade. Therefore, it's important to encourage Sub-Saharan nations to seek policies that will hasten the development of their banking sectors in order to increase their foreign trade, and it is also necessary to increase government expenditure on productive sectors and foreign direct investment to improve external trade.

Keywords: *external trade, financial development, dynamic panel data, sub-Saharan African*

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LIST OF ABBREVIATIONS

IMF	International Monetary Fund
GDP	Gross Domestic Product
GMM	Generalized Method of Moment
VAR	Vector Auto Regression
FEM	Fixed Effect Model
PMG	Pooled Mean Group
WB	World Bank
SSA	Sub-Saharan Africa
FDI	Foreign Direct Investment
WGI	Worldwide Government Indicator

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CHAPTER ONE: INTRODUCTION

1.1 Background

According to empirical growth studies, a country's level of participation in the global economy and its level of financial success are substantially tied to its growth trajectories. (Beck, 2002). The impact financial development has on external trade is mostly studied based on the five major functions of the financial sector suggested by (Levine, 1997), which are: (i) making it easier to trade and reducing risks by spreading investments and risk diversification; (ii) regulating leaders and imposing corporate control; (iii) attracting savings; (iv) enabling the interchange of products and services; and (v) providing information on profitable investments and allocating capital. Countries with good financial systems can specialize more easily because it takes less time and money to do things. Nations with a good banking system will be able to specialize more easily because they can easily trade with other countries. Countries without a good banking system may find it harder to specialize.

Well-functioning financial markets and institutions will expedite the development methods of a country by making reasonable resource allocations towards the most productive firms through customer screening, accepting savings from individuals and borrowing them from investors, and monitoring and managing firms to which the banks have provided credit for appropriate utilization (Cihak et al., 2016). The authors viewed financial development as an external determinant influencing a country's competitive advantage. The authors also investigated the relationship between finance's growth and global commerce, paying close attention to the financial sector's trade-enabling role, and realized that a developed financial sector reduces transaction costs and enables trade as well as specialization.

Conversely, academic studies also argue that financial development is predominantly endogenous and is influenced by a nation's commercial expertise. It is determined by whether a country specializes in a finance-intensive industry or not. When a country is best at the production and marketing of goods and services requiring huge funds, demand for the financial sector increases (Do & Levchenko, 2007). (Thuy et al., 2021). Studied how trading with other countries affects developing countries and discovered that it has a big effect on their financial

growth. But according to (Ezeibekwe, 2020), this good effect doesn't last forever and stops when trade openness hits a specific point. The idea of financial performance has many parts, so researchers argue about how it is connected with foreign trade. The way one affects the other differs from country to country based on the level of economic growth (Kiendrebeogo, 2012). Current research has shown that the way we quantify financial development affects the relationship (Sare, 2021)

1.2 Statement of the Problem

Economists are studying how financial development and external trade are connected because they both have a significant positive impact on economic growth. By looking at how they are related, we can see how they can affect the economy in different ways. (Kletzer & Bardhan, 1987) takes the lead to investigate the relationship between financial development and external trade by examining the impact of credit market shortcomings on the nature of countries' specialization and trade on produced goods and states that a country with low credit costs and/or developed banking systems will have a distinct advantage in the production of manufactured products. (Beck, 2002) is the first to empirically validate this proposed theory.

Notwithstanding the fact that multiple studies on the relationship between external trade and financial development have been conducted, the conclusions are contradictory. According to a worldwide study undertaken by (Zhuang, et al. (2010), half of the research revealed a one-way link between variables, while the remainder identified both directional relationships (Eicher et al., 2012). The different conclusions necessitate further examination. These variances could be due to methodological differences or various data types.

Recent studies on the finance-trade nexus in SSA concentrate on the indirect and/or borderline impact in addition to direct relationships. Interactions have been demonstrated to be dependent on proxies of trade and financial development. For example, Sare et al. (2018) investigated the impact of financial development on international trade in Africa and attempted to answer the question, "Does the measure of finance matter?" They discovered that the impact of financial development on trade varies depending on the measure used to proxy the variables and discovered a conflicting result between domestic credit and private credit, which were used as

proxies of financial development in the study. The outcome is also affected by trade proxies. (Asli et al., 1996). (Sare, 2021) used sample splitting and threshold estimation methods to evaluate the borderline influence of financial sector development on global trade and confirmed that the impact of financial development on trade is dependent on the achievement of a certain level of threshold; the same result is also confirmed by Yakubu using quadratic square terms.

Most of the studies are based on one-directional causality, specifically on the impact of financial development on international trade, including those focusing on SSA, and the outcomes are divergent. In consideration of these facts, this study intends to use the IMF's Financial Development Index to proxy financial development instead of depending on private credit because it provides comprehensive information on the various aspects of financial development in SSA, and this measure has not been applied in the finance-trade nexus of the region. It also focuses on studying if there is a bi-directional or uni-directional relationship between the variables, meaning whether the variables are causal to each other at the same time or not.

1.3 Objective of the study

1.3.1 General objective

The general objective of the study is to examine the causal relationship between financial development and external trade.

1.3.2 Specific objectives

- To examine the link between financial development and external trade
- To figure out whether there exists one directional or bi directional causality between financial development and external trade.

1.4 Significance of the study

The study's major goal is to study the relationship between financial development and external trade in SSA. The majority of the region's countries are having difficulty achieving global levels of development in the financial sector and external commerce. This study gives some information on policy initiatives suitable for enhancing economic development by following the direction of causality between the financial industry and external trade. This study could be utilized as a reference and foundation for future academic research.

1.5 Scope of the study

This study focuses on the causal link between financial development and economic growth in SSA through econometric analysis using secondary data. The study uses the Financial Development Index developed by the IMF to proxy for the financial development of the region. And also, the sum of exports and imports as a percentage of GDP is used to measure external trade since it is the most widely applied measure when it comes to cross-country analysis. The study will be limited to 20 years of data, from 2000 up to 2019, for 42 countries in the region. The recent years 2020 and 2022 are excluded due to a lack of data for most of the countries.

1.6 Limitations of the study

The time period of the study is limited to twenty years of data in order to incorporate most of the countries in the region. Another challenge the researcher faces when it comes to SSA is the lack of literature done exclusively for the region in relation to the causal link between financial development and external trade.

CHAPTER TWO: LITERATURE REVIEW

2.1 Theoretical literature review

This section focuses on key concepts, definitions and theories related to financial development and external trade and also measurements issues.

2.1.1 Financial Development

The term "Financial Development" refers to the expanding magnitude, productivity, and reliability of financial markets, as well as their greater availability, all of which may aid the economy in a wide range of ways (Guru & Yadav, 2019). The accessibility with which institutions of finance, markets, and mediators may handle data, compliance with agreements, and expenses related to transactions, allowing them to better carry out the core responsibilities of the financial sector in the economy, is referred to as financial sector development (Levine, 2005). Since we've discussed the progress of the financial sector, it's a good idea to understand what the financial sector is in an economy. "A section of the economy made up of firms and institutions that provide financial services to commercial and retail customers," according to the definition, this sector includes a diverse range of enterprises such as banks, investment firms, insurance companies, and real estate corporations" (Kenton, 2021).

Scholars have devised many methods for measuring financial development. Goldsmith made the first attempt in 1969 with the financial interrelation ratio (FIR), which is the ratio of the market value of the flow of instruments to total tangible wealth. Following this, numerous measures of financial development have evolved significantly during the last fifty years (Reid, 2021)

Even though measuring financial development is challenging due to the different dimensions and concepts, scholars have developed four dimensions of measurement that capture the two key components, namely the financial market and financial institutions, across time. Financial depth, access, efficiency, and stability are the four proxy factors. These proxies are used to quantify the five financial sector functions mentioned by (Levine, 1997). Researchers must assess the financial services supplied in relation to the five functions, although doing so directly is difficult (Reid, 2021). The following are the four dimensions to examine when analyzing financial development:

a) Financial Depth

Financial Depth is a measure of the magnitude of financial institutions. The two widely used measures of financial depth are Private Credit as a ratio of GDP and Liquid Liabilities Ratio. Private Credit is deposit money banks credit provided to the private sector as a percentage of GDP (Beck, 2002). According to the author, credit provided to government agencies, government enterprises, and central banks is not included, making it the most widely used proxy and capturing the major function of the financial sector, which is mobilizing savings and allocating resources to the economy's real sector. Liquid Liabilities are the sum of currency and demand liabilities as well as interest-bearing obligations of banks and non-bank financial intermediaries expressed as a percentage of GDP. This measure has been challenged for having an issue with duplicate counting and including credits supplied to the public sector (Kim, et al., 2010). M2, a broad measure of money stock and a typical proxy, is the third variable. However, it has a weakness in that it does not capture the primary purpose of the financial sector, which is mobilizing savings and channeling them to the private sector (Kiendrebeogo, 2012)

Three stock market development indicators have been developed to measure the financial market (Demirgüç-Kunt & Levine, 1996). The first is to compare stock market capitalisation to GDP to determine size. The second metric is Market Liquidity, which is calculated as the value of stock market transactions as a percentage of GDP. The third metric is market volatility, which is calculated using a twelve-month rolling standard deviation estimate based on market returns.

b) Financial Access (Inclusion)

According to (Sarma, 2011), "Financial Inclusion" is described as a process that guarantees all members of an economy have easy access to, and use of, the formal financial system. A well-functioning financial system provides financial services to a high proportion of a country's enterprises and individuals (Levine, et al., 2012). Financial inclusion is a multifaceted topic that necessitates a metric that can encompass all of its facets. (Sarma, 2011) created a Financial Inclusion Index (FDI) that provides evidence for financial inclusion from multiple perspectives, including accessibility, availability, and utilization of banking services. Despite the fact that it incorporates a variety of dimensions, the number of bank accounts per 1,000 adults is the most generally used indicator of financial inclusion for financial institutions.

c) Financial Efficiency

According to the World Bank (2005), "financial efficiency" is defined as the financial sector's ability to provide excellent services and goods at a price that is affordable. Operating costs, lending spreads, days to clear cheques, return on assets, net interest margins, and concentration ratios are all indices of financial institution efficiency (Calderón, et al., 2006)). For financial market proxies, the main measure is the ratio of turnover to capitalization in the stock market, in the sense that the easier it is to execute transactions in the stock market, the more efficient the market is (Sarma, 2011)

d) Financial stability

A stable financial system performs its functions of resource allocation, risk management, mobilization, and trade facilitation successfully (World Bank, 2006). The Z-score is the most accurate measure of financial stability since it provides information on the volatility of returns or risks (Mlachila, et al., 2016)). According to the authors, it accurately depicts bank reliability

2.1.2 External Trade

International organizations like the WTO are promoting more integration into the world economy, especially for developing countries (Siddiqui, 2016). In doing so, trade openness has been enhanced for the last 29 years. (Calderon et al., 2020). External trade is also one of the

International trade (external trade) is described as "the purchase and sale of goods and services by businesses from various countries." The international marketplace buys and sells consumer products, raw materials, food, and machinery. Researchers have used many methods to assess a country's level of integration into the global economy. The majority of recent researches have concentrated on trade volume and/or value-based measurements of international transactions. The most commonly used indicator is trade openness, which is calculated as the total of imports and exports as a proportion of GDP. The other extensively used measure of international trade is the volume of exports of Goods and services, which represents the value of all Goods and services sold to the rest of the world. In this paper, we intend to use trade openness as a measure of integration to the world economy.

2.1.3 Financial Development and external Trade

Despite the fact that international trade theories do not include financial development, contemporary scholars have emphasized the relationship between the two variables in determining a country's comparative advantage (Susanto et al., 2011). The important question is (a) whether financial development derives from external trade or (b) whether external trade explains financial sector expansion. The first theory argues that under identical technology and factor endowments, countries could have a comparative advantage when external finance is required for the production and trade of goods and services (Kletzer & Bardhan, 1987). Credit market imperfections due to government risks or institutional capabilities to enforce contracts, according to the authors, will have a higher influence on the volume of foreign trade. The other aspect of comparative advantage is liquidity limitations. Industries involved in export trade will confront a lack of finance if a country's financial sector is inadequate in mobilizing savings and channeling them to sectors that rely on external finance; as a result, the number of enterprises involved in export trade will shrink. (Chaney, 2005). The growth of a country's financial system has a substantial impact on its export performance since entering the export sector has greater up-front costs that are difficult to finance externally unless a country has a well-functioning financial sector (Becker et al., 2013). The pattern of trade is also affected by the financial sector's ability to diversify risk (Baldwin, 1989). The development of the financial sector allows a country to specialize in risky goods since it has the advantage of access to a decreased risk premium.

The second argument is that financial development is determined by a country's specialization in trade (Do & Levchenko, 2007). The authors evidenced that demand for financial sector intervention will rise for a country which have a comparative advantage in the production and trade of financially dependent goods. According to (Rajan & Zingales, 1998), existing firms and interest groups have the intention of blocking financial sector development thinking it will provide opportunity for new entrant firms to join economic activities, which results in more competition and then the reduction of their rents. The authors suggest that openness to trade together with openness to capital flows will weaken the power of the incumbent firms and then enhance financial development (Rajan & Zingales, 1998).

On the other hand, the relationship between financial development and external trade differs with the level of economic development. For developing countries, the development of the financial sector has a significant causal relationship with international trade compared to developed countries (Kiendrebeogo, 2012). According to (Susanto, et al., 2011), the positive impact of financial development on the export performance of manufacturing and agricultural sectors in developing countries is greater than that of advanced countries.

Recently, studies on the relationship between financial development and international trade have started to focus on indirect and threshold issues. The impact of financial development, whether positive or negative, depends on the attainment of a certain level (Sare, 2021). When it comes to the indirect impact of financial development on international trade (Sare et al., 2018), they studied the channel through which it impacts trade and came to the conclusion that financial development has a dampening effect on external trade, and this impact is reduced with the development of the service sector.

2.2 Empirical literature review

Based on panel data analysis (Beck, 2002) confirmed the theoretical argument of (Kletzer & Bardhan, 1987). Using a sample of 65 countries using 30 years of data on the manufacturing sector and applying an econometric model of the Generalized Methods of Moments (GMM) estimators, (Beck, 2002) found a positive and significant causal relationship between financial development and external trade in manufactured commodities. Based on the results of the model, the author confirmed the positive impact financial sector development has on the export performance of financially intensive sectors and also on overall economic growth. An industry-based analysis of (Svaleryd & Vlachos, 2002) built a model that considers the financial sector as one of the factor endowments of a country and uses the total value of stock market trade relative to GDP as a measure of financial market development. The study evidenced that the development of the financial sector results in an increase in mobilization and channeling of savings to the private sector, solving the liquidity problem of firms, which in turn directs the specialization pattern of a country towards external finance-intensive sectors. In studying the link between financial shocks and trade finance by applying matched bank firm data (Amiti &

Weinstein, 2011), it was confirmed that the health of the financial sector determines the export performance of firms in a country; that is, shocks in the financial sector negatively affect exports.

Unlike most of the above-mentioned empirical works which focus on the manufacturing sectors, (Susanto, et al., 2011) studied the effect of financial development on trade of both agricultural and manufactured products. Applying the Fixed Effects Model (FEM) on a data set of 49 countries for the period of 1980 and 2008 the authors found that trade of both sectors of the economy are positively influenced by the development of financial sector with at a greater intensity for the manufacturing sector. And also came up with different result for the developed and developing countries with a profound impact of financial development in developing countries than in the developed ones.

Diverging the focus of attention from cross country to specific country analysis. (Awojobi, 2013) conducted a time series analysis to answer the question that ‘‘Does trade openness and financial liberalization foster growth in Greece?’’ using 50 years of data and came up with a conclusion that an indirect positive impact of financial development on trade of the Greece economy. (Kar, et al., 2014) used monthly data to investigate causal link between financial development and openness to trade for the period of 1989-2007 in Turkey and found a one directional causality which runs from financial development to trade.

All of the preceding literary works, whether country-specific, cross-country, or regional in scope, are concerned with unidirectional causality extending from financial development to trade. However, the debate about the relationship between these macroeconomic variables does not stop here. There are additional studies that look at causality in the opposite direction, from international trade to financial development. For instance, (Kim, et al., 2010) studied the dynamic effect of international trade on financial development using the Pooled Mean Group (PMG) method. The study sampled 88 countries for the period spanning from 1960 to 2005. The analysis ends up with a different result across time and region. In the short run, trade openness imposes a negative impact on financial development, but the reverse is true for the long run. Based on region, this relationship is confirmed for developing countries. Similarly, regional analysis done by (Samba & Yan , 2009) for seven East Asian countries using the VAR time series method confirms causality running from external trade to financial development.

(Gries et al., 2009), came up with a different argument by analyzing the relationship between international trade, financial development, and economic development for 16 SSA countries and concluded that the financial sector and international trade move the economy back and forth slowly, and the result also suggests no indirect relation between financial development and trade openness for most of the countries studied.

(Kiendrebeogo, 2012) examined the causal relationship between financial development and international trade for developed and developing countries using panel data analysis and found two-directional causality, and the result became more evident for the developing countries compared to the advanced countries.

(Babatunde, 2012) examined the link between financial development and trade in the case of SSA for manufactured products. The study is conducted for a sample of 22 countries in the region using 35 years of data applying both the FEM and GMM estimators, but the test result does not confirm the causal relationship suggested by Beck between the two variables.

In summary, the various empirical studies result in different relationships between financial development and external trade. This study will investigate the possible interconnection between the two variables. We try to add to the existing body of knowledge by examining any causality relationship using the total import and export of the region of SSA and measuring financial development with the more recent and comprehensive proxy.

2.2.1 Financial Development and External Trade of SSA

In general, Africa's financial sector is characterized as small in size, highly concentrated, and with poor intermediation efficiency (Beck, 2011). When we came to SSA, following the global financial liberalization effort since the late 1980s, there had been significant financial deepening in the region, even though it was only evidenced in the banking sector (Soumar et al., 2021). The author also showed that despite the reform, SSA's financial sector performance lags behind other regions. The banking sector is also inefficient in performing its basic function, which is mobilizing the finance required for development. According to the US Department of Treasury (2003), the domestic saving rate in the SSA is recorded as being the lowest compared to other developing regions, which account for only 12% of total GDP. According to World Bank data on

ease of doing business in 2019, most of the countries in SSA ranked among the least likely to get credit. According to the report, the region is the most expensive to do business in. The US Department of Treasury (2003) asserts that policy issues in implementing the reform are one of the challenges in the sector, which is inadequate supervision of law enforcement and adherence to international compliance issues. Moreover, resource allocation patterns are based more on political issues than economic reasons, which results in borrowing from non-productive segments of the economy (Ncube, 2007).

As a major source of foreign exchange, Africa's economy is highly dependent on external trade. Accordingly, trade openness has increased on the continent since the 1980s, specifically in SSA (Moussa, 2016). To study the trade integration pattern of SSA, Calderon et al., (2020) used trade volume, patterns of trade concentration across products and markets, natural resource dependence of exports, patterns of sectoral trade (primary goods and manufacturing goods), and patterns of regional trade. According to the study, the region's participation in the global economy has increased over time. In 2020, total trade value as a percentage of GDP will be about 50% in SSA, compared to about 60% for East Asia and the Pacific and 63% for the Middle East and North Africa, indicating that SSA is lagging behind. Besides, exports from the region account for only 3% of world trade despite their fast-growing pattern (World Bank, 2022). According to (Schmieg, 2016), SSA contributes only 1.7% of world trade, even though external trade plays a significant part in the region's GDP. According to World Bank data on SSA export and import of product groups in 2020, the region's exports are comprised of 38% raw materials, 16.63% consumer goods, and 6.99% capital goods, which is low compared to other regions. This study aims to answer the question of whether the relationship between financial development and external trade goes in both directions, rather than one affecting the other.

2.3 Conceptual Framework

As we have discussed in the theoretical and empirical literature, there is no common consensus on financial development and external trade. Most of the researchers argue for the existence of causality from finance to trade in SSA; for instance, (Amiti & Weinstein, 2011) and (Svaleryd & Vlachos, 2002) have evidenced that financial development is an endowment that shapes a country's comparative advantage. On the other hand, some others argue that causality runs from trade to finance (Soumar et al., 2021) Trade openness has a significant positive impact in SSA. In some rare cases, no causal relationship is also confirmed, like in the study of (Babatunde & Fowowe, 2010). This study focuses on the bidirectional causality between financial development and external trade.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Data Type and Sources

Panel data analysis from a sample of 42 SSA nations for the period 2000 - 2019 is utilized to examine the causal link between financial development and foreign trade. The data utilized in this study is entirely secondary and comprises variables evaluating the Sub-Saharan economy's financial development and foreign trade. World Development Indicators (WDI), the International Monetary Fund (IMF), and World Governance Indicators (WGI) are used in the study. Panel data was utilized in the study because it provides a researcher with a high number of data points, which enhances the efficiency of econometric estimates and allows the researcher to analyze many critical economic problems that cannot be handled using cross-sectional or time series data sets.

3.2 Methodology

The method used in this study is the widely used method in causal relationships which is Generalized Method of Moment (GMM) developed by (Arellano & Bond, 1991) & (Blundell & Bond, 1998). The GMM approach is ideal for our investigation since we are employing a dynamic panel with a small Time T and a big N. Furthermore, it aids in dealing with regressor endogeneity when the independent variables are not exactly exogeneous. To investigate causality in a bivariate panel, the Vector Auto Regression (VAR) approach is used, as described by (Dumitrescu and Hurlin 2012), which gives a causality test in a panel data setting. The model is described below.

$$EX_{i,t} = \beta_1 + \sum_{j=1}^k \rho_{1,j} EX_{i,t-j} + \sum_{j=1}^k \delta_{1,j} FD_{i,t-j} + \theta_1 CV_{i,t} + \tau_{1,j} + \phi_{1,i} + \varepsilon_{1,i,t} \dots\dots\dots (1)$$

$$FD_{i,t} = \beta_2 + \sum_{j=1}^k \delta_{1,j} EX_{i,t-j} + \sum_{j=1}^k \delta_{2,j} FD_{i,t-j} + \theta_2 CV_{i,t} + \tau_{2,i} + \phi_{2,i} + \varepsilon_{2,i,t} \dots\dots\dots (2)$$

Where $EX_{i,t}$ represents external trade, $FD_{i,t}$ is financial development τ_i refers to country-specific effect where as ϕ_i represents time specific factors, $\varepsilon_{i,t}$ represents normally distributed error terms, $t = 1 \dots\dots\dots T$ time periods $i = 1 \dots\dots\dots$ Number of countries, $CV_{i,t}$ represents control variables which are other factors related to external trade in equation 1 and financial development in equation 2. We control for government effectiveness, population, net inflows of

FDI, and government consumption. This model is used by other researchers in studying causal relationships [(Akinlo, 2019); (Kahouli, 2018)].

In order to correct endogeneity & eliminate the fixed effects (τ_i) which are correlated with independent variables we take the first difference of equation 1 & 2 which is the Difference GMM method developed by (Arellano & Bond, 1991) and it is estimated as follows:

$$\Delta EX_{i,t} = \sum_{j=1}^{K-1} \rho_{1,j} \Delta EX_{i,t-j} + \sum_{j=1}^{k-1} \delta_{1,j} FD_{i,t-j} + \partial_1 \Delta CV_{i,t} + \Delta \phi_{1,i} + \Delta \varepsilon_{1,i,t} \text{-----(3)}$$

With the following linear moment restriction:

$$E[EX_{i,t-s} \Delta \varepsilon_{i,t}] = E[FD_{i,t-s} \Delta \varepsilon_{i,t}] = 0 \text{ for } s \geq 2 \text{ and } t = 3 \dots \dots \dots T \text{-----}$$

(4)

Where t-s is any lagged values of the dependent variables.

But this system brings about endogeneity problem since the differenced error terms would be correlated with the lagged values of the dependent variables & it also accounts for small sample bias (Levine , et al., 2000). To solve such problem, (Blundell & Bond, 1998), came up with System GMM which introduced more instrument variables to improve efficiency and transforms the instruments to make them uncorrelated with the fixed effects., also reduces small sample bias. In addition to the restriction on equation (5) this estimator uses the following moment conditions:

$$E[\Delta EX_{i,t-1}(\phi_i + \varepsilon_{i,t})] = E[\Delta FD_{i,t-1}(\phi_i + \varepsilon_{i,t})] = 0 \text{ for } t = 3 \dots \dots \dots T$$

To check for the validity of the instruments we use the (Hansen, 1992) J test of over-identifying restriction and to examine whether the error terms are autocorrelated the serial correlation test is employed.

3.3 Variable description and measurement

3.3.1 Measuring Financial Development

In examining the Finance-trade nexus, researchers utilized private credit over GDP, total credit over GDP, and liquid liabilities over GDP (Caporale , et al., 2022). According to (Pham, et al., 2021), the ratio of private credit to GDP is the most relevant statistic for measuring financial progress in developing countries. Because the private sector directs its finances to more profitable projects than the public sector, credit to the private sector as a percentage of GDP is widely utilized as the major financial proxy in many studies. [(Beck, 2003); (Caporale , et al., 2022)]. This study plans to utilize the Financial Institution Index, which is a subset of the Financial Development Index produced by (Svirydzenka, 2016), to proxy financial development. It assesses many different aspects of financial development, namely financial depth, financial efficiency, and financial access for the country's financial institutions and markets. Banks, insurance firms, mutual funds, and pension funds are measures of financial institutions, while bond and stock markets are measures of financial markets. These financial development indexes aggregate the depth, access, and efficiency of financial institutions and markets. Private sector credit to GDP, pension fund assets as a ratio to GDP, mutual fund assets as a ratio to GDP, and insurance premiums (both life and non-life) as a ratio to GDP comprise the financial institution depth index. Bank branches per 100,000 adults and ATMs per 100,000 adults are indices of access to financial institutions (financial institution access index). The financial institution efficiency index compiles data on net interest margin, lending-deposit spread, non-interest revenue to total income, overhead expenses to total costs, return on assets, and return on equity. The financial institution index is calculated by adding the financial institution access, depth, and efficiency indexes. Stock market capitalization as a percentage of GDP, traded stock as a percentage of GDP, international debt securities of the government as a percentage of GDP, total debt securities of financial corporations as a percentage of GDP, and total debt securities of non-financial corporations as a percentage of GDP comprise the financial markets depth index. Markets for financial instruments The Access Index combines statistics on the proportion of market capitalization outside of the top ten largest enterprises as well as the total number of debt issuers per 100,000 people (domestic and external, non-financial and financial corporations). Finally, the stock market turnover ratio provides information on the financial market efficiency

index. The financial market index is the sum of financial market access, financial market depth, and financial market efficiency. (Svirydzenka, 2016). This recent measure has started to be used by researchers in studying the finance-growth nexus (see (Mlachila, et al., 2016) ; (Poghosyan, 2022)

3.3.2 Measures of External Trade

To measure external commerce, we utilize trade openness, which is the ratio of the total of goods and services exports and imports to GDP. It shows the degree of actual exposure to trade contacts and takes into account the level of integration that really happens. It is often used by academics in trade literature, for instance, (Do & Levchenko, 2007), (Sare, et al., 2018), ((Ho & Iyke, 2021)).

For robustness, we also include Control variables such as, total population (POP), foreign direct investment (FDI), government consumption, and institutional quality.

Table 3. 1 : Description of variables

Variables	Proxy	Description	Unit of measurement	Source
Financial development	Financial development index	Financial institution index	Index	Global Financial Development Database
External trade	Trade openness	The ratio of total trade (exports and imports) to GDP	%	World Development Indicators
Control variables	Government Consumption	General government final consumption expenditure (% of GDP)	%	World Development Indicators
	Foreign direct investment	The ratio of foreign direct investment, net inflows to GDP	%	World Development Indicators
	Institutional quality	Government effectiveness index	%	World Development Indicators
	Populaion	Total population	Total number	World Development Indicators

CHAPTER FOUR: RESULT AND DISCUSSION

In this chapter, the researcher employs a range of methodologies to convey the evaluation of financial growth and international commerce in SSA states. The initial stage in economic and statistical analysis is to investigate using descriptive statistics. These statistics provide a thorough description of the statistical features of the data through the use of summary statistics (measures of central tendency and measures of dispersion) and graphs to represent the connections between variables and provide preliminary support for the given hypothesis. Descriptive statistics are crucial to this study because they enable us to clearly comprehend the patterns in our key variables by demonstrating how financial development and external trade variables are distributed differently across SSA nations over time. The second step is to talk about the anticipated outcomes that were outlined in the previous chapter. The estimated results that we anticipated in Chapter three are discussed in the second step. In this regard, we start by estimating our baseline dynamic model using the one- and two-step difference GMM and then the final model using the one- and two-step system GMM estimator to confirm the consistencies of our estimator. Finally, in the third step of this chapter, we examine the causal direction of financial development and external trade and discuss the finding's connection with existing theoretical and empirical literature for its rationality. More crucially, this section explores the potential relationship between financial development and external trade in SSA nations throughout time using dynamic panel data.

4.1 Descriptive statistics

In this chapter, the researcher employs a range of methodologies to convey the evaluation of financial growth and international commerce in SSA states. The initial stage in economic and statistical analysis is to investigate using descriptive statistics. These statistics provide a thorough description of the statistical features of the data through the use of summary statistics (measures of central tendency and measures of dispersion) and graphs to represent the connections between variables and provide preliminary support for the given hypothesis. Descriptive statistics are crucial to this study because they enable us to clearly comprehend the patterns in our key variables by demonstrating how financial development and external trade variables are distributed differently across SSA nations over time. The second step is to

This portion of the study presents the trends and summary statistics of the study variables that were employed in the estimation. The variables mentioned here include financial development indicators proxied by the financial institution index, which is made up of financial access, financial depth, and financial efficiency; trade openness (external trade); government consumption; government effectiveness (an indicator for institutional development or quality); population; and foreign direct investment. A simple line graph has been used to show the cross-sectional trends of those variables for the last twenty years (2000–2019). The 42 SSA countries evaluated across regions from 2000 to 2019 are compared in this part using Figure 4.1 to Figure 4.4 and Table 4.1, which show trends, averages, standard deviations, maximum and lowest values, and the number of observations for selected variables.

Theories and empirics about external trade and financial development describe the link between external trade and financial development while adjusting for the other economic factors stated above. To explain such realizations, a line graph depicting the link between financial development and foreign commerce is investigated, with the benefit of employing disaggregated financial institution indexes for financial efficiency, financial access, and financial depth. Even with categorized financial development indicators, the connection between the two variables often exhibits co-movement (see Figs. 4.1–4.4). Although the lines graph in Figs. 4.1 to 4.2 do not directly visualize what other things threaten the growth in international trade in SSA nations,

which makes it a subject of discussion in the empirical analysis, it currently shows a clear positive relationship between financial indicators and international trade.

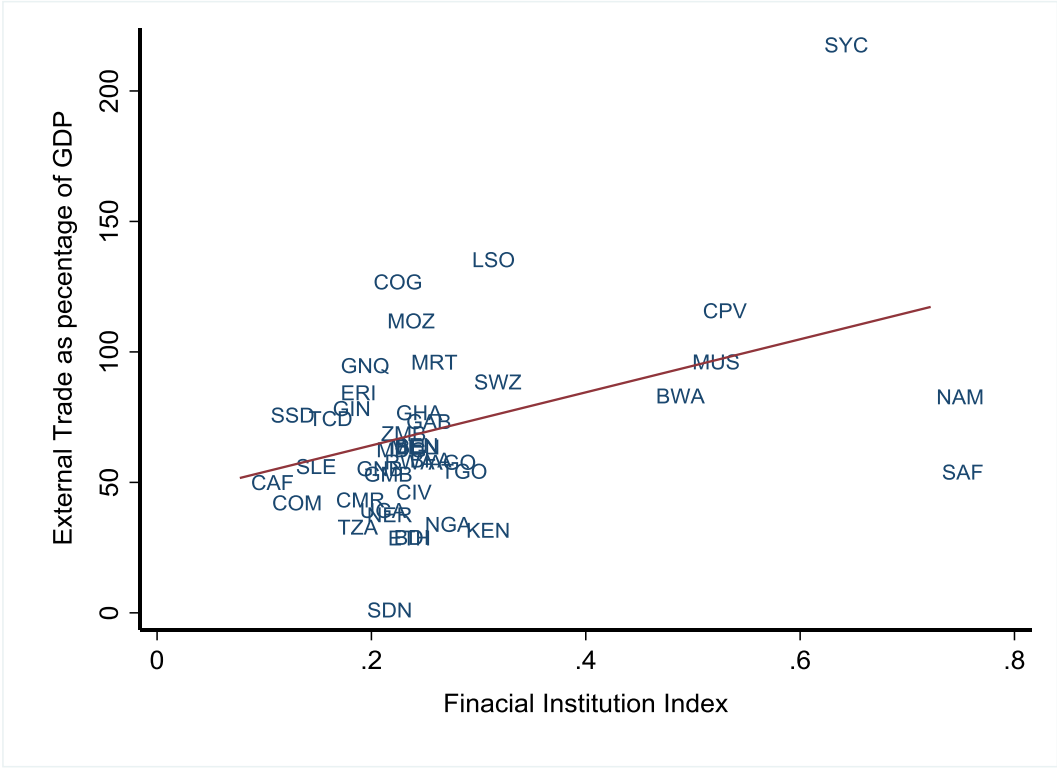


Figure 4. 1 Reduced-form relationship between external trade and financial institution index

Source: Authors computation using STATA

Figure 4.1 depicts the simplified version of the association between average financial institution indices and foreign trade for a sample of SSA states from 2000 to 2019. This Figure depicts the prevalence of variability. Countries like as Namibia, South Africa, Capo Verde, Botswana, and Mauritius, for example, rank high in terms of financial institution index and considerable international commerce. These countries, especially Namibia, Botswana and South Africa are resource intensive countries. Similarly, countries such as republic of Congo, Lesotho, and Mozambique have large international trade with low financial institution index. Countries such as republic of Congo and Lesotho’s main exporting item are diamonds and, hence they have large external trade compared to other countries. On the other hand, countries such as Ethiopia

Sudan, Kenya, Tanzania, Gambia and etc. are on the low stages in both external and financial economic development.

In terms of financial efficiency index, as can be observed from Fig 4.2, many of the SSA are on better stage except Comoros and Central African Republic. Countries such as Mauritius, South Africa, Seychelles, and Cabo Verde are much better than other countries.

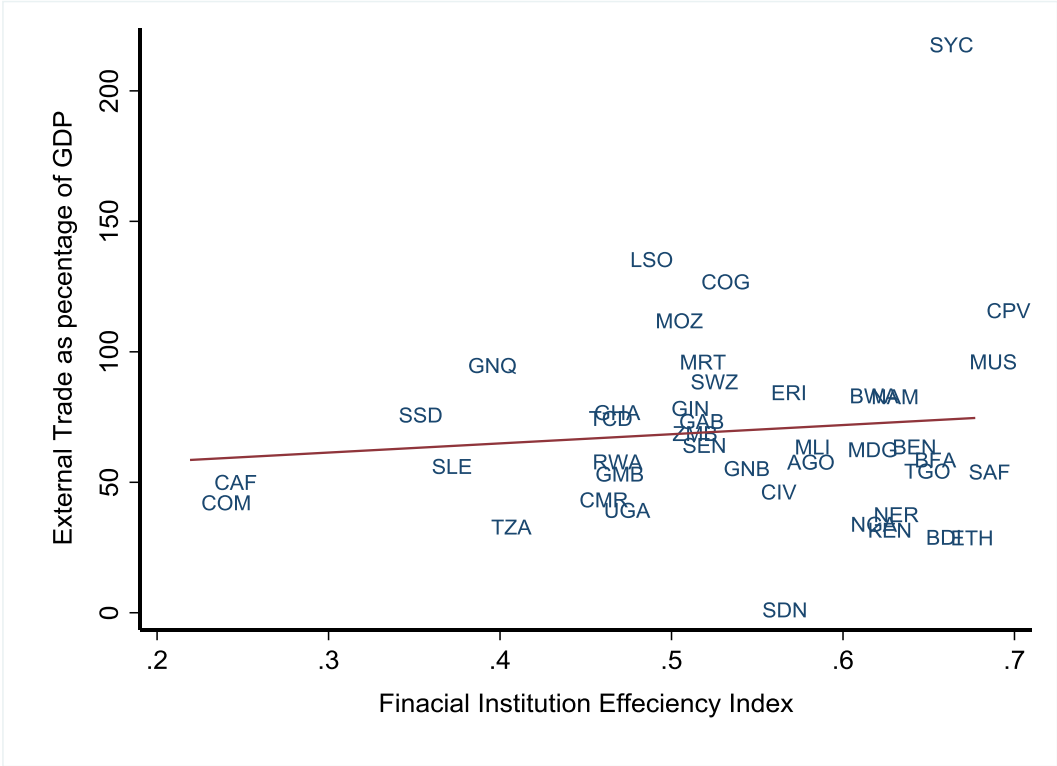


Figure 4. 2 Reduced-form relationship between external trade and financial institution efficiency index

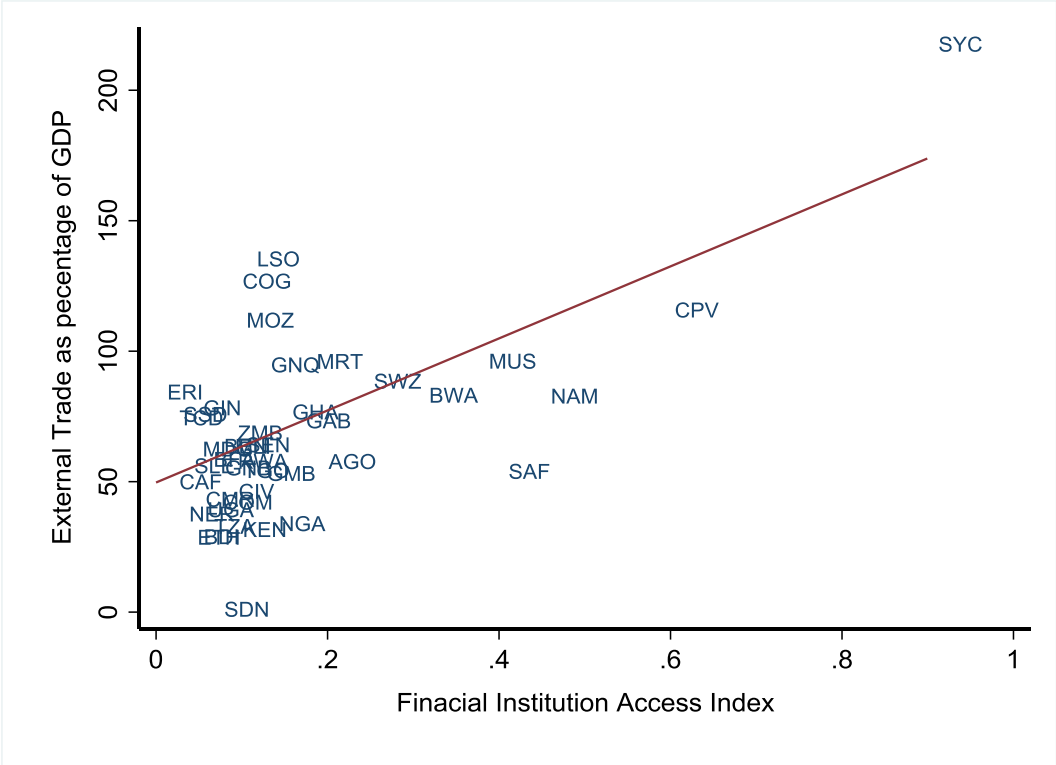


Figure 4. 3 Reduced-form relationship between external trade and financial institution access index

Source: Authors computation using STATA

Seychelles' population is of little, and it is the best country to have best financial efficiency and international trade from SSA nations as observed in Fig 4.2. Similarly, in terms of financial depth and financial access, comparatively SSA generally has less access to financial services and low level of financial depth as can be observed from Fig 4.3 and Fig 4.4.

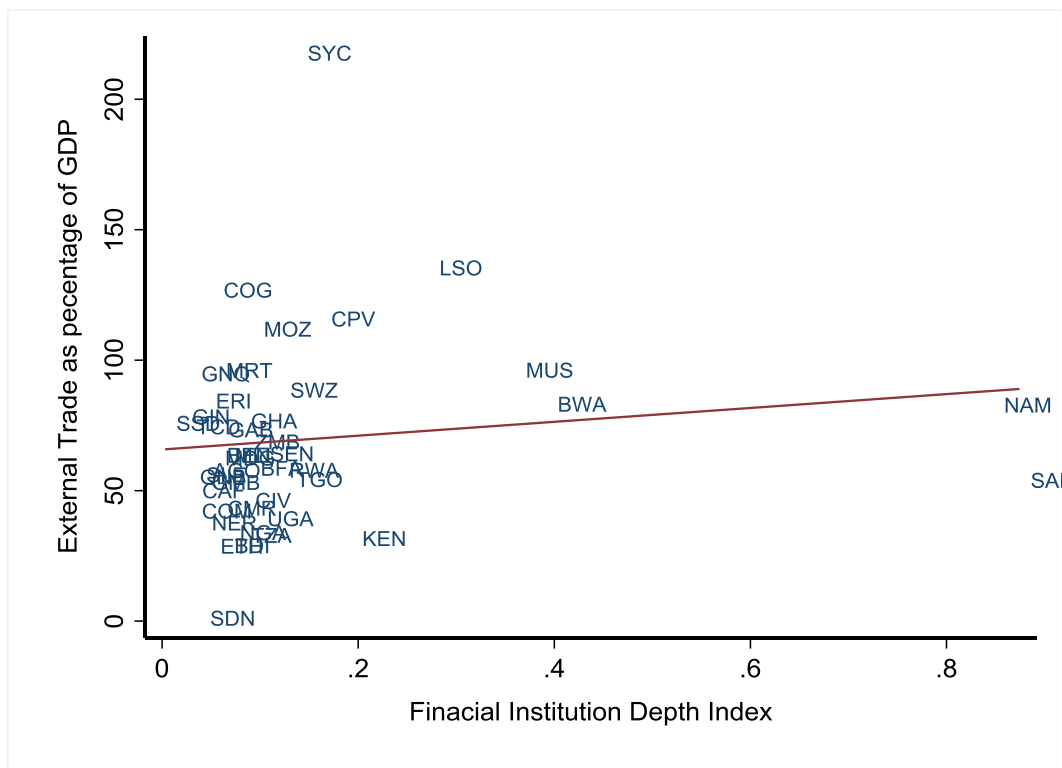


Figure 4. 4 Reduced-form relationship between external trade and financial institution depth index

Source: Authors computation using STATA

Seychelles, Cap Verde, Botswana, Namibia, and other resource-rich nations continue to outperform in terms of financial access and depth. These countries also fared well in terms of international commerce. In general, greater financial development is advantageous for equitable development in SSA since it increases deposits and loans as well as their accessibility and increases financial sector efficiency. It aids in circulating savings and directing money toward useful ends, such as by giving launch funding for creative businesses. In turn, such businesses make it easier to allocate resources more effectively, which raises total productivity and increases the international market. Additionally, financial depth also facilitates the development of a wider range of goods and services, enhances risk management, facilitates payments, and aids lenders in better customer monitoring. It also offers tools, such as insurance plans, and knowledge that can assist households and businesses in dealing with unfavorable situations, ensuring more consistent consumption and investment. However, the trends show that, although

the financial efficiency of SSA nations has advanced significantly over the past two decades, financial access and financial depth remain significantly lower.

Table 4. 1 summary Statistics Result for a sample of 42 Sub-Saharan countries over a period of 2000 to 2019

Variable	Obs	Mean	Std. Dev.	Min	Max
External Trade as % of GDP	840	69.90	36.57	1.22	225.02
Financial Institution Index	840	0.22	0.14	0.00	0.73
Financial Depth Index	840	0.11	0.17	0.00	0.88
Financial Efficiency Index	840	0.49	0.14	0.00	0.79
Financial Access Index	840	0.10	0.15	0.00	0.90
Government Consumption as a % of GDP	840	15.20	7.32	0.04	54.80
Government Effectiveness	840	-0.49	0.87	-2.70	1.28
Foreign Direct Investment, net inflow as a % of GDP	840	4.08	6.29	-11.20	64.38
Population	840	18,300,000.00	28,600,000.00	81,131.00	203,000,000.00

Source: Authors computation using STATA

According to table 4.1, all of the variables under consideration have a similar number of observations (840), indicating that the panel data utilized in the study is a balanced panel data with non-missing points in the chosen sample. Our data show that, from 2000 to 2019, the average government consumption as a percentage of GDP in SSA nations was 15.2%, with a standard deviation of 7.32% and minimum and maximum values, respectively, of 0.04% and 54.8%. The financial institution index, an indicator for financial development is a composite of financial depth index which is about 0.11 on average, financial efficiency index which is about 0.49 and financial access index which is about 0.10 on average. The financial institution index has a mean of 0.22 and a standard deviation of 0.14 It ranges from 0 to 0.73. From 2000 to 2019, the average external trade as a percentage of GDP in a sample of SSA was 70%, with a standard

deviation of 36.6%, with a maximum of 225% and minimum of 1.22%. Foreign direct investment as a percentage of GDP, have a mean value of 4.08% with standard deviations of 6.29%. Its lowest values are -11.2% and its lowest value is 64.38%. Between 2000 and 2019, the average population in SSA was equal to 18.3 million with its largest value 203 million and lowest population of 81.13 thousand. Based on the discussion of a few summary statistics, it is established that SSA nations, and especially the chosen samples, have heterogeneity in terms of financial development, external trade, and other variables, which truly implies country-specific factors are quite important.

4.2 Estimation and Econometric Results

This section discusses the estimation outcomes for the models presented in Chapter 3. It let's examine the empirical findings about the correlation between financial development and international trade in SSA nations.

To estimate these models, we intend to investigate the vast majority of estimating approaches that are applicable to the dynamic panel model. We performed a number of simulations in STATA using the One-Step Difference GMM, Two-Step Difference GMM, One-Step System GMM, and Two-Step System GMM estimation methodologies. Among the models presented, the best model from the System GMM estimation that best fits the external trade model was stated. The results for the appropriate tests on the external trade models using the four methods stated above are presented in the table below. Among the tests that are accessible are the Arellano and Bond test for second-order autocorrelation (AR (2)) and Hansen's J statistics, which is a test for over-identifying restriction, or the test for instrumental validity and efficiency of the Differenced and System GMM estimator. The Hansen J test is used to evaluate an instrument's overall validity (Roodman, 2009). Failure to reject the null hypotheses validates the instrumentation choice. It is also demonstrated to do the autocorrelation/serial correlation test for the error term, which is used to determine whether the differenced error term exhibits first- and second-order serial correlation. The initial error term is serially uncorrelated, and the moment conditions are properly met if the null hypothesis of no-second order serial correlation rejected

Table 4. 2 External trade estimation result

	(One step Differenced GMM)	(Two step Differenced GMM)	One step (System GMM)	(Two Step System GMM)
	In of external trade	In of external trade	In of external trade	In of external trade
In of External trade (-1)	0.699*** (0.0374)	0.697*** (0.0236)	0.786*** (0.0351)	0.776*** (0.0189)
In of External trade (-2)	0.0521 (0.0381)	0.0769** (0.0228)	0.0988* (0.0425)	0.108*** (0.0278)
In of financial institution index	-0.0802 (0.170)	-0.0378 (0.0530)	0.136 (0.131)	0.114** (0.0328)
In of foreign direct investment	0.0198 (0.0101)	0.0230*** (0.00466)	0.0129 (0.00835)	0.0154*** (0.00317)
In of government consumption	0.0981 (0.0680)	0.0832*** (0.0234)	0.0302* (0.0457)	0.0266* (0.0144)
Population	-6.23e-10 (2.21e-09)	-1.86e-09* (8.14e-10)	-1.21e-09 (8.64e-10)	-5.26e-10 (5.20e-10)
Government effectiveness	-0.00944 (0.0286)	-0.00567 (0.0119)	-0.0220 (0.0477)	-0.0121 (0.0132)
Year Dummies	Yes	Yes	Yes	Yes

<i>_cons</i>			0.550 (0.307)	0.524*** (0.109)
<i>N</i>	664	664	706	706
AR(1) (P-value)	0.00	0.02	0.00	0.02
AR(2) (P-value)	0.03	0.48	0.02	0.53
Hansen Test (P-value)	0.7	0.05	0.65	0.15
Groups	42	42	43	43
IV	41	41	42	42
F(9, 41)			6820.21	89471

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The results of estimating the external trade model utilizing one-step, two-step differenced, and one-step and two-step System GMM estimate strategies are shown in Table 4.2 above. As shown by the (F) or Wald test statistics for the overall regressions, which are presented alongside the diagnostic test results in Table 4.2, all variables incorporated in the model are jointly significant. This demonstrates that the variables chosen for the estimation process are valid when used in combination, i.e., financial development, lagged external trade, government spending, government effectiveness, foreign direct investment, and population, which are pertinent in jointly explaining the external trade of Sub-Saharan African countries. (Roodman, 2009) recommends taking into account Hansen's J statistics, which are the tests for instrumental validity and over-identifying limitation.

Furthermore, the Arellano-Bond AR (2) of second-order autocorrelation in the residual Z-statistics test, as shown in table 4.2, verifies the absence of second-order autocorrelation, denoting the absence of additional lagged dependent variables on the right-hand side. The model is sufficiently specified, according to the p-values of Hansen's over-identification tests and second-order serial correlation. Additionally, the study founded on the two-step GMM approach was chosen for four additional reasons. First, it uses an upgraded two-step GMM. It is also more resilient to the one-step system GMM. Third, as discussed in (Roodman, 2009), it is more effective and resilient to heteroscedasticity and autocorrelation. Based on this estimate, the results show that the coefficient of financial development is found to have a positive impact; it is

statistically significant at the 5% and even at 1% level of significance. The data we have used clearly showed that financial development plays a statistically significant role in boosting the international trade in SSA countries.

Furthermore, at a 5% level of significance, lagged and current external trades are positively associated. As a result, the current year's foreign trade is dependent on the previous year's external trade. In other words, it has been established that historical external trade conditions are crucial in interpreting current external economic activity. It reveals that a 1% increase in the lag of international trade leads to a 0.1% to 0.8% rise in current international trade at a 5% level of significance.

Foreign direct investment was shown to be statistically significant and to have the predicted positive sign in explaining external trade in SSA when all four approaches were used consistently. It demonstrates that a 1% rise in the FDI-to-GDP ratio increases external trade by 0.02% while holding all other variables equal.

The variable that indicates human development (population) is also found to be insignificant and negative in SSA countries. Based on the results of the two-step GMM system, it is revealed that government effectiveness, which captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies, is found to have a negative and insignificant effect on external trade.

In general, the results show that lagged external trade (both first and second), the financial institution index, and foreign direct investment have been found to have a positive and statistically significant effect on the two-step system GMM.

4.3 Causality Analysis

Before attempting to establish causal linkages between the key target variables, we need first verify for stationarity. The Levin-Lin-Chu panel unit root test is employed, and the findings demonstrate that the variables have no unit root at level. They are I (0) variables, as can be seen in Table 4.3. The fact that the target variables are determined to be level stationary suggests that they have long-run common trends. The cointegration test between the variables is therefore

unnecessary. The direction of causation and the causality between the variables can be tested, though

Table 4. 3 Panel Unit root test using Levin-Lin-Chu results

Variables	Stationarity		
	level	Unit Root Test	
		<u>Statistic</u>	<u>P-value</u>
External Trade as % of GDP	I(0)	-9.0907	0
Financial Institution Index	I(0)	-8.4524	0

Ho: Panels contain unitroots Ha: Panels are stationary

In a seminal article, Granger (1969) developed a methodology for analyzing the causal relationships between time series. Dumitrescu and Hurlin (2012) provide an extension designed to detect causality in panel data. The underlying regression is

$$Y_{i,t} = \alpha_i + \sum_{j=1}^K \rho_{1,j} Y_{i,t-k} + \sum_{j=1}^k \beta_{i,k} x_{i,t-k} + \varepsilon_{i,t} \text{ with } i = 1, 2, \dots, N \text{ and } T = 2000, 2001, \dots, 2019$$

where $x_{i,t}$ and $y_{i,t}$ are the observations of two stationary variables for individual “i” in period “t”. Coefficients are allowed to differ across individuals (note the i subscripts attached to coefficients) but are assumed to be time invariant. The lag order K is assumed to be identical for all individuals, and the panel must be balanced. As in Granger (1969), the procedure to determine the existence of causality is to test for significant effects of past values of x on the present value of y. The null hypothesis is therefore defined as

$$H_0: \beta_{i1} = \dots = \beta_{iK} = 0 \quad \forall i = 1, \dots, N$$

We chose the ideal lag and discovered it to be lag 1 utilizing the panel VAR model lag selection criteria of the Bayesian Information Criterion (BIC), the Hannan-Quinn Criterion (HQC), and the Akaike Information Criterion (AIC) suggested by Andrews and Lu (2001). We then obtained the following granger causality results after running the VAR model and conducting the granger causality test.

Table 4.4 : Granger non-causality test result

HO: no causality	W-bar statistics	Z-bar statistics	Z-bar tilde statistics	P-value
EX does not Granger-cause FD	2.1190	5.1280	3.5009	0
FD does not Granger-cause EX	1.8011	3.6710	2.3606	0.018

There is a bidirectional causal relationship between external trade and financial development, as shown in Table 4.4 for the test result by Dumitrescu & Hurlin (2012). Indicating that financial development accelerate external trade and also external trade facilitate financial development.

4.4 Discussion

In this section, we attempt to interpret the results by comparing our empirical findings to previous theoretical and empirical literature.

Our empirical analysis indicates that financial development has a positive impact on international trade in SSA nations. According to World Bank data on ease of doing business in 2019, most of the countries in SSA ranked among the least likely to get credit (financial access). The positive sign indicates that if SSA nations were successfully implemented, the impact of financial development would appear to be significant in boosting external trade. Theoretically, there are many ways that financial development could benefit countries in Sub-Saharan Africa's external

trade. The first is that it helps with the transformation of savings into more useful forms, the effective use of capital, and enhanced total factor productivity (TFP), which encourages greater export or import. Second, it promotes risk management and diversification. Third, it reduces transaction and monitoring costs as well as information disparities. Fourth, it can reduce economic volatility by giving individuals and organizations access to a variety of tools and data that will enable them to smooth out their consumption and investment in response to negative shocks, as explained by (Mlachila, et al., 2016).

A comprehensive analysis of the literature has concentrated on how the two factors interact to shape a country's comparative advantage (Susanto, et al., 2011). The crucial question is whether financial development explains trade. It is argued that when countries need external financing for the production and trade of goods and services, they may have a comparative advantage if they have the same level of technology and factor endowment (Kletzer & Bardhan, 1987). The authors argued that imperfections in the credit market (financial development) caused by sovereign risk or by institutional weaknesses in contract enforcement will have a stronger effect on the volume of international trade. Financial development positively explains international trade in Sub-Saharan African countries, according to our empirical findings. Our finding is comparable to the works of (Leibovici, 2021), where he argued that financial development results in a substantial reallocation of trade shares from labor-intensive to capital

Furthermore, our empirical finding depicts that the external trade for the current year is dependent on the external trade for the preceding year in Sub-Saharan African nations. In other words, it is discovered that the condition of past external trade is important in understanding current external trade. Besides, similar to the findings of (Hermes & Lensink, 2003) and (Kamara, 2013), our empirical result asserts that foreign direct investment has a positive effect on external trade in SSA countries. As critically explained by (Fontagne, 1999), FDI serves as a means for firms to overcome transaction costs and become more efficient overall. Individual countries are affected by and able to benefit from this improved efficiency in their capacity as both home and host to FDI. In most cases, and given favorable conditions and policies, the theoretical and empirical evidence suggests that trade and foreign direct investment are complementary, implying that investment abroad tends to translate into increased production at home, improving trade. The relationship between investment and trade is not static; it evolves

and responds to changing conditions in a dynamic way. Our finding also suggests that foreign direct investment is crucial for sub-Saharan African nations.

Similarly, as it is theoretically stated, the government uses taxation and expenditure to affect the economy. This action is often used by governments to encourage robust, long-term growth and lower poverty. When governments intervened to stabilize financial institutions, spur growth, and lessen the crisis's effects on vulnerable individuals, the function and goals of such policies rose to prominence, additionally increasing external trade. Our empirical findings show that government spending will raise external trade in sub-Saharan African nations. It will be argued that government spending on the productive sector will improve the economy and further enhance external trade. Although (Benarroch & Pandey, 2012) found no relationship among these two variables, our empirical findings clearly suggest that government spending has been contributing positively and significantly in sub-Saharan African nations.

On the other hand, government effectiveness, which is an indicator of institutional development on perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment has been found to have negative and statistically insignificant effect on external trade. A theory of government suggests that government may be called upon to undertake tasks that the private economy do not undertake spontaneously and to act, to speak, like in filling the resultant vacuums, as part of economic efficiency (Kindleberger, 1978). Similar result wasn't much with the result observed (Nzama, et al., 2023) where they found that government effectiveness is important for openness. Similarly, the data we have used do not show that population, an indicator of human capital is statistically insignificantly determining external trade; the sign is also negative.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

This chapter summarizes the findings and policy implications derived from the analysis and estimation results described in Chapter 4. Part 5.1 of our investigations build conclusions, while Part 5.2 gives policy recommendations.

5.1 Conclusion

Economists have been attentively studying the link between financial growth and global commerce for several decades. Despite much investigation, empirical data remains contradictory. This is especially true for research that addresses the experiences of African countries, notably those in SSA. This study employed a two-step GMM dynamic panel data analysis that takes into account endogeneity in the financial development index to investigate the correlation between financial development and international trade in 42 SSA nations from 2000 to 2019. The World Development Indicators (WDI) and the International Monetary Fund (IMF) provided us with macroeconomic statistics.

There are four major findings. First, after adjusting for government consumption, government effectiveness, external trade lag, foreign direct investment, and population growth, the study finds that financial development has a positive and substantial influence on SSA nations' external trade. It indicates that financial growth promotes foreign commerce, which is already statistically significant in SSA countries. Despite the low degree of financial access, financial depth, and financial efficiency in the study region, as evidenced by trends, its contribution is critical. Second, assuming all factors equal, the current year's foreign trade is statistically strongly reliant on the previous year's external trade in any Saharan African nation. Third, foreign direct investment and government consumption in SSA states have a positive and statistically significant influence on external trade, while other factors remain constant. Fourth, our data reveal a bidirectional causal link between financial development and overseas trade.

It's worth considering if our findings are limited to SSA countries or have larger implications. We hope that the setting under examination is typical of the majority of developing countries.

Most emerging nations encounter turbulence in their financial development and international trade. If it is aggressively executed, financial development appears to enhance international trade. This study region might thus be used as an example of how financial growth can affect the results of foreign trade.

The findings show that enhancing financial development, as well as improving external trade and foreign direct investment, are all proactive approaches to improve external trade achievement. However, given the scarcity of data in developing nations, it would be helpful to do further study in order to establish the most relevant policy. Much needs to be learned about the role of financial development in influencing foreign trade utilizing more detailed data. A disadvantage here is the lack of data for the human capital index, which would allow us to examine its influence on improving external commercial activity over time and investigate how changes in human capital may affect external trade over multiple years. More thorough data would be necessary in order to better assess the impact of various factors on external trade.

5.2 Recommendation

In order to enhance their foreign trade, SSA countries should pursue policies that accelerate the growth of their financial sectors, according to our results. The prevalence of tiny financial institutions that transfer money inefficiently is one of the factors impeding African international trade performance.. Access to financial services may be expanded by encouraging the use of current information and communication technologies, such as electronic money and mobile banking, and by fostering the establishment of microfinance institutions, particularly in rural regions. Governments should also develop financial markets to enable more efficient and effective resource allocation across productive sectors, which would assist long-term economic growth and boost foreign trade volume.

The overall policy implications of this study show that, so as to keep up resilient external trade accomplishments, government officials needs to expand the financial sector and take the steps required to improve the long-term relationship between financial development and global trade. AAmong these methods include growing financial integration and elevating financial

institutions. In addition to these steps, the macroeconomic climate must be stabilized to sustain the financial industry's expansion. Foreign direct investment should be expanded, as it will become more desired over time. Increased government

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Dynamic panel-data estimation, one-step difference GMM

Group variable: count_id Number of obs = 664
 Time variable : year Number of groups = 42
 Number of instruments = 41 Obs per group: min = 6
 F(0, 42) = . avg = 15.81
 Prob > F = . max = 17

lextr	Robust		t	P> t	[95% Conf. Interval]	
	Coef.	Std. Err.				
lextr						
L1.	.6987209	.1024088	6.82	0.000	.4920516	.9053903
L2.	.052131	.0582644	0.89	0.376	-.0654514	.1697133
lfid	-.0802295	.1276772	-0.63	0.533	-.3378926	.1774336
lfdi	.0198135	.008218	2.41	0.020	.003229	.036398
lconcp	.0981013	.1061195	0.92	0.361	-.1160565	.3122591
pop	-6.23e-10	1.90e-09	-0.33	0.745	-4.46e-09	3.22e-09
geffc	-.0094408	.0195315	-0.48	0.631	-.0488571	.0299754
year						
2002	.0482985	.0536227	0.90	0.373	-.0599164	.1565134
2003	.0391519	.0439882	0.89	0.379	-.0496198	.1279236
2004	.0274569	.0422783	0.65	0.520	-.0578642	.112778
2005	.0618345	.0753792	0.82	0.417	-.090287	.213956
2006	-.0193696	.0837844	-0.23	0.818	-.1884535	.1497142
2007	.134222	.0597599	2.25	0.030	.0136216	.2548224
2008	.1053461	.0426241	2.47	0.018	.0193272	.191365
2009	.0296623	.0387312	0.77	0.448	-.0485004	.107825
2010	.0985676	.0361913	2.72	0.009	.0255305	.1716047
2011	.1362272	.0459664	2.96	0.005	.0434632	.2289911
2012	.0843845	.0333116	2.53	0.015	.0171591	.15161
2013	.0530454	.0274833	1.93	0.060	-.0024181	.108509
2014	-.0102303	.0699083	-0.15	0.884	-.1513109	.1308503
2016	.0378985	.0349144	1.09	0.284	-.0325616	.1083586
2017	.0719032	.037477	1.92	0.062	-.0037285	.1475348
2018	.0653714	.0337734	1.94	0.060	-.0027861	.1335288
2019	.0356902	.0286525	1.25	0.220	-.0221328	.0935133

Instruments for orthogonal deviations equation

Standard

FOD.(L.lextr L2.lextr lfdi pop geffc 2000b.year 2001.year 2002.year
 2003.year 2004.year 2005.year 2006.year 2007.year 2008.year 2009.year
 2010.year 2011.year 2012.year 2013.year 2014.year 2015.year 2016.year
 2017.year 2018.year 2019.year)

GMM-type (missing=0, separate instruments for each period unless collapsed)
 L(1/19).lfid collapsed

Arellano-Bond test for AR(1) in first differences: z = -2.20 Pr > z = 0.028
 Arellano-Bond test for AR(2) in first differences: z = -0.71 Pr > z = 0.477

Sargan test of overid. restrictions: chi2(17) = 13.41 Prob > chi2 = 0.708
 (Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(17) = 27.86 Prob > chi2 = 0.047
 (Robust, but weakened by many instruments.)

Dynamic panel-data estimation, one-step system GMM

Group variable: count_id Number of obs = 706
 Time variable : year Number of groups = 42
 Number of instruments = 43 Obs per group: min = 7
 Wald chi2(24) = 398115.91 avg = 16.81
 Prob > chi2 = 0.000 max = 18

lextr	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
lextr						
L1.	.7551607	.0739722	10.21	0.000	.6101778	.9001435
L2.	.0951139	.0397514	2.39	0.017	.0172026	.1730251
lfid	.1341059	.075182	1.78	0.074	-.0132482	.2814599
lfdi	.0144528	.0065519	2.21	0.027	.0016114	.0272943
lconcp	.032598	.0494406	0.66	0.510	-.0643037	.1294997
pop	-1.31e-09	7.05e-10	-1.86	0.063	-2.69e-09	6.90e-11
geffc	-.0127569	.0300424	-0.42	0.671	-.0716388	.0461251
year						
2002	.1018482	.0573695	1.78	0.076	-.010594	.2142904
2003	.0800442	.0482019	1.66	0.097	-.0144297	.1745182
2004	.0678435	.0507375	1.34	0.181	-.0316001	.1672871
2005	.092926	.0807103	1.15	0.250	-.0652634	.2511154
2006	.0072396	.0852527	0.08	0.932	-.1598526	.1743317
2007	.1645801	.0578632	2.84	0.004	.0511702	.2779899
2008	.1305489	.0423554	3.08	0.002	.0475338	.2135639
2009	.0379988	.0397491	0.96	0.339	-.039908	.1159057
2010	.1053611	.0362238	2.91	0.004	.0343638	.1763585
2011	.1425655	.0438027	3.25	0.001	.0567138	.2284171
2012	.0825911	.0315333	2.62	0.009	.020787	.1443952
2013	.0448054	.0287509	1.56	0.119	-.0115453	.1011561
2014	-.0193371	.0707755	-0.27	0.785	-.1580546	.1193805
2016	.0406992	.0335729	1.21	0.225	-.0251026	.106501
2017	.0756353	.0348033	2.17	0.030	.0074221	.1438484
2018	.06072	.0310449	1.96	0.050	-.0001268	.1215669
2019	.0314356	.0249801	1.26	0.208	-.0175245	.0803958
_cons	.6889679	.3199065	2.15	0.031	.0619627	1.315973

Instruments for orthogonal deviations equation

Standard

FOD.(L.lextr L2.lextr lfdi pop geffc 2000b.year 2001.year 2002.year
 2003.year 2004.year 2005.year 2006.year 2007.year 2008.year 2009.year
 2010.year 2011.year 2012.year 2013.year 2014.year 2015.year 2016.year
 2017.year 2018.year 2019.year)

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(1/19).lfid collapsed

Instruments for levels equation

Standard

L.lextr L2.lextr lfdi pop geffc 2000b.year 2001.year 2002.year 2003.year
 2004.year 2005.year 2006.year 2007.year 2008.year 2009.year 2010.year
 2011.year 2012.year 2013.year 2014.year 2015.year 2016.year 2017.year
 2018.year 2019.year

_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

D.lfid collapsed

Arellano-Bond test for AR(1) in first differences: z = -2.14 Pr > z = 0.032

Arellano-Bond test for AR(2) in first differences: z = -0.80 Pr > z = 0.424

Sargan test of overid. restrictions: chi2(18) = 15.94 Prob > chi2 = 0.596
 (Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(18) = 19.47 Prob > chi2 = 0.364
 (Robust, but weakened by many instruments.)

Dynamic panel-data estimation, two-step difference GMM

Group variable: count_id Number of obs = 664
 Time variable : year Number of groups = 42
 Number of instruments = 41 Obs per group: min = 6
 F(0, 42) avg = 15.81
 Prob > F max = 17

lextr	Coef.	Corrected Std. Err.	t	P> t	[95% Conf. Interval]	
lextr						
L1.	.6971926	.1262661	5.52	0.000	.4423772	.952008
L2.	.0768668	.069609	1.10	0.276	-.0636099	.2173434
lfid	-.0378189	.1634735	-0.23	0.818	-.3677218	.292084
lfdi	.0230474	.0103398	2.23	0.031	.0021808	.0439139
lconcp	.083165	.1071019	0.78	0.442	-.1329753	.2993053
pop	-1.86e-09	1.49e-09	-1.25	0.219	-4.88e-09	1.15e-09
geffc	-.0056746	.0213013	-0.27	0.791	-.0486623	.0373131
year						
2002	.0418007	.0654221	0.64	0.526	-.0902264	.1738279
2003	.0010631	.0504333	0.02	0.983	-.1007154	.1028416
2004	.0145598	.0526803	0.28	0.784	-.0917533	.120873
2005	.069749	.0771219	0.90	0.371	-.0858892	.2253872
2006	.0078556	.0690657	0.11	0.910	-.1315246	.1472358
2007	.0776455	.058513	1.33	0.192	-.0404386	.1957295
2008	.0810782	.0401852	2.02	0.050	-.0000188	.1621752
2009	-.0031089	.039474	-0.08	0.938	-.0827707	.076553
2010	.0686466	.0436427	1.57	0.123	-.0194278	.1567211
2011	.0719039	.047928	1.50	0.141	-.0248187	.1686265
2012	.0526188	.0362595	1.45	0.154	-.0205557	.1257934
2013	.0273994	.036854	0.74	0.461	-.0469749	.1017738
2014	-.0177561	.0600933	-0.30	0.769	-.1390293	.1035171
2016	.0103429	.0389925	0.27	0.792	-.0683472	.089033
2017	.0673792	.0381843	1.76	0.085	-.0096798	.1444382
2018	.0627885	.0390448	1.61	0.115	-.0160071	.1415841
2019	.0324567	.0324378	1.00	0.323	-.0330054	.0979189

Instruments for orthogonal deviations equation

Standard

FOD.(L.lextr L2.lextr lfdi pop geffc 2000b.year 2001.year 2002.year
 2003.year 2004.year 2005.year 2006.year 2007.year 2008.year 2009.year
 2010.year 2011.year 2012.year 2013.year 2014.year 2015.year 2016.year
 2017.year 2018.year 2019.year)

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(1/19).lfid collapsed

Arellano-Bond test for AR(1) in first differences: z = -2.12 Pr > z = 0.034

Arellano-Bond test for AR(2) in first differences: z = -0.68 Pr > z = 0.494

Sargan test of overid. restrictions: chi2(17) = 13.41 Prob > chi2 = 0.708
 (Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(17) = 27.86 Prob > chi2 = 0.047
 (Robust, but weakened by many instruments.)

Dynamic panel-data estimation, two-step system GMM

```

Group variable: count_id          Number of obs   =       706
Time variable : year             Number of groups =        42
Number of instruments = 43       Obs per group: min =         7
F(24, 41) = 89471.22           avg =        16.81
Prob > F = 0.000               max =         18
    
```

lextr	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lextr					
L1.	.7762522	.018885	41.10	0.000	.7381131 .8143912
L2.	.1084373	.0278248	3.90	0.000	.0522441 .1646305
lfid	.1135771	.0327631	3.47	0.001	.0474107 .1797435
lfdi	.0154421	.0031739	4.87	0.000	.0090322 .0218519
lconcp	.0265513	.0143694	1.85	0.072	-.0024683 .0555709
pop	-5.26e-10	5.20e-10	-1.01	0.318	-1.58e-09 5.25e-10
geffc	-.0121471	.0131629	-0.92	0.361	-.0387301 .0144359
year					
2002	.1014568	.0283044	3.58	0.001	.0442948 .1586188
2003	.0677183	.0281843	2.40	0.021	.010799 .1246375
2004	.062294	.0263287	2.37	0.023	.0091221 .1154659
2005	.0931762	.0283459	3.29	0.002	.0359305 .1504219
2006	.0274882	.0351839	0.78	0.439	-.0435671 .0985434
2007	.141267	.0313949	4.50	0.000	.0778637 .2046702
2008	.1161159	.0209575	5.54	0.000	.0737914 .1584403
2009	.0116531	.0183954	0.63	0.530	-.0254971 .0488032
2010	.1026667	.0237807	4.32	0.000	.0546406 .1506928
2011	.1292765	.0287556	4.50	0.000	.0712034 .1873495
2012	.07381	.0172452	4.28	0.000	.0389827 .1086373
2013	.0180422	.020271	0.89	0.379	-.022896 .0589803
2014	-.0094853	.0215013	-0.44	0.661	-.0529081 .0339375
2016	.0092118	.0219042	0.42	0.676	-.0350247 .0534483
2017	.0819275	.022295	3.67	0.001	.0369018 .1269532
2018	.0761894	.0239602	3.18	0.003	.0278007 .1245781
2019	.0345124	.017981	1.92	0.062	-.0018009 .0708257
_cons	.5242509	.1087014	4.82	0.000	.3047241 .7437778

Warning: Uncorrected two-step standard errors are unreliable.

Instruments for orthogonal deviations equation

GMM-type (missing=0, separate instruments for each period unless collapsed)
L(1/19).lfid collapsed

Instruments for levels equation

Standard
L.lextr L2.lextr lfdi pop geffc 2000b.year 2001.year 2002.year 2003.year
2004.year 2005.year 2006.year 2007.year 2008.year 2009.year 2010.year
2011.year 2012.year 2013.year 2014.year 2015.year 2016.year 2017.year
2018.year 2019.year

_cons
GMM-type (missing=0, separate instruments for each period unless collapsed)
D.lfid collapsed

Arellano-Bond test for AR(1) in first differences: z = -2.36 Pr > z = 0.018
Arellano-Bond test for AR(2) in first differences: z = -0.78 Pr > z = 0.433

Sargan test of overid. restrictions: chi2(18) = 15.24 Prob > chi2 = 0.645
(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(18) = 24.05 Prob > chi2 = 0.154
(Robust, but weakened by many instruments.)

Dumitrescu & Hurlin (2012) Granger non-causality test results:

Optimal number of lags (BIC): 1 (lags tested: 1 to 4).

W-bar = 1.8011

Z-bar = 3.6710 (p-value = 0.0002)

Z-bar tilde = 2.3606 (p-value = 0.0182)

H0: **FD** does not Granger-cause **EX**.

H1: **FD** does Granger-cause **EX** for at least one panel (**Count_ID**).

Dumitrescu & Hurlin (2012) Granger non-causality test results:

Optimal number of lags (BIC): 1 (lags tested: 1 to 4).

W-bar = 2.1190

Z-bar = 5.1280 (p-value = 0.0000)

Z-bar tilde = 3.5009 (p-value = 0.0005)

H0: **EX** does not Granger-cause **FD**.

H1: **EX** does Granger-cause **FD** for at least one panel (**Count_ID**).