UNIVERSITY OF CAPE COAST

# FINANCIAL MARKET DEVELOPMENT AND ECONOMIC GROWTH IN SUB-SAHARAN AFRICA

BY

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# DECLARATION

## Candidate's Declaration

I hereby declare that this dissertation is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature ---------- Date ----------

Name: Felix Coffie Akomaning

## Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Supervisor's Signature ---------- Date ----------

Name: Prof. Samuel Kwaku Agyei

## ABSTRACT

The development of the financial markets is considered as a major avenue for propelling the growth of economies. The study assessed the contributory role of financial market development to the growth of Sub-Saharan African economies using the quantile regression approach. The study focused on forty-eight economies within the Sub-Saharan African region and employed data from 2002 to 2019. The study was based on the explanatory design and the quantitative approach while descriptive statistics, unit root analysis, correlation analysis, Generalized Method of Moments (GMM) estimator, and the quartile regression were used to analyse the financial market development and economic growth nexus. Using the Generalized Method of Moments (GMM) estimator to implicate the short-run and long-run nexus, the result revealed that financial market development and economic growth are positively related in both the short-run and long-run. Also, a bi-directional causality was found to exist between financial market development and economic growth in Sub-Saharan Africa. The quantile regression result showed that financial market development increases economic growth for the 5th to the 75th quantile growth distributions but for the 95th quantile distribution, financial market development reduces economic growth. The study recommended that governments of Sub-Sahara Africa economies should support the development of the financial sector through granting of more credit to the private sector to cushion the productivity and growth prospects.

## KEY WORDS

Bi-directional causality

Economic growth

Financial market development

Institutional quality

Quantile regression

Sub-Saharan Africa

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## DEDICATION

To my family

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## LIST OF ACRONYMS/ABBREVIATIONS

| | |
|---|---|
| CC | Control of Corruption |
| FMD | Financial Market Development |
| GDPPC | Gross Domestic Product per Capita |
| GE | Government Effectiveness |
| GSE | Ghana Stock Exchange |
| INF | Inflation |
| PSAV | Political Stability and Absence of Violence |
| RL | Rule of Law |
| RQ | Regulatory Quality |
| VA | Voice and Accountability |

# CHAPTER ONE

# INTRODUCTION

Economic growth is vital for countries because it is what translates to the well-being of citizens of the sate in the long-run. The expansion of African's economy has been slower than the rest of the other continents in the world and it seems to indicate that, largely, this is linked to low capital accumulation. Economists have long held conflicting opinions on the beneficial effects of fiscal intermediation institutions and development on economic growth, despite the fact that scientific theories and empirical studies have acknowledged the significance of fiscal expansion on economic expansion. However, from a theoretical perspective and from the perspective of empirical study employing different econometric methods, this dependence is not explicit. Therefore, this study's goal is to explore the connection between Sub-Saharan Africa's economic progress and the expansion of its fiscal markets.

## Background to the Study

According to Godwin (2007), economic expansion is a surge in the real Gross Domestic Product (GDP) of a country over a stated period normally a year. In a study by Artadi and Sala-i-Martin (2003) on the economic tragedy of the XXth century growth in Africa, by 1960, a substantial number of African countries had gained independence and comparing growth over 1960 to 2002, per Capita GDP enlarged slightly from USD 1500 to about USD2000 between 1960 and 1980 and then stagnated at this level. Northern Africa's slightly better development rates may have obscured the overall picture, but the gap between the continent as a whole and Sub-Saharan Africa was

substantial. A breakdown of per capita growth rates over various sub-periods showed growth rates that were around 3% in the early 60s, close to 2% in the late 60s and slightly below 1.5% among the first half of 1970. These rates were slightly above that recorded for sub-Saharan Africa but these rates further deteriorated in the late 1970s. SSA recorded -0.5% in the late 70s, -1.2% in the second half of the 1970s and zero among 1980 and 1985. By the first half of the 1990s, expansion rates of SSA dropped further to -1.5% per year but saw recovery with a positive, although small, expansion rates for the second half of 1990 into the new 2002. These growth rates witnessed in Africa are worsened if compared to the rest of the world which saw growth at a yearly rate of close to 2% within the same period.

Further analysis of the African economy over the periods between 1960 and 2000 showed that whereas the poorest citizens of the continent had their economic condition worsen, the richest persons did not suffer any much of a change. Income inequality between the poorer sects of the African continent and the rich continues to widen. In respect of reports, the African income distributions for 1970, 1980, 1990 and 2000 the incomes of the poorest citizens of Africa have deteriorated over the three decades from 1970 to 2000.

Literature has it that the ratio of investment to GDP in Africa was not only low but weakened over the last 40 years beginning from 1960 to 2000. In some economists' view, Africa's low physical capital accumulation, which they are of the view is central to economic development, has been the chief reason for the low growth trajectory. Investment rates fell after 1975 to a record low of 7.5% for Sub-Saharan Africa and 8.5% for the entire continent in the first part of the 1990s, remaining consistently below 15% between 1960

and 2000. In contrast, investment rates for the OECD's average-performing markets were between 20 and 25 percent, while they averaged 30 percent for the miraculous East Asian economies. A skeptical analysis of the aggregate investment of Africa in the period also showed that public investments follow political lines that are characterized by non-economic preferences and were on the lead compared to private investment which is essentially required for economic growth.

Beyond investment, determinants like costs of investment in Africa, quality of human capital (concerning education and health of the labor force), geographical location and institutions of most African countries, the excessive public expenditure towards consumption and military conflicts and ethnolinguistic fractionalization have impeded the expansion of the African economy in the period between 1960 and 2000. Today, as of October 2019 International Monetary Fund report, Africa ranks 6$^{th}$ in the world with GDP per capita US$1,930 as against Oceania, North America, and Europe with US$ 53,220, US$ 49,240 and US$ 29,410 respectively. Below shows the US Dollar per capita in current prices (all amount in '000) of the following regions from 2010 to 2019.

**Table 1- GDP per Capita at Current Prices (US Dollars per capita)**

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Region** | US$'000 | US$'000 | US$'000 | US$'000 | US$'000 | US$'000 | US$'000 | US$'000 | US$'000 | US$'000 |
| Africa | 1.94 | 2.11 | 2.19 | 2.21 | 2.23 | 1.98 | 1.82 | 1.79 | 1.85 | 1.88 |
| North Africa | 3.65 | 3.77 | 4.18 | 4.05 | 3.96 | 3.65 | 3.58 | 3.08 | 3.23 | 3.39 |
| Egypt | 2.92 | 3.08 | 3.38 | 3.40 | 3.52 | 3.73 | 3.69 | 2.50 | 2.57 | 3.05 |
| SSA | 1.61 | 1.79 | 1.81 | 1.86 | 1.90 | 1.67 | 1.50 | 1.56 | 1.60 | 1.60 |
| South Africa | 7.31 | 8.00 | 7.49 | 6.82 | 6.43 | 5.73 | 5.27 | 6.12 | 6.35 | 6.1 |
| Nigeria | 2.33 | 2.54 | 2.76 | 3.00 | 3.22 | 2.73 | 2.18 | 1.97 | 2.03 | 2.22 |
| Ghana | 1.75 | 2.12 | 2.18 | 2.39 | 1.96 | 1.75 | 1.94 | 2.04 | 2.22 | 2.22 |
| EM&DE | 3.94 | 4.59 | 4.79 | 5.02 | 5.11 | 4.78 | 4.70 | 5.02 | 5.26 | 5.38 |
| LA&C | 8.83 | 10.16 | 10.10 | 10.13 | 9.96 | 8.68 | 8.24 | 8.82 | 8.41 | 8.25 |
| Advance Eco | 42.10 | 44.95 | 44.58 | 44.77 | 45.62 | 42.96 | 43.87 | 45.56 | 47.97 | 48.25 |

Source: Fieldwork, Akomaning (2020)

It can be seen from Table 1 that economic progress in the African and its divisions cannot be compared to Latin America and the Caribbean let alone be compared to the advanced economies. It can be seen again that Northern Africa's growth in the economy masks the underperformance of Sub-Saharan Africa. It is glaring that even Ghana's economy is performing better than Sub-Saharan Africa in each of the periods between 2010 and 2020. The same can be said of Nigeria and South Africa which are all part of SSA and have a buoyant financial market. It can also be deduced from the table that the regions that have a vibrant financial market have GDP per capita to be higher than what the entire Africa records.

For instance, all of the North African countries have thriving financial markets (e.g., the Egyptian Exchange in Egypt, the Casablanca Stock Exchange in Morocco, the Algiers Stock Exchange in Algeria, the Bourse de Tunis in Tunisia, and the Libyan Stock Market in Libya), all of which have significantly more listings and larger market capitalizations than their South Asian counterparts. South Africa and Nigeria, which together account for 23 of the SSA nations' exchanges, list 388 and 190 companies and have a market capitalization of US$970.5 and US$114.2billion, respectively. (Africa Strictly Business, 2013). There were 34 listings and US$ 28.2 billion in market capitalization on the Ghana Stock Exchange in 2013 (Africa Strictly Business, 2013), 42 listings and US$ 20.17 billion in market capitalization in 2014. (Ghana Stock Exchange, n.d).

Today, the question is, can this economic development be traced to the effectiveness of the fiscal systems (particularly, the expansion of the fiscal market) in these countries? It can be confirmed from many works of literature

that growth-oriented strategies and programs such as the Economic Recovery Program (ERP) and Structural Adjustment programmes (SAP) were pursued in the early 80s to enhance sustained economic growth. The investment in these programmes required long-term funding which resulted in the progress of the fiscal schemes in most emerging countries to mobilize funds for the investment.

The fiscal Sector Adjustment Programme (FINSAP I) was started and put into action to increase sector efficiency and achieve real interest rates. Most African countries accepted and implemented the financial sector reforms, which aimed at building an efficient financial market, in the 80s. Before these reforms were implemented, according to Dziwornu and Awunyo-Vitor (2013), bank financing had been the traditional means of financing investment projects. It was seen in Churchill, Arhenful, and Agbodohu (2013) that SSA has over the years depended on banks for short-term funds instead of the capital market which is meant to offer firms with long-term finance which can contribute towards sustainable growth.

According to Aryeetey (2003), referenced in Adams, Debrah, Williams, and Mmieh (2015), the underdeveloped capital and money markets in Africa are to blame for the commercial banks' dominance in the continent's formal fiscal markets. According to Ihendinihu and Onwuchekwa (2012), this method of financing proved unable to raise the required long-term capital for investment projects. According to Dziwornu and Awunyo-Vitor (2013), the GSE's main goal was to make it easier for corporate entities, enterprises, and the state to raise long-term capital through the issuing of securities (shares, bonds), which would speed up the nation's development. Its performance in

2008 amidst the global economic and financial crises in 2008 got it adjudged the world's best-performing stock market.

According to Asante, Agyapong, and Adam (2011), the neoclassical growth model explains the positive interaction between fiscal markets and economic progress in three different ways. They again cited that according to the wealth effect, variation in stock prices cause variation in the real economy (Shahbaz, Ahmed & Ali, 2008). Churchill, Arhenful, and Agbodohu (2013) conducted a review and found that the capital market has been crucial to national economic expansion and progress, particularly in advanced and other emerging markets (Levine & Zervos, 1996; Ezeoha, Ogamba, & Oyiuke, 2009).

Drawing further inferences from the Table 1, it could be inferred that growth levels within the sub-Saharan region are asymmetric. In this sense, the effect of fixed deposits on growth may also be heterogenous at different distributions of growth. Furthermore, a wide range of financial research on the development of the fiscal markets and economic expansion have found good long-term cointegration between these variables and causality from stock exchange expansion related to economic growth both outside and inside of Africa. However, some researchers have still not come into any conclusive stands regarding this relationship, and this gap forms the focus of this current reading.

**Statement of the Problem**

The gap that this research paper seeks to resolve is the inconclusive nature of the association among fiscal market expansion and economic growth using a statistically different approach in an area where the topic has been

understudied. A recurring theme in the literature was the use of models by researchers to control the link among the stock market and economic expansion for various nations with varying rates of economic expansion. Touny (2012) examined the association among the expansion of the stock market and the economy using actual data from various Arab nations, and Agarwal's study on the subject from 2001 included some preliminary data from African nations. According to the scholar, the frequent use of the stock market may be due to how data is normally readily available in stock markets.

That notwithstanding, there are several other works on the financial markets as a whole. But in the Wait and Ruzive (2016) study on the influence of fiscal market expansion on economic expansion in BRICS states, these studies were conducted in diverse economies, such as BRICS countries. Additionally, Odunga and Ayoyi (2016) explored the effect of fiscal markets on East Africa's economic development. The scholars used East Africa because according to them, the East African region has a moderately shallow capital market associated to some markets in Northern and Southern Africa.

Most noteworthy is the nexus between the stock market classification and the entire financial market. It appears from the review of literature that there is no consistent conclusion on the actual association that exists among the stock market and economic expansion. Although some researchers find a negative correlation for good reasons, others also found a positive relationship for equally justifiable reasons. Despite these inconsistencies in their findings, it is clear that the extent to which the relationships are positive or negative are not known. However, it could be observed that the results were weighted in

favour of those who view it as positive relations in terms of the number of outcomes.

In order to further clarify, Singh (1997), a supporter of the adverse relationship, contended that the instability of stock markets in many emerging nations causes market failure. That is, it leads to making rollbacks on economic gains that have been achieved in the economy. Consequently, a variety of influencing elements contribute to the expansion of the capital market. It is challenging to create and isolate the causal relationship among economic expansion and the progress of the capital market as a result of the numerous interdependencies that exist between these elements (Brasoveanu, Dragotta, Catarama & Semecsa, 2008).

Also, the approaches used by some of these research papers were VAR, least square, ADF test and the systematic reviewing of literature papers in the field of fiscal markets through content investigation. Touny (2012) used the least squares dummy variable as a model approach to determine the relationship between three identified stock market variables and GDP as a measure for economic expansion. Theoretically, the least-square offers a good way to test fixed effects. Despite Touny's (2012) discovery of a positive link among market capitalization and economic expansion and also stock market liquidity and economic expansion, there was no statistical effect between total value traded on the stock market and economic expasion indicative of some weaknesses of the least squares dummy variable.

To address this shortfall, the quantile regression is used when the conditional median and quantile are of interest in the research. It has also been proven to be more robust against outliers in the reply measurement. The least-

squares approximations of mean regression models, in accordance with Sakai and Fukushige (2021), poses the question of how the conditional mean of Y relates to the covariates X. The question of whether each quantile of the conditional distribution allows one to get a more thorough explanation of how the conditional distribution of Y given X = x relies on x is asked via quantile regression.

It further demands that the growth rate used for testing the relationship must not be the average of the distribution but a robust model that captures outliers and hence the suitability of quantile regression. Due to the necessity to understand the full picture of the underlying affiliation among fiscal market expansion and economic expasion, this robustness is sought. In light of this, the growth rate does not follow a Gaussian distribution but rather an exponential distribution, hence, the assumption for normally distributed errors may not hold. It is against this methodological gap in the existing literature (Brasoveanu et al., 2008; Singh, 1997; Touny, 2012) that this present study sought to find the association among fiscal market expansion and economic expansion in Sub-Saharan Africa using the quantile regression approach.

**Purpose of the Study**

Examining the connection between Sub-Saharan Africa's fiscal market development and economic expansion is the goal of this study.

**Research Objectives**

Specifically, this research work sought to:

1. examine the relationship between financial market development and economic growth in Sub-Saharan Africa.

2. examine the direction of causality between financial market development and economic growth in Sub-Saharan Africa.
3. examine the relationship between financial market development and economic growth across the various percentile distribution in Sub-Saharan Africa.

**Research Hypotheses**

1. $H_0$: Financial market development has no relationship with economic growth in Sub-Saharan Africa.
2. $H_0$: Financial market development and economic growth do not Granger cause each other in Sub-Saharan Africa.
3. $H_{0:}$ Financial market development has no relationship with economic growth across the various quartile distributions in Sub-Saharan Africa.

**Significance of the Study**

According to a new IMF assessment of economies' GDP, the steady decline in the GDP of sub-Saharan African states is concerning. In order to better understand the link among regional economic expansion and the development of the fiscal markets, a study of this kind is necessary. The results of this study will assist close this gap in the literature as a result. Second, the researcher believes that this could be helpful for policy makers in Sub-Saharan African sates to develop suitable policies that will support the region's financial growth.

Numerous parties, such as existing and prospective investors, as well as governments in sub-Saharan African countries, will find the results useful. Last but not least, it will provide strong support for using the panel quartile regression approach for future studies that focus on these important factors.

**Delimitation of the Study**

The study focus is fiscal market progress and economic expasion in Sub-Saharan Africa. It seeks to know the effect of fiscal market expansion on economic expansion within the sub-region. The dependent variable which is of importance to this study remains economic expansion which is proxied by real GDP per capita. The Quantile regression approach would be used, estimates are based on the conditional median and quantile which are of interest in this research.

**Limitation of the Study**

The major limitation of the reading was that it ignored the peculiar differences among the various Sub-Saharan African economies for the as the pooled regression model was used. Tendencies are that the result could be affected by the endogeneity problem.

**Definition of Terms**

**Economic growth –** is a persistent rise in a country's gross domestic output and per capita, most frequently accompanied with a persistent and considerable increase in population (Kuznets, 1961).

**Finance market development -** When fiscal tools, markets, and intermediaries reduce the belongings of data, enforcement, and transaction costs, they recover the performance of the important economic services performed by the financial sector (World Bank 2020). The World Bank lists these as the five essential roles of a financial system: (i) generating information ex-ante about potential investments and allocating capital; (ii) overseeing investments and exercising corporate governance following the provision of finance; (iii) facilitating trading, diversification, and risk

management; (iv) mobilizing and pooling savings; and (v) facilitating the exchange of goods and services.

**Organisation of the Study**

There are five section in the study. The general introduction to the study, which covers the background, problem statement, study objectives, hypotheses, significance of the study, delimitations, and study organization, is presented in Chapter 1. The association between Sub-Saharan Africa's fiscal market development and economic expansion was covered in detail in Chapter 2 along with associated theories and studies. While Chapter Four addressed the findings and a discussion of the empirical data, Chapter Three concentrated on the research techniques. In Chapter 5, the study's summary, findings, and suggestions were laid out.

# CHAPTER TWO

# LITERATURE REVIEW

## Introduction

Examining the connection between Sub-Saharan Africa's fiscal market progress and economic expansion is the goal of this study. The review of the literature will be guided by the following specific goals: to scrutinize the association between Sub-Saharan African fiscal market development and economic growth; to examine the direction of causality among Sub-Saharan African fiscal market development and economic expansion; and, finally, to assess the relationship between Sub-Saharan African fiscal market progress and economic expansion across the various percentile distributions. This chapter analyzed pertinent material on the rise of the fiscal markets and the economy. The literature review is divided into three sections: a theoretical evaluation of the evolution of fiscal markets and economic growth; a conceptual analysis; and an empirical analysis.

## Theoretical Review

### Keynesian theory

Aggregate Demand (AD) and Aggregate Supply (AS) evaluation form the foundation of the Keynesian model. The primary characteristic of this theory is that the AS curve slopes upward in the short run instead of being vertical. Demand-side economic shocks only have an impact on pricing when the AS curve is vertical. But according to Dornbusch, Fischer, and Samuelson (1996), the higher slope of the AS curve means that shifts in demand can now affect output and price fluctuations. The emergence of an adjustment route that first shows a positive connection among inflation and expansion but later turns

negative is caused by the short-run dynamic equilibria of the AD and AS curves. The time-inconsistency issue is typically what causes the positive relationship between inflation and growth. As a result, some producers think that the prices for their products are rising while the prices for others are staying the same. As a result, they create more, which raises total output (Dornbusch et al., 1996).

**Conceptual Review**

**Trends in economic growth of Sub-Saharan Africa**

After abruptly falling to 1.3 percent in 2016, growth in Sub-Saharan Africa is predicted to have recovered to 2.4 percent in 2017. Increased household consumption is the result of a modest rebound in the region's three largest economies—Angola, Nigeria, and South Africa—which has been aided by improving commodity prices, favourable global financial conditions, and a decline in inflation. The region is still seeing adverse per capita income expansion, sluggish investment, and a fall in productivity development, therefore expansion was a little weaker than anticipated.

Although the effects of the earlier oil price collapse are still being felt by the region's oil producers, metal exporting countries' growth has moderately recovered as a result of increased mining output and rising metal prices, while the growth of non-resource-intensive countries—mostly agricultural exporters—has been largely stable as a result of infrastructure investment and crop production.

In 2017, fiscal deficits somewhat decreased as a result of significant spending cuts in some oil exporting countries. However, as governments

borrowed to finance public investment, government debt in the region increased in comparison to 2016.

May saw a slight increase in regional inflation to 15.2% (April: 15.0%). The acceleration was largely caused by rising food prices in Angola, Ghana, and Nigeria, while Zimbabwe's inflation rate continues to rocket into the triple digits. Future inflation in Sub-Saharan Africa is predicted to be higher than 2019 because to supply disruptions brought on by the epidemic and weaker currencies.

The monetary authorities of Mozambique and, most significantly, Nigeria decreased their benchmark rates in recent weeks, while the central banks of Botswana and Kenya kept things the same. Analysts in the market were taken aback by Nigeria's action because it could further escalate inflation. Policymakers are generally anticipated to continue moving forward as a collective.

Recent currency performance in Sub-Saharan Africa was inconsistent. The Angolan kwanza's decline versus the US dollar is particularly noteworthy, as the South African rand has continued to recover some of the significant losses it has sustained since the start of 2020. Most regional currencies are expected to decline more dramatically than in 2019.

From Figure 1 below, Sub-Saharan Africa economic growth for 2019 was $1,766.94B, a 2.66% increase from 2018, for 2018 was $1,721.16B, a 4.83% increase from 2017, for 2017 was $1,641.78B, a 6.58% increase from 2016, for 2016 was $1,540.37B, a 7.31% decline from 2015.

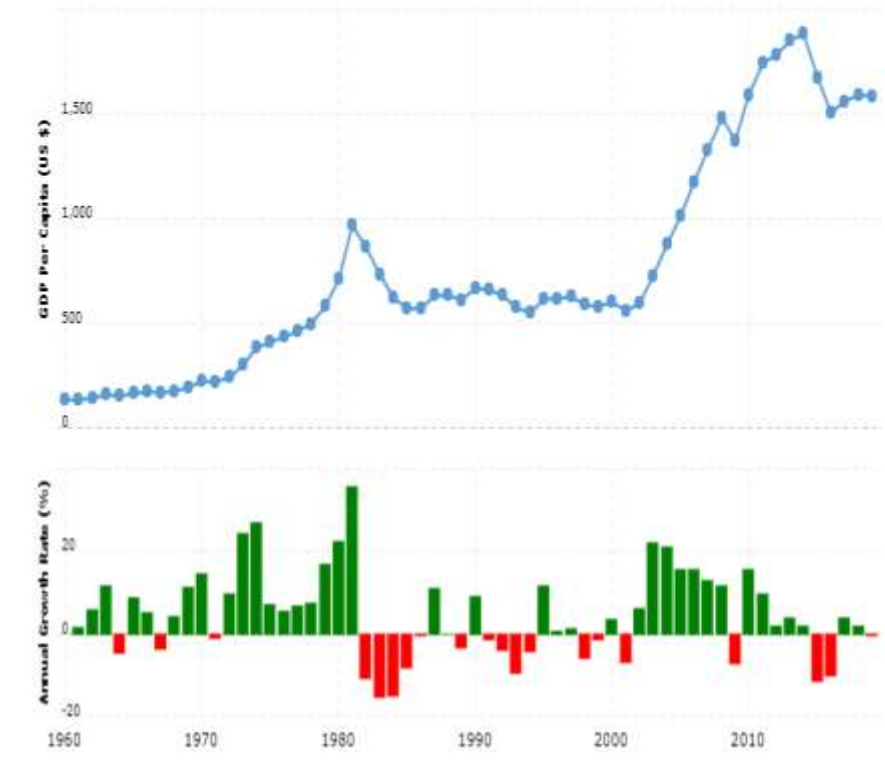


*Figure 1:* Sub-Saharan Africa GDP Per Capita 1960-2021

Source: World Bank (2021)

**Determinants of economic growth**

Recently, the determinants of economic growth have been much researched. Traditional models such as the Neoclassical, based on Solow's growth model, have stressed the relevance of investment while endogenous expansion theory created by Romer (1986) and Lucas (1988) has focused on the role of human capital and innovation capacity. Numerous empirical studies have been conducted to either support or disdain these theories. Because of the lack of a unified theory on growth, these empirical studies have multi-theoretical bases.

The level of technological expansion of the host economy, economic stability, the state's investment strategy, and the degree of openness can all be considered important growth drivers, particularly in developing nations

(Rittenberg & Tregarthen, 2012). FDI boosts the production of the host nation and alters its comparative advantage. In the same way that FDI affects capital formation, growth and exports would be impacted if productivity growth were export-biased (Blanka, 2012). According to Dritsakis, Erotokritos, and Adamopoulos (2006), the effect of FDI on a nation's economic expansion is influenced by that nation's level of technological development, economic stability, investment policy, and degree of openness. They further contend that since FDI inflows are a source of funding and capital formation is a factor in determining economic expansion, they might also have an influence on capital formation.

Ensuring sustainable growth and progress is the major policy indication of any government in the world. This is because sustainable growth ensures that the needs of the present generation are met whiles securing that of the future generation and capital formation is seen as one of the major contributing factors towards the expansion and development of a state. Dritsakis et al. (2006) affirm this notion by stating that gross capital formation is one of the prime factors that determine economic expansion. Pavelescu (2008) also iterated that gross capital formation’s contribution to growth is not only on the demand side but also on the supply side. He attributed this notion to the fact that a significant portion of these expenditures is channeled towards renewing the fixed assets of firms in an economy. The author further argued that since fixed capital is a major factor in production, there is a need to quantify its efficiency, and therefore derived formula from the Domar growth model to quantify capital accumulation efficiency.

Government investment in infrastructure development complements private investment by raising the marginal product of private capital, which boosts the expansion of the domestic economy. Public infrastructure investments, in the opinion of Knight, Loyaza and Villanueva (1993), Nelson and Singh (1994), significantly boost economic growth. Since private investors are typically more productive than public investors, Khan and Kumar (1997) contend that the impact of private and public investment on expansion is knowingly different. The effect of a poorly managed exchange rate on an economy is enormous. It disrupts household planning as well as the firm's budgetary allocations, especially in an import-dependent economy like Ghana.

The continuous increase in the cost of imported goods, especially inputs of production, affects productivity adversely and decreases economic growth. Also, exchange rate volatility has been a major issue in Ghana due to the continuous fall of the Cedi against the major trading currencies (De Melo and Tsikata, 2015). Theoretically, there exists no unambiguity about the growth-effect of the exchange rate. The exchange rate affects growth through the channels of investment, trade and productivity (Petreski, 2009).

**Empirical Review**

This section reviews existing findings on fiscal market expansion and economic growth. It discusses previous findings and discusses their strength and weaknesses.

**Relationship between financial market development and economic Growth in Sub-Saharan Africa**

According to a study by Ngongang (2015), fiscal development in SSA states between 2000 and 2014 had little effect on economic expansion. The author speculates that the stated absence of a relationship may be due to the SSA's weak financial system. The researcher continued by saying that the quality of the link between finance and economic expansion is affected by the volatility of growth rates of real GDP per person in SSA. According to Nyasha and Odhiambo's 2015 analysis, there is a brief, one-way causal relationship linking market-based financial development and bank-based financial development. However, the study was unable to show a connection between the growth of bank-based financing and economic expansion.

Domestic credit to the private sector and economic development were favourable and statistically significant at 5%, per Ofori-Abebrese, Pickson, and Diabah (2017). In other words, a 1% rise in domestic lending to the private sector will result in an immediate 5% boost in economic growth. But with a domestic deposit as a proxy, the researchers obtained a statistically significant negative association at 1% which translated into a 0.5% decrease in economic growth when domestic deposit increase by 1% in the short run. Although it was discovered that investment as a proportion of GDP strongly correlated with economic growth, it was statistically inconsequential over the short term. According to Sehrawat and Giri (2016), there is a short-term unidirectional causality connecting fiscal expansion and economic expansion.

The general opinion is that the expansion of the fiscal markets has an impact on economic expansion in the short term for the majority of

economies. Depending on the proxy employed for fiscal market development, some researchers find no association between short-term economic expansion and financial market development. There is also a lot of disagreement on whether that relationship is positive or bad.

According to the 2015 study by Nyasha and Odhiambo, there is a definite short- and long-term unidirectional Granger-causality connecting economic growth in South Africa with stock market expansion. This study looked at the years 1980 to 2012 in South Africa to determine the causal link between economic expansion, stock market development, and bank-based financial development.

According to a study by Pradhan, Arvin, Hall, and Nair (2016) that looked at the causal relationships between innovation, financial market development, and economic expansion, there is strong evidence that both financial development and innovation are crucial in determining long-term economic growth for Eurozone economies.

Depending on the proxy measures for financial development, the results of Adu, Marbuah, and Mensah's (2013) examination into the association between Ghana's financial market development and economic expansion differed. For instance, using the ratio of private sector credit to GDP or the ratio of private sector credit to total credit produced a statistically significant positive effect of financial development on economic expansion over time, whereas using the ratio of broad money supply to GDP produced a statistically significant negative effect.

Long-term domestic loan to the private sector has a favourable link with economic expansion, whereas domestic deposits have the opposite

impact. (2017) Ofori-Abebrese et al. According to the researchers' findings, each increase of 1% in the amount of funding provided to private businesses leads to an increase of 0.84% in economic growth. Additionally, they discovered that a 1% increase in domestic deposits causes an economic progress decline of 0.99%. On the basis of data collected between 1970 and 2013, this study was carried out in Ghana.

According to a co-integration test performed by Sehrawat and Giri (2016), fiscal development and economic expansion for (South-Asian Association for Regional Cooperation) SAARC countries exist over the long term. Looking at the long-term impacts, it is unclear whether or not there is a link between financial market expansion and economic expansion in Ghana. If there is a relationship it will be important to know whether that relationship is positive or negative and how the Ghanaian average over the long term differs from that of SSA countries combined.

**The Direction of causality between financial market development and economic growth in Sub-Saharan Africa**

Boadu, Chen, and Zhang (2016) built a dynamic panel model to examine 12 SSA nations between the years 2000 and 2006 and discovered that there was substantial evidence of a unidirectional causal link among the growth of stock markets and economic expansion. According to Wait and Ruzive (2016), there is a correlation between financial market expansion indices and economic growth. After doing econometric research, they further discovered that BRICS economies grow 13% faster than non-BRICS economies for every 1% rise in financial market depth. There is a short-term unidirectional causal link between market-based financial development and

economic expansion and bank-based fiscsal development. In 2015, Nyasha and Odhiambo.

A long-term positive association among fiscsal development and economic expansion was discovered in a study by Polat et al. (2015) that included trade openness. Additionally, a unidirectional connection linking fiscal development and economic expansion was discovered. There is a one-way causal link among fiscal progress and economic expansion in the short run. 2016 (Sehrawat & Giri). The link between the relative rates of financial and real sector output expansion will determine how quickly the economy grows overall. 2018 (Ibrahim & Alagidede). Depending on how the real sector and financial development are balanced, the influence could be either negative or good. The study was carried out for 29 SSA countries between 1980 and 2014 in order to determine whether sectoral growth had any bearing on how financial development affected SSA's economic growth.

If a relationship between the two variables was discovered, there appears to be agreement regarding the unidirectional causal link among fiscal market expansion and market expansion both in the long run and short run. The research, therefore, seeks to confirm if a similar situation will be found in Ghana. However, the view of no relationship and bidirectional positive link between fiscal market and economic expansion exist in literature according to Nyasha and Odhiambo (2015) per their empirical analysis conducted. There are also views on a supply leading and a demand following hypothesis of the relationship.

**Conceptual Framework**

Based on the assumptions created to investigate the relationship between Sub-Saharan Africa's financial market development and economic expansion, the study built a conceptual framework. From figure 1 below, the conceptual framework showed that fiscal market development (domestic credit to private sector by banks, % of GDP) has a direct link with market expansion (real per capita GDP). The conceptual framework included some country-level macroeconomic control variables in the empirical analysis. These variables are institutional value index (simple average of six governance indicators), gross fixed capital formation (% of GDP), foreign aid ((% of GNI), trade openness (% of GDP) and consumer price inflation rate. The study also analysed each of the sub-components of the institutional value index in separate models.

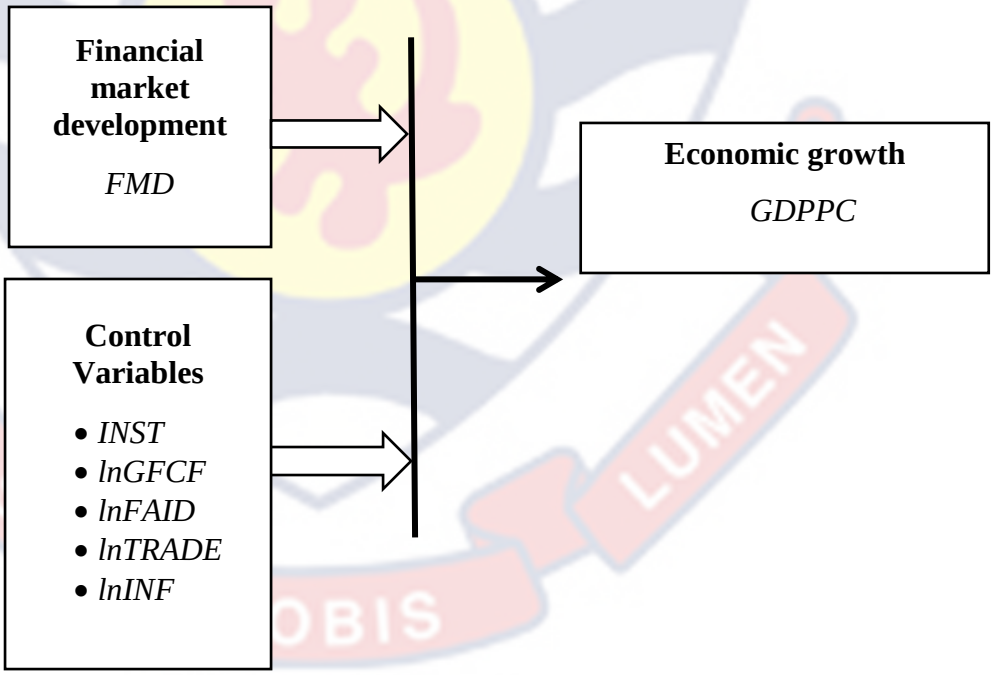


*Figure 2*: Conceptual framework
Source: Author's construct (2020)

## Chapter Summary

The section reviewed literature that was related to the study. Keynesian theory was reviewed to establish the theoretical link among the variables of interest. The conceptual review was made on the trends and determinants of economic expansion in Sub-Saharan Africa. The chapter concluded with an empirical review of the various objectives as specified in the previous chapter. The chapter identified some empirical gaps and provided a conceptual framework to explain the various relationships among fiscal market expansion and economic expansion in Sub-Saharan Africa.

# CHAPTER THREE

# RESEARCH METHODS

## Introduction

In order to fulfil the study's goals, this chapter explains the procedures, approaches, and methodologies employed to carry out the study on the evolution of the financial market and economic expansion in SSA. The following were the study's goals: Examine the causal chain, the association between SSA's financial market expansion and economic growth across the various percentile distributions, and the among between SSA's financial market development and economic growth in general. The research paradigm, research design, research approach, model specification and justification, data, sources, definitions, and measurements of variables, as well as estimate technique, are all subjects covered in this chapter.

## Research Paradigm

The research paradigm is the set of common beliefs and agreements shared among scientists about how problems should be understood and addressed (Kuhn, 1970). The choice of which paradigm to adopt in research is a function of the researcher's positions in ontology and epistemology (Pittaway & Thorpe, 2012). The paradigms of research are in three major sub-groupings. They are positivism, interpretivism and critical theory. Positivism defines a branch of philosophy that became prominent during the early nineteenth century. This was due to the works of the French philosopher Auguste Conte (Richards, 2003). It assumes the independent existence of reality outside of humans. It is not under the influence of sensual factors but rather under the governance of immutable laws. Interpretivism seeks to

respond to the extreme dominance of positivism (Grix, 2004). It is opposed to the fundamental assertion that there exists a sole and universal reality that exists outside of our senses. The proposition of interpretivism refuses to assume any enduring, unvarying standards by which truth can be universally known (Guba & Lincoln, 2005).

Critical theory is another research paradigm that originates from the works of some authors in the twentieth century with affiliations with the Institute of Social Research at the University of Frankfurt. This position of ontology assumes that reality exists which has been shaped by interpretive factors. Hence, it is subjective in that it acknowledges the influence of the researcher on the research process. By this, it assumes that positivist outcomes are influenced by cultural, ethnic, political, gender and other factors like religion which interact to create a functioning social system. To this end, the critical theory bridges the divide between positivism and interpretivism. It provides the necessary disclaimer so that "no one is confused concerning the epistemological and political baggage they bring with them to the research site" (Kincheloe & McLaren, 2005).

From the merits of the research topic, the object of this study is to discover the association among fiscal market growth and economic expasion. For this reason, the researcher found it prudent to adopt a positivist approach to the research. This is because it is the most suited for the determination of causal relationships which would then be generalized for the whole population of the study. Hence the research paradigm of this research is that of positivism.

## Research Design

This research adopts a deductive research design rather than an inductive design. The deductive method typically uses existing ideas as a guide to comprehend evidence, whereas the inductive method also uses facts to generate new understanding, such as building a theory (Ackah, 2016). The deductive design is more suitable for answering the research questions posed. Deductive research also ensures generalizability of research conclusions.

This study adopted the explanatory research design. Explanatory research, according to Saunders, Lewis and Thornhill (2009) establishes the causal relationship between variables. Explanatory research is used to link ideas to understand the cause and effect and to explain what is going on in the research area in the context of this research topic to reflect the demands of the research objectives. The explanatory design will also provide increasing understanding, the flexibility of resources and a better conclusion for the research. Specifically, this research adopts the quantile regression approach to try and explain the link between fiscal market expansion and economic expansion in SSA.

## Research Approach

The enterprise of academic research recognizes three research styles which are the quantitative, qualitative and mixed approaches (Guba, 1990). The quantitative approach includes positivism and the worldviews which emerged post-positivism. The qualitative approaches deal with the constructivist and transformative worldview of research. Finally, the mixed approach deals with the views centered on pragmatism.

Given the positivist paradigm of this research, the approach to be adopted is the quantitative approach. This is because it seeks to discuss the cause-and-effect relationship in a framework of positivism.

**Data Sources and Description**

This study employed secondary annual data on financial market growth, economic growth and control variables (institutional quality index, gross fixed capital creation, foreign aid, trade openness and consumer price inflation rate for forty-eight (48) SSA countries from 2002 to 2019. Some observations were missing for some years, which gives unbalanced panel data. Data were obtained chiefly from the World Development Indicators (WDI) and the World Governance Indicators (WGI). Stata v.14 and Microsoft excel 2019 were used to process the data for analysis.

**Pre-Estimation Technique**

**Panel unit root test**

When the long-run affiliation among variables is estimated without checking their stationarity, it may result in a spurious regression. Unit root tests are used to test if the series are integrated into the order of one I(1).

The series is expected to follow an AR (1) process:

$$y_t = \rho y_{t-1} + X_t'\delta + \varepsilon_t \qquad (1)$$

Where $y_t$ is a nonstationary series, $\rho$ and $\delta$ are the parameters and $\varepsilon_t$ is the white noise;

The hypothesis of the general unit root test is as follows:

$$H_0: \rho = 1$$

$$H_1: \rho < 1$$

Where $\rho$ is the parameter to be estimated;

Augmented Dickey-Fuller unit root test is a parametric test that corrects for correlation by following an AR(p) process (Dickey & Fuller, 1979).

$$\Delta y_t = \alpha y_{t-1} + X_t'\delta + \varepsilon_t \quad (2)$$

Where $\alpha = \rho = 1$

The hypothesis of the Augmented Dickey-Fuller unit root test is as follows:

$$H_0: \alpha = 0$$

$$H_1: \alpha < 0$$

Where $\alpha = \rho - 1$.

The Philips-Perron unit root test is a nonparametric test good for overcoming serial correlation and heteroscedastic errors. The test statistic used to reject the null hypothesis or otherwise is presented as:

$$t_\alpha = t_\alpha \left(\frac{\gamma_0}{f_0}\right)^{1/2} + \frac{T(f_0 - \gamma_0)\left(se(\hat{\alpha})\right)}{2{f_0}^{1/2}s} \quad (3)$$

Where $(\hat{\alpha})$ is the estimated parameter and $se(\hat{\alpha})$ is the associated standard error.

**Model Specification**

Some researchers (Brooks, 2008; Gujarati, 2011) have highlighted the advantages that come with the use of the panel aproximation technique due to the nature of the data over cross-sectional and time-series estimation techniques. In order to overcome the drawbacks of cross-sectional and time-series estimating techniques, panel estimation technique helps to control for

omitted variables and country-specific effects while also allowing for both long-run and short-run effects (Stock & Watson, 2001). According to Gujarati (2011), merging cross-sectional and time-series observations into panel data results in "more efficient data, more variability, less collinearity among variables, and more informative data. By following Zafar, Shahbaz, Hou and Sinha (2019), the baseline empirical model was estimated as:

$$GDPPC_{it} = \beta_0 + \beta_{1i}FMD_{it} + \beta_{2i}INST_{it} + \beta_{3i}lnGFCF_{it} + \beta_{4i}lnFAID_{it} + \beta_{5i}lnTRADE_{it} + \beta_{6i}lnINF_{it} + v_{it} \quad (4)$$

Here *i* denotes countries and *t* refers to the year. $GDPPC_{it}$ is economic growth, $FMD_{it}$ is financial market development, $INST_{it}$ is the institutional quality index, $lnGFCF_{it}$ is gross fixed capital formation, $lnFAID_{it}$ is foreign aid, $lnTRADE_{it}$ is trade openness, $lnINF_{it}$ is consumer price inflation rate, $ln$ denotes the natural logarithm of some variables, The parameters $\beta_i{}'^s$ represents the regression coefficients and $v_{it}$ denotes the standard error term. Some of the variables are transformed into their natural logarithm to level the data. Moreover, linear-log transformation generates more reliable and efficient outcomes as compared to the simple linear conversion (Akram, Chen, Khalid, Huang & Irfan, 2021).

The error term is explained as:

$$Vit = \mu i + \lambda t + \varepsilon it \quad (5)$$

If $\mu i$ are assumed to be fixed parameters, the model is a fixed-effects model. If $\mu i$ are assumed to be realizations of an independent and identically distributed (i.i.d.). a process with mean 0 and variance $\sigma\mu^2$, it is a random-effects model. Whereas in the fixed-effects model, the $\mu i$ may be correlated

with the covariates X*i,t*, in the random-effects model the $\mu i$ are assumed to be independent of the X*i,t*. On the other hand, any X*i,t* that do not vary over *t* is collinear with the $\mu i$ and would be dropped from the fixed-effects model. In contrast, the random-effects model could accommodate covariates that are constant over time.

**Dynamic Panel Estimation**

The study's primary goal was to investigate the connections between Sub-Saharan Africa's developing financial markets and its expanding economy. Due to its robustness and the dynamic character of the study's variables, the study used a dynamic panel estimate technique, specifically the two-step system GMM. The empirical analysis was carried out using Athanasoglou's (2008) proposed GMM formula, which is as follows:

$$\text{GDPPC}_{it} = \alpha_0 + \delta_i \text{GDPPC}_{it-1} + \beta_i FMD_{it} + \sum_{J=1}^{J} \beta_j Z_{it} + v_{it} \qquad (6)$$

Where, $\text{GDPPC}_{it}$ indicates economic growth where real per capita GDP was used as the proxy variable of country *i* at time *t* where *i = 1…N, t = 1*, $\alpha_0$ is the constant term, and $\delta_i$, $\beta_i$ and $\beta_j$ are the coefficients of the respective variables. $\text{GDPPC}_{it-1}$ is the one-lag value of the dependent variable, $FMD_{it}$ which represents financial market development is the explanatory variable, $Z_{it}$ represents all control variables and $v_{it}$ the disturbance term, with $\varepsilon it$ the unobserved country-specific and $u_{it}$ the idiosyncratic error.

The standard first-differenced GMM estimator was introduced by Arellano and Bond (1991) to account for dynamic effects in panel data. Country-specific fixed effects are included to control for the possibility that some variables may vary more across units than over time. sample bias", which can distort assessments even from remarkably large samples (Bound et

al., 1995). Then, utilising additional moment criteria, Arellano and Bover (1995) and Blundel and Bond (1998) created a system GMM model to handle this issue. Additionally, a two-step estimation is used since it increases the asymptotic efficiency of GMM diagnostic tests and is more effective. As a result, a two-step system GMM estimator was used to estimate Eqn (6). Arellano-Bond first- and second-order autocorrelation as well as the Hansen's J test of overidentifying limits for the overall instrument validity were used to confirm the validity of our GMM estimations.

**Diagnostics test**

Diagnostic tests were done to make sure the model was adequate. The Arellano and Bond serial correlation tests for serial correlation and the Sargan test for instrument validity were the two primary diagnostics needed by the GMM estimator. According to Mileva (2007), the Arellano-Bond test for autocorrelation is applied to the differenced residuals and has a null hypothesis of no autocorrection. The null hypothesis for the test of the AR (1) process in first differences is typically anticipated to be rejected.

However, the test for AR (2) in initial differences will notice the autocorrelation in levels, therefore its null hypothesis is acceptable. It is significant to note that the Sargan test of over-identifying constraints may not be suitable if the null hypothesis "the instruments as a group are exogenous" is rejected. Consequently, the higher the p-value of the Sargan Stats, the better, as it demonstrates the validity of the instruments employed for the GMM estimate and the reasonableness of the exclusion criteria for these instruments.

**Estimation of the Long-run Coefficients**

Long-run coefficients were estimated for only significant variables (p-value < 0.05), the long-run coefficient was estimated as the ratio of the coefficient of the significant variable to the coefficient of the lag dependent variable (L. GDPPC). The equation below was used in Stata v.14 to estimate long-run coefficients of the significant explanatory and control variables.

$$\delta_J = \frac{\beta_i X_{it}}{1 - \beta_m GDPPC_{it-1}} \quad (7)$$

Where, $\delta_J$ represents the long-run coefficients of the significant variables, $\beta_i$ is the coefficient of the significant variables, $\beta_m$ is the coefficient of $\text{GDPPC}_{it-1}$, $\text{GDPPC}_{it-1}$ is the one-lag value of the dependent variable and $X_{it}$ is a set of significant variables estimated from the two-step system GMM in Eqn (6).

**Causality Estimation**

The study's second goal was to inspect the link between the expansion of the financial market and Sub-Saharan Africa's economic growth. Thus, it intended to look into any potential bi-causality between Sub-Saharan Africa's economic growth and the expansion of its fiscal markets. Dumitrescu and Hurlin (2012) were employed in this investigation to find Granger causality in panel datasets. In actuality, K is the lag order and is supposed to be the same for all individuals, and the panel must be balanced. Dumitrescu et al. (2012) ran all sets of regressions including a lag order from 1 to the largest number conceivable (i.e., such that T > 5+3K). The most common estimation technique used in literature to investigate causality between two study variables of interest is the Granger-causality which was proposed by Granger

(1969). The Granger-Causality estimation technique is easy to run and has been applied in many kinds of empirical studies including Adjei-Frimpong, Gan, and Hu (2013). Granger causality is useful in determining the direction of the relationships. The empirical is estimated below;

$$\Delta Y_{it} = \alpha_0 + \sum_{i-1}^{p} \beta_{1i} \Delta Y_{it-i} + \sum_{i-0}^{q} \theta_{1i} \Delta X_{it-i} + \mu_{it} \quad (8)$$

$$\Delta X_{it} = \alpha_0 + \sum_{i-1}^{p} \beta_{2i} \Delta X_{it-i} + \sum_{i-0}^{q} \theta_{2i} \Delta Y_{it-i} + \mu_{it} \quad (9)$$

If $X_{it}$ Granger causes $Y_{it}$, then the current values of $Y_{it}$ are determined by past values of $X_{it-1}$. The test of the null hypothesis($H_0$): $\alpha_i$= 0, can be carried out with the F- test.

From the above model, the study would specifically estimate the panel Granger causality between financial market development and economic growth using the model below;

$$\Delta GDPPC_{it} = \alpha_0 + \sum_{i-1}^{p} \beta_{1i} \Delta GDPPC_{it-i} + \sum_{i-0}^{q} \theta_{1i} \Delta FMD_{it-i} + \mu_{it} \quad (10)$$

$$\Delta FMD_{it} = \alpha_0 + \sum_{i-1}^{p} \beta_{2i} \Delta FMD_{it-i} + \sum_{i-0}^{q} \theta_{2i} \Delta GDPPC_{it-i} + \mu_{it} \quad (11)$$

**Quantile Regression**

The third objective of the study was to scrutinize the relationship among fiscal market expansion and economic expansion in Sub-Saharan Africa across various percentile distributions. In this study, conditional quantile functions were measured and conclusions about them were drawn

using a statistical technique known as a quantile regression model, created by Koenker and Bassett (1978). Quantile regression is an excellent method for analysing the relationship between the development of financial markets and economic growth since it is more adaptive when modelling data with varying conditional circumstances:

$$y_{it} = x'_{it}\beta_\theta + u_{\theta it} \qquad \text{with} \quad \text{Quant}_\theta(y_{it}|x_{it}) = x'_{it}\beta_\theta$$

where $y_{it}$ is the dependent variable, $x$ is a vector of regressors, $\beta$ is the vector of parameters to be estimated, and $u$ is a vector of residuals. $Q_\theta(y_{it}|x_{it})$ denotes the $\theta^{th}$ conditional quantile of $y_{it}$ given $x_{it}$. The $\theta^{th}$ regression quantile, $0 < \theta < 1$, solves the following problem:

$$\min_\beta \frac{1}{n}\left\{ \sum_{i,t:y_{it}\geq x'_{it}\beta} \theta|y_{it} - x'_{it}\beta| + \sum_{i,t:y_{it}<x'_{it}\beta} (1-\theta)|y_{it} - x'_{it}\beta| \right\} = \min_\beta \frac{1}{n}\sum_{i=1}^{n} \rho_\theta u_{\theta it}$$

where $\rho_\theta(.)$, which is known as the 'check function', is defined as:

$$\rho_\theta(u_{\theta it}) = \left\{ \begin{array}{ll} \theta u_{\theta it} & \text{if } u_{\theta it} \geq 0 \\ (\theta-1)u_{\theta it} & \text{if } u_{\theta it} < 0 \end{array} \right\}$$

Due to the advantages (as stated above) of quantile regression estimation technique over OLS, fixed and random effect models, we examined at the 5th, 25th, 50th, 75th and 95th quantiles in this study. To enable the specifications in this study to differentiate themselves from previous studies, the following models below were used:

$$\begin{aligned} Q_{0.05}(GDPPC_{it}) &= \beta_{0.05} + \beta_{0.05}FMD_{it} + \beta_{0.05}INST_{it} + \beta_{0.05}lnGFCF_{it} \\ &+ \beta_{0.05}lnFAID_{it} + \beta_{0.05}lnTRADE_{it} + \beta_{0.05}lnINF_{it} \\ &+ v_{0.05it} \end{aligned} \qquad (12)$$

$$Q_{0.25}(GDPPC_{it}) = \beta_{0.25} + \beta_{0.25}FMD_{it} + \beta_{0.25}INST_{it} + \beta_{0.25}lnGFCF_{it} + \beta_{0.25}lnFAID_{it} + \beta_{0.25}lnTRADE_{it} + \beta_{0.25}lnINF_{it} + v_{0.25it} \quad (13)$$

$$Q_{0.50}(GDPPC_{it}) = \beta_{0.50} + \beta_{0.50}FMD_{it} + \beta_{0.50}INST_{it} + \beta_{0.50}lnGFCF_{it} + \beta_{0.50}lnFAID_{it} + \beta_{0.50}lnTRADE_{it} + \beta_{0.50}lnINF_{it} + v_{0.50it} \quad (14)$$

$$Q_{0.75}(GDPPC_{it}) = \beta_{0.75} + \beta_{0.75}FMD_{it} + \beta_{0.75}INST_{it} + \beta_{0.75}lnGFCF_{it} + \beta_{0.75}lnFAID_{it} + \beta_{0.75}lnTRADE_{it} + \beta_{0.75}lnINF_{it} + v_{0.75it} \quad (15)$$

$$Q_{0.95}(GDPPC_{it}) = \beta_{0.95} + \beta_{0.95}FMD_{it} + \beta_{0.95}INST_{it} + \beta_{0.95}lnGFCF_{it} + \beta_{0.95}lnFAID_{it} + \beta_{0.95}lnTRADE_{it} + \beta_{0.95}lnINF_{it} + v_{0.95it} \quad (16)$$

Where all the variables are defined earlier; $ln$ denotes the natural logarithm of some variables, the parameters $\beta_i{}'^{s}$ represents the regression

coefficients at $5^{th}$, $25^{th}$, $50^{th}$, $75^{th}$ and $95^{th}$ quantiles and $v$ denotes the standard error term.

**Justification of the Model**

A statistical method called quantile regression is used to estimate and draw conclusions regarding conditional quantile functions. Quantile regression approaches provide a more thorough statistical study of the links among the dependent (economic growth) and the independent variables by approximating models for conditional quantile functions, including the conditional median function. Quantile regressions allow for the capture of heterogeneity and the assessment of how changes in the financial markets affect various nations based on where they fall on the conditional progress distribution. The conditional distribution is depicted by each estimated quantile, which leads to a more comprehensive and diverse depiction of the link between economic expansion and its explanatory variables.

**A Prior Expectation**

Table 2 displays the predictable signs of the exogenous variables based on theoretical and empirical literature discussed in section 2.

**Table 2: A Priori Expected Signs of the Exogenous Variables**

| Variables | Expected sign |
|---|---|
| FMD | +/- |
| INST | + |
| *ln*GFCF | + |
| *ln*FAID | +/- |
| *ln*TRADE | + |
| *ln*INF | +/- |

Source: Author's computation (2020)

## Measurement of Variables

### Gross domestic product per capita

A macroeconomic indicator of a country's standard of living is its gross domestic output per capita. Gross domestic product divided by a nation's entire population is used to calculate the variable. Salas et al. (2002) claim that an increase in gross domestic product per capita is an indication of improvement in the standard of living, citing research like Fofack (2005), Rajan et al (2003), and Salas et al. Real GDP per capita (GDPPC) was utilised in this study (Barth et al., 2013) to gauge the overall state of the economy. Real GDP divided by the entire population was used to calculate the variable. Data are from the WDI and are expressed in constant 2010 U.S. dollars.

### Financial market development

Numerous metrics are employed in the literature to gauge the level of fiscal progress. As a general indication of fiscal development, the ratio of domestic bank lending to the private sector to GDP is utilised in the current analysis as one proxy variable (Khan & Senhadji, 2000; Levine et al., 2000; Boyd et al., 2001; Beck et al., 2004; Honohan, 2004). It reveals the true scale of the financial industry in a developing country. Data were gathered from the WDI and used as a proxy to measure the level of fiscal intermediation in the SSA: domestic credit to the private sector by banks,% of GDP.

### Institutional quality

The simple average of six Worldwide Governance Indicators components is used to calculate this variable (Kaufman, Kraay, & Zoido-Lobatón, 2001; Kaufmann, Kraay & Mastruzzi, 201; Law & Azman-Saini, 2012). The Control of Corruption (CC) metric captures perceptions of how

much public power is utilised for private gain. Government effectiveness (GE) measures the degree of independence from political interference, the credibility of the civil service, the credibility of public services, and the government's adherence to its stated policies. The probability of political instability and/or politically motivated violence, including terrorism, is gauged by the Political Stability and Absence of Violence (PSAV) index. The public's perception of the government's ability to develop and implement reasonable laws and regulations that support and promote the expansion of the private sector is measured by the regulatory quality (RQ). The effectiveness of contract implementation, the police, and the courts, as well as the tendency for crime and violence, all factor into how much agents trust and support the rule of law (RL). Voice and Accountability (VA) gauges citizens' impressions of their freedom of expression, association, and media access, as well as their ability to select their government. The values of each of the six indicators ought to be greater. The WGI provided the data.

**Gross fixed capital formation**

Gross fixed capital creation, according to Meyer and Sanusi (2019), is a macroeconomic strategy that is a key element of domestic investment and has the potential to boost economic growth. Existing research reveals that domestic investment, or gross fixed capital creation, is seen as a crucial element to promote economic growth (Tobin, 1965; Faulkner, Loewald, and Makrelov, 2013; Overseas Development Institute, 2016). Investment and economic expasion have a strong positive relationship, according to empirical literature (Levine & Renelt, 1992; Mankiw et al., 1992; De Long & Summers, 1992). The ratio of gross fixed capital creation to GDP was calculated using

the natural log, and data were gathered from World Development Indicators for this study.

**Foreign aid**

Robert Solow's 1956 neoclassical growth model postulates the significance of saving as a factor in physical capital accumulation and expansion. According to this hypothesis, foreign aid can be extremely helpful in creating physical capital in nations where it is lacking by increasing domestic savings (Baldé 2011). According to the Keynesian model, foreign aid may help boost consumption, a key factor in determining growth. Accordingly, it has been proposed that foreign aid and growth are positively correlated (Islam 1992; Fayissa & El-Kaissy 1999; Feeny 2007; Juselius, Mller & Tarp 2014). The natural logarithm of the ratio of net official development assistance to GNI was employed in this analysis as a proxy for foreign aid based on empirical evidence, and data were obtained from the WDI.

**Trade openness**

Increasing entree to a variety of production inputs, entrée to advanced technology from other countries, and broader markets that increase the efficiency of domestic production through amplified specialisation are just a few of the many ways that increased trade openness is thought to boost growth (Durbarry et al., 2006). Edward (1998), for instance, uses a series of openness indicators of trade policy. In the present context, the natural logarithm of the ratio of the sum of exports and imports to GDP was used as a variable named (*ln*TRADE) to proxy for trade openness and data were collected from the WDI.

**Consumer price inflation rate**

Inflation-growth nexus has been extensively reviewed in the literature. Studies have found a varied link among inflation and economic expansion (Mishchenko, Naumenkova, Mishchenko & Ivanov, 2018; Chu, Cozzi, Furukawa & Liao, 2017; Ndoricimpa, 2017; Kryeziu & Durguti, 2019). This study employs the natural logarithm of the consumer price inflation rate as a proxy for monetary instability (Beck, Demirgüç-Kunt, & Levine, 2006). Data were sourced from the World Development Indicators (WDI).

**Summary of Variables**

**Table 3: Description of Variables, Measurement, and Data Sources**

| Variable | Measurement | Data Source |
|---|---|---|
| GDPPC | Real gross domestic product/total population. | WDI (2002-2019) |
| FMD | Domestic credit to private sector by banks %GDP | WDI (2002-2019) |
| INST | Index of six WGI | WGI (2002-2019) |
| CoC | Estimates ranging from −2.5 to 2.5. | WGI (2002-2019) |
| GE | Estimates ranging from −2.5 to 2.5. | WGI (2002-2019) |
| PSAV | Estimates ranging from −2.5 to 2.5. | WGI (2002-2019) |
| RQ | Estimates ranging from −2.5 to 2.5. | WGI (2002-2019) |
| RL | Estimates ranging from −2.5 to 2.5. | WGI (2002-2019) |
| VA | Estimates ranging from −2.5 to 2.5. | WGI (2002-2019) |
| *ln*GFCF | Natural log of the ratio of gross fixed capital formation to GDP. | WDI (2002-2019) |
| *ln*FAID | Natural log of the ratio of net official development assistance to GNI. | WDI (2002-2019) |
| *ln*TRADE | Natural log of the ratio of the sum of exports and imports to GDP. | WDI (2002-2019) |
| *ln*INF | Natural log of consumer price inflation rate. | WDI (2002-2019) |

Source: Author's computation (2020)

**Estimation Technique**

This study seeks to discover the link between the expansion of GDP and the development of financial markets. The research is thus contextualized within a developing country and will require the estimation and evaluation of interrelationships among different variables. For this reason, in choosing an

estimation technique, care was taken to ensure that the technique chosen had the right mix of robustness and flexibility to allow for the different linkages and the interrelations that were expected to exist among the variables of the study.

Given the foregoing, the quantile regression method was selected for this study. It is intended to estimate conditional quantile functions and draw conclusions from them. The conditional median function is one of the conditional quantile functions that its methods estimate models for. As a result, the statistical correlations between dependent and independent variables are analysed more comprehensively. Here, economic growth is the dependent variable, while the variables that fall under the general definition of financial markets are the ones that are independent.

The choice of this technique allows the researcher to capture heterogeneity and aids in the assessment of the effect on countries of financial markets developments according to the country's position on the conditional expansion distribution. With each estimation of a quantile comes the portrayal of a particular segment of the conditional growth distribution. This results in a non-homogenous, and broader definition of the observed relationships between the variable of economic growth and other independent explanatory variables like those within the definition of financial markets.

**Chapter Summary**

The research techniques used to carry out the study are presented in this chapter. The study uses a quantitative methodology and the positivist viewpoint. Additionally, the explanatory design was used in order to use descriptive statistics, unit root analysis, correlation analysis, the Generalised

Method of Moments (GMM) estimator, and a quantile regression model to explain the correlations among fiscal market development and economic expansion. A model specification was made, prior expectations were deduced, a summary of the variables, data collection procedures and estimation technique were discussed.

# CHAPTER FOUR

# RESULTS AND DISCUSSION

## Introduction

Results and comments pertaining to the expansion of the fiscal markets and the economy are presented in this chapter. As a result, the descriptive findings, the relationship among Sub-Saharan Africa's fiscal market and economic growth across different percentile distributions, the direction of causality among fiscal market progress and economic expansion, and these findings are all presented.

## Descriptive Statistics

The results in Table 4 and 5 reflects the expressive statistics on the key variables of the study. Table 4 indicated the number of explanations, mean, standard deviation, kurtosis and skewness values on all the variables.

**Table 4: Descriptive Statistics**

| Variables | Obs | Mean | Std. Dev. | Kurtosis | Skewness |
|---|---|---|---|---|---|
| *GDPPC* | 828 | 2347.336 | 3263.253 | 6.992 | 2.555 |
| *FMD* | 794 | 18.658 | 17.206 | 6.001 | 2.326 |
| *INST* | 856 | -0.675 | 0.641 | -0.107 | 0.165 |
| *CC* | 856 | -0.651 | 0.636 | -0.078 | 0.642 |
| *GE* | 855 | -0.791 | 0.644 | 0.120 | 0.336 |
| *PSAV* | 855 | -0.564 | 0.928 | -0.405 | -0.426 |
| *RQ* | 855 | -0.722 | 0.639 | 0.527 | -0.114 |
| *RL* | 855 | -0.723 | 0.661 | 0.007 | 0.173 |
| *VA* | 855 | -0.598 | 0.759 | -0.786 | 0.026 |
| *GFCF* | 768 | 21.730 | 9.173 | 4.573 | 1.340 |
| *FAID* | 779 | 8.719 | 9.185 | 18.650 | 3.163 |
| *TRADE* | 797 | 73.648 | 37.523 | 5.791 | 1.803 |
| *INF* | 744 | 7.663 | 16.954 | 329.943 | 16.103 |

Source: Fieldwork (2023)

Notes: GDPPC (economic growth), FMD (financial market development), INST (institutional quality index), CC (control of corruption estimate), GE (government effectiveness estimate), PSAV (political stability and absence of violence/terrorism estimate), RQ (regulatory quality estimate), RL (rule of law estimate), VA (voice and accountability estimate), GFCF (gross fixed capital formation), FAID (foreign aid), TRADE (trade openness), INF (consumer price inflation rate).

From Table 4, the economic growth measured by the GDPPC had mean of 2347.336, standard deviation of 3263.253, kurtosis of 6.992 and skewness of 2.555. The mean value for financial market development was 18.658, standard deviation of 17.206, kurtosis of 6.001 and skewness of 2.326. Institutional quality had mean of -0.675 with standard deviation of 0.641, kurtosis of -0.107 and skewness of 0.165. This implied that institutional quality for Sub-Saharan Africa is below the average as the mean is negative.

The mean values for the governance indicators variables for the control of corruption, state effectiveness, political stability and lack of violence, regulatory quality, and voice and accountability were, respectively, -0.651, -0.791, -0.564, -0.722, -0.723, and -0.598. The governance indicators had means values of less than zero and this indicates that institutional quality in Sub-Saharan Africa is deteriorating. The standard deviation for the governance indicators—controlling corruption, effectiveness of the state, political stability and lack of violence, regulatory quality, and voice and accountability—were, respectively, 0.636, 0.644, 0.928, 0.639, 0.661, and 0.759. The kurtosis values for the mentioned governance indicators were -0.078, 0.120, -0.405, 0.527,

0.007, and -0.786 respectively. The skewness values for the governance indicators respectively were 0.642, 0.336, -0.426, -0.114, 0.173, and 0.026.

With respect to the control variables, the mean value for gross fixed capital formation was 21.730%, standard deviation of 0.173, kurtosis of 4.573 and skewness of 1.340. Foreign aid had mean of 8.719% with standard deviation of 9.185, kurtosis of 18.650 and skewness of 3.163. The mean value reflects that foreign aid to Sub-Saharan Africa had been quite low over the sample period. Trade openness had mean of 73.648%, standard deviation of 37.523, kurtosis of 5.791, and skewness of 1.803. Inflation also had mean value of 7.663% with standard deviation of 16.954, kurtosis of 329.943, and skewness of 16.103. Thus, inflation for Sub-Saharan Africa of a single digit is quite encouraging. The results in Table 5 also produced the minimum and maximum values and the 25th, 50th and 75th percentile for the variables of the study.

**Table 5: Descriptive Statistics**

| | | | Percentile | | |
|---|---|---|---|---|---|
| Variables | Min | Max | 25$^{th}$ | 50$^{th}$ | 75th |
| *GDPPC* | 194.873 | 20532.952 | 566.717 | 1035.748 | 2224.504 |
| *FMD* | 0.000 | 106.260 | 8.728 | 13.465 | 21.046 |
| *INST* | -2.449 | 0.880 | -1.123 | -0.697 | -0.291 |
| *CC* | -1.869 | 1.217 | -1.147 | -0.729 | -0.286 |
| *GE* | -2.484 | 1.057 | -1.244 | -0.792 | -0.480 |
| *PSAV* | -3.315 | 1.200 | -1.187 | -0.391 | 0.067 |
| *RQ* | -2.645 | 1.127 | -1.118 | -0.692 | -0.337 |
| *RL* | -2.606 | 1.077 | -1.211 | -0.711 | -0.331 |
| *VA* | -2.226 | 0.998 | -1.202 | -0.583 | -0.066 |
| *GFCF* | 2.000 | 79.462 | 15.578 | 20.576 | 26.058 |
| *FAID* | -0.251 | 92.141 | 2.698 | 6.188 | 11.843 |
| *TRADE* | 16.669 | 311.354 | 46.904 | 64.036 | 92.802 |
| *INF* | -8.975 | 379.848 | 2.286 | 5.318 | 9.136 |

Source: Fieldwork (2023)

Notes: GDPPC (economic growth), FMD (financial market development), INST (institutional quality index), CC (control of corruption estimate), GE (government effectiveness estimate), PSAV (political stability and absence of violence/terrorism estimate), RQ (regulatory quality estimate), RL (rule of law estimate), VA (voice and accountability estimate), GFCF (gross fixed capital formation), FAID (foreign aid), TRADE (trade openness), INF (consumer price inflation rate).

The minimum and maximum values for economic growth were 194.873 and 20532.952 respectively; and 25th, 50th and 75th percentiles were 566.717, 1035.748, and 2224.504. This implies that 25% of the Sub-Saharan Africa (SSA) economies had economic growth (GDPPC) of below 666.717 and 75% had GDPPC of above 666.717; 50% of the SSA economies had GDPPC of below 1035.748 and 50% also had GDPPC of above 1035.748; and 75% of the SSA economies had GDPPC of below 2224.504 while 25% of SSA economies had GDPPC of more than 2224.504.

The minimum and maximum values for financial market development were 0.000 and 106.260 respectively; and 25th, 50th and 75th percentiles were 8.728, 13.465, and 21.046. This implies that 25% of the Sub-Saharan Africa (SSA) economies had financial market development of below 8.728 and 75% had financial market development of above 8.728; 50% of the SSA economies had financial market development of below 13.465 and 50% also had financial market development of above 13.465; and 75% of the SSA economies had financial market development of below 21.046 while 25% of SSA economies had financial market development of more than 21.046.

The minimum and maximum values for institutional quality were -2.449 and 0.880 respectively; and 25th, 50th and 75th percentiles were -1.123, -0.697, and -0.291. This implies that 25% of the Sub-Saharan Africa (SSA) economies had institutional quality score of below -1.123 and 75% had institutional quality score of above -1.123; 50% of the SSA economies had institutional quality score of below -0.697 and 50% also had institutional quality score of above -0.697; and 75% of the SSA economies had institutional quality score of below -0.291 while 25% of SSA economies had institutional quality score of more than -0.291.

Gross fixed capital formation had minimum value of 2.000, maximum value of 79.462, 25th percentile of 15.578, 50th percentile of 20.576 and 75th percentile of 26.058. The implication is that 25% of the SSA economies had their gross fixed capital formation to be below 15.578 while 75% had gross fixed capital formation to be above 15.578. Also, 50% of the SSA economies had gross fixed capital formation to be below 20.576 while 50% also had gross fixed capital formation to be above 20.576. Moreover, 75% of the SSA economies had their gross fixed capital formation to be below 26.058 while 25% had gross fixed capital formation to be above 26.058.

With respect to foreign aid, the minimum value was -0.251% for SSA economies with maximum value to be 92.141%. The 25th percentile was 2.698, 50th percentile was 6.188, and the 75th percentile was 11.843. The implication is that 25% of the SSA economies had their foreign aid to be below 2.698% of GDP while 75% of the SSA economies had foreign aid to be more than 2.698% of GDP. It was also found that 50% of the SSA economies had foreign below 6.188% of GDP while 50% also had foreign aid of more

than 6.188% of GDP. Moreover, 75% of SSA economies had foreign aid of less than 11.843% of GDP while 25% of the SSA economies had foreign aid of more than 11.843%.

In terms of trade openness, the minimum value was 16.669% of GDP with maximum value being 311.354% of GDP. The result showed that the 25th percentile was 46.904 with the implication that 25% of the SSA economies had the sum of import and export to GDP of less than 46.904% while 75% of the SSA economies had the sum of their imports and exports to GDP being more than 46.904%. Also, the 50th percentile was 64.036 with the implication that 50% of SSA economies had trade openness value of less than 64.036% of GDP while 50% of the SSA economies also have trade openness value to GDP of 64.036%. Moreover, 75% of the SSA economies had trade openness value to GDP of less than 92.802% while 25% had trade openness value to GDP of more than 92.802%.

The minimum and maximum values for inflation for the SSA economies over the sampled period were -8.975% and 379.848% respectively. The 25th, 50th and 75th percentiles were 2.286%, 5.318%, and 9.136%. Thus, 25% of the SSA economies had inflation rate of less than 2.286% while 75% of the SSA economies have inflation rate of more than 2.285%. Also, 50% of the SSA economies have inflation rate of less than 5.318% while more 50% of the SSA economies have their inflation rate to be more than 5.318%. Furthermore, 75% of the SSA economies have their inflation rate to be less than 9.136% while 25% of the SSA economies have their inflation rate to be more than 9.136%.

**Unit Root Analysis**

The study performed the panel unit root analysis on the key variables of the reading using the Augmented Dickey Fuller (ADF) test. The ADF test was performed under the null hypothesis that all panels contain unit root against the alternative hypothesis that at least one panel is stationary. The number of lags used for the unit root analysis was 2, used panel specific autoregressive parameter, had panel means included and with drift term but without time trend. Based on the results in Table 5, gross fixed capital formation, foreign aid, trade openness and inflation were logged due to obvious statistical reasons. The various test statistic test including the inverse chi-square test, inverse normal test, inverse logit test, and the modified inverse test all showed that the key variables stationary at 1% substantial level.

**Table 6: Panel Unit Root Test – ADF**

| Test Statistic | *GDPPC* | *FMD* | *INST* | *lnGFCF* | *lnFAID* | *lnTRADE* | *lnINF* |
|---|---|---|---|---|---|---|---|
| Inverse chi-squared ($\chi 2$) | 287.8*** | 190.6*** | 266.5*** | 245.2*** | 282.4*** | 238.4*** | 225.9*** |
| Inverse normal (*Z*) | -10.5*** | -6.7*** | -9.2*** | -9.2*** | -10.6*** | -8.2*** | -8.8*** |
| Inverse logit (*t*) | -10.9*** | -6.6*** | -9.7*** | -9.3*** | -11.0*** | -8.5*** | -9.3*** |
| Modified inv. ($\chi 2$) | 14.1*** | 7.5*** | 12.3*** | 11.5*** | 14.0*** | 10.7*** | 12.1*** |
| | | | | | | | |
| *Lags* | *2* | *2* | *2* | *2* | *2* | *2* | *2* |
| *Order of integration* | *I(0)* | *I(0)* | *I(0)* | *I(0)* | *I(0)* | *I(0)* | *I(0)* |
| *Number of panels* | *47* | *47* | *48* | *47* | *47* | *47* | *44* |
| *AR parameter* | *Panel-specific* | *Panel-specific* | *Panel-specific* | *Panel-specific* | *Panel-specific* | *Panel-specific* | *Panel-specific* |
| *Panel means* | *Included* | *Included* | *Included* | *Included* | *Included* | *Included* | *Included* |
| *Time trend* | *Not included* | *Not included* | *Not included* | *Not included* | *Not included* | *Not included* | *Not included* |
| *Drift term* | *Included* | *Included* | *Included* | *Included* | *Included* | *Included* | *Included* |

*Ho: All panels contain unit roots*
*Ha: At least one panel is stationary*

Source: Fieldwork (2023)

Notes: GDPPC (economic growth), FMD (financial market development), INST (institutional quality index), lnGFCF (natural logarithm of gross fixed capital formation), lnFAID (natural logarithm of foreign aid), lnTRADE (natural logarithm of trade openness), lnINF (natural logarithm of consumer price inflation rate), * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Based on the result in Table 6, the study concluded that economic expansion measured by the gross domestic product per capita, financial market development, institutional quality, the natural log of gross fixed capital formation, foreign aid, trade openness, and inflation were all stationary at level. Thus, the variables in the study were integrated at order zero.

**Correlation Analysis**

The result in Table 7 denotes the correlation analysis of the study. As it can be observed from the result, the correlation between each variable and itself is 100% or 1. Also, a positive correlation was found to exist amid fiscal market progress and economic growth (GDPPC) with value of 0.402. This correlation value was significant at 0.1% alpha level. Furthermore, a significant positive correlation exists among institutional quality and economic growth (0.302) as well as fiscal market development (0.658). Correlation between gross fixed capital formation and economic expansion (0.267), financial market development (0.120), and institutional quality (0.239) were all positive and significant at 0.1% but the association between gross fixed capital formation and financial market development was significant at 1%.

**Table 7: Correlation Matrix of Variables**

| Variables | *GDPPC* | *FMD* | *INST* | *lnGFCF* | *lnFAID* | *lnTRADE* | *lnINF* |
|---|---|---|---|---|---|---|---|
| *GDPPC* | 1 | | | | | | |
| *FMD* | 0.402*** | 1 | | | | | |
| *INST* | 0.302*** | 0.658*** | 1 | | | | |
| *lnGFCF* | 0.267*** | 0.120** | 0.239*** | 1 | | | |
| *lnFAID* | -0.75*** | -0.39*** | -0.19*** | -0.219*** | 1 | | |
| *lnTRADE* | 0.413*** | 0.235*** | 0.249*** | 0.360*** | -0.19*** | 1 | |
| *lnINF* | -0.098* | -0.102* | -0.0590 | -0.121** | 0.118** | -0.0437 | 1 |

Source: Fieldwork (2023)

Notes: GDPPC (economic growth), FMD (financial market development), INST (institutional quality index), lnGFCF (natural logarithm of gross fixed capital formation), lnFAID (natural logarithm of foreign aid), lnTRADE (natural logarithm of trade openness), lnINF (natural logarithm of consumer price inflation rate). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

According to Table 7, the correlation among foreign aid and economic growth (-0.75), financial market development (-0.39), institutional quality (-0.19), and gross fixed capital formation (0.219) were all negative and significant at 0.1% alpha level. The association among trade openness and economic growth (0.413), financial market development (0.235), institutional quality (0.249), gross fixed capital formation (0.360) were all negative and significant at 0.1% level; but the correlation between trade openness and foreign aid was negative (-0.19) and significant at 0.1% alpha level. Table 7 shows that the correlation between inflation and economic expansion was negative (-0.098) and significant at 5% alpha level, between inflation and financial market development was also negative (-0.102) and significant at 5% alpha level, between inflation and institutional quality was negative but not significant, between inflation and gross fixed capital formation was negative (-0.121) and significant at 1% alpha level, between inflation and foreign aid was positive (0.118) and significant at 1% alpha level, but the correlation between inflation and trade openness was negative but not significant.

**Relationship between Financial Market Development and Economic Growth in Sub-Saharan Africa**

To test the association among fiscal market progress and economic expansion in Sub-Saharan Africa, the study adopted the two-step scheme generalised method of moment to analyse this objective. The result in Table 8 shows seven different models displayed as (1) to (7). The dependent variable in models in Table 8 is economic growth (GDPPC) while the lag of economic expasion (LGDPPC), financial market development (FMD), institutional quality index (INST), and the governance indicators were the main

independent variables. The control variables were gross fixed capital creation, foreign aid, trade openness, and inflation.

**Table 8: Two-step system GMM**

| *Variables* | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| *L.GDPPC* | 0.892*** | 0.892*** | 0.894*** | 0.898*** | 0.912*** | 0.883*** | 0.916*** |
| | (0.0145) | (0.0156) | (0.0151) | (0.0143) | (0.0151) | (0.0151) | (0.0139) |
| *FMD* | 4.164*** | 4.351*** | 4.203*** | 4.544*** | 4.932*** | 3.958*** | 4.334*** |
| | (1.276) | (1.221) | (1.278) | (0.895) | (1.021) | (1.393) | (1.046) |
| *INST* | 100.1** | | | | | | |
| | (39.40) | | | | | | |
| *CC* | | 86.41*** | | | | | |
| | | (28.31) | | | | | |
| *GE* | | | 91.40** | | | | |
| | | | (40.14) | | | | |
| *PSAV* | | | | 68.24*** | | | |
| | | | | (23.55) | | | |
| *RQ* | | | | | 27.10 | | |
| | | | | | (28.46) | | |
| *RL* | | | | | | 104.5*** | |
| | | | | | | (37.97) | |
| *VA* | | | | | | | 26.40 |
| *Control Var.* | | | | | | | (25.42) |
| *lnGFCF* | 68.35* | 75.08** | 75.41* | 50.31* | 88.28** | 71.59** | 82.19** |
| | (33.94) | (34.61) | (38.19) | (27.87) | (34.17) | (32.70) | (34.45) |
| *lnFAID* | -134.5*** | -136.4*** | -125.0*** | -125.4*** | -103.4*** | -149.9*** | -101.9*** |
| | (29.39) | (31.11) | (30.64) | (26.55) | (29.31) | (30.38) | (26.49) |
| *lnTRADE* | 104.3** | 97.95** | 116.0** | 80.47** | 80.43* | 133.6*** | 71.15** |
| | (43.84) | (43.17) | (46.44) | (35.02) | (41.17) | (46.58) | (35.08) |
| *lnINF* | 12.89 | 12.94 | 10.46 | 14.72* | 12.19 | 11.02 | 11.56 |
| *Diagnostics* | (9.861) | (9.195) | (8.913) | (8.504) | (8.400) | (9.582) | (7.161) |

**Table 8 Continued**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Year Dum | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| F-stat | 51649.45 | 24352.47 | 116671.01 | 64518.23 | 40332.79 | 62572.42 | 26581.17 |
| *p-value* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| AR (1) | -1.81 | -1.82 | -1.79 | -1.72 | -1.72 | -1.86 | -1.66 |
| *p-value* | 0.070 | 0.069 | 0.074 | 0.086 | 0.086 | 0.063 | 0.097 |
| AR (2) | -1.08 | -1.09 | -1.08 | -1.08 | -1.08 | -1.09 | -1.07 |
| *p-value* | 0.278 | 0.278 | 0.280 | 0.282 | 0.281 | 0.275 | 0.283 |
| Hansen ($\chi 2$) | 17.14 | 18.12 | 17.52 | 14.37 | 16.73 | 18.10 | 15.35 |
| *p-value* | 0.311 | 0.257 | 0.289 | 0.498 | 0.335 | 0.257 | 0.427 |
| Instruments | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| No. of grps | 42 | 42 | 42 | 42 | 42 | 42 | 42 |
| No. of Obs. | 552 | 552 | 552 | 552 | 552 | 552 | 552 |

Source: Fieldwork (2023)

Notes: *GDPPC* (economic growth), *FMD* (financial market development), *INST* (institutional quality index), *CC* (control of corruption estimate), *GE* (government effectiveness estimate), *PSAV* (political stability and absence of violence/terrorism estimate), *RQ* (regulatory quality estimate), *RL* (rule of law estimate), *VA* (voice and accountability estimate), *lnGFCF* (natural logarithm of gross fixed capital formation), *lnFAID* (natural logarithm of foreign aid), *lnTRADE* (natural logarithm of trade openness), *lnINF* (natural logarithm of consumer price inflation rate), $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$, Robust Standard errors are in parentheses, Sample period: 2002-2019. *Syntax: xtabond2 twostep small robust.*

From Table 8, the model in column (1) contains institutional quality index, column (2) contains control of corruption, column (3) contains government effectiveness, column (4) contains political stability and absence of corruption, column (5) contains regulatory quality, column (6) included rule of law in the model, and column (7) included voice and accountability in the model.

Under column (1), the study found that economic expansion in Sub-Saharan Africa is influenced meaningfully by the previous value or lag of economic expansion, fiscal market development, institutional quality, gross fixed capital formation, foreign aid and trade openness. More directly, economic growth has significant positive relationship with financial market development, institutional quality, capital formation, and trade openness. The link between economic expansion and foreign aid was however found to be negative. There was no evidence of significant link among economic expansion and inflation in the Sub-Saharan Africa economies.

According to the data in Table 8's column (1), an increase of one unit in the precious economic growth value causes the current economic growth value to increase by 0.892 units, an increase of one unit in financial market development causes an increase of 4.164 units in economic growth, and an increase of one unit in institutional quality causes an increase of 100.1 units in economic growth. Additionally, an increase in foreign aid reduces economic growth by 134.5 units, an increase in trade openness raises economic growth by 104.3 units, and an increase in gross fixed capital formation in SSA boosts economic growth by 68.35 units.

Under column (2) of Table 8 which included control of corruption, the result was that previous value of economic growth, financial market development, control of corruption, gross fixed capital formation, foreign aid, and trade openness expansion influence economic growth. Economic growth and foreign aids relate negatively while economic expansion and financial market development, control of corruption, gross fixed capital creation, and trade openness positively influence economic expansion.

Regarding the magnitude of the relationship, a unit rise in the previous value of economic expansion causes the current economic expansion value to increase by 0.892 units, a unit rise in financial market progress increases economic growth by 4.351 units, a unit increases in control of corruption increases economic growth by 86.41 units, a percentage increase in gross fixed capital formation increases economic expansion by 75.08 units, a percentage increase in foreign aids reduces economic expansion by 136.4 units, and a percentage increase in trade openness rise economic expasion by 97.95 units. Inflation does not influence economic growth significantly in model (2).

Under column (3) of Table 8, the government effectiveness was introduced into the model predicting economic growth and fiscal market development. The results displayed that previous value of economic expansion, financial market development, government effectiveness, gross fixed capital formation, and trade openness positively and meaningfully influence economic growth while foreign aid negatively influence economic growth. A unit rise in the economic expansion in the preceding year results in a 0.894 unit increase in the current value if economic growth. A unit rise in financial market development increases economic growth by 4.203 units. A

unit rise in government effectiveness increases economic growth by 91.94 units. Also, a percentage increase in gross fixed capital formation results in 75.41 units increase in economic growth. Furthermore, a percentage increase in foreign aid causes the economy to grow by 125 units less. Additionally, a percentage increase in trade openness boosts Sub-Saharan African economies' economic development by 116 units.

In the study's model for economic expasion and the development of the fiscal markets, political stability and the absence of violence were taken into account for column (4) in Table 8. The study discovered that while foreign aids and economic expansion are adversily correlated in the short term, the lag of economic growth, fiscal market expansion, political stability and lack of violence, gross fixed capital formation, trade openness, and inflation positively and meaningfully influence economic expansion in the short run.

The magnitude of the effect was 0.898 units, or a unit rise in the lag of economic expansion multiplied by the present amount of economic expansion. Economic expansion is boosted by 4.544 units for every unit rise in financial market development. Economic expansion is boosted by 68.24 units for every unit rise in political harmony and the absence of conflict. Economic growth is increased by 50.31 units for every percentage point rise in gross fixed capital formation. An increase in foreign aid cuts economic growth by 125.4 units per percentage point. In the near run, economic growth is increased by 14.72 units for every percentage increase in inflation and by 80.47 units for every percentage increase in trade openness.

Under column (5) of Table 8, a short-term model for regulatory quality, fiscal market development, and economic expansion was created. The outcomes demonstrated that while regulatory quality and inflation had no effect on economic growth, the lag of economic expansion was considerably influenced by financial market development, gross fixed capital creation, foreign aid, and trade openness. In the near run, a unit rise in the lag value of economic expansion results in a 0.912 unit increase in the current value of that growth. Additionally, a rise of one unit in the financial market development results in a short-term gain of 4.932 units in economic growth. Furthermore, in the near term, a percentage rise in trade openness boosts economic expansion by 80.43 units, a percentage increase in foreign aid decreases economic growth by 103.4 units, and a percentage rise in gross fixed capital creation enhances economic growth by 88.28 units.

The rule of law was incorporated into the model of economic expansion and fiscal market development under column (6) in Table 8. The findings indicated that while inflation does not have a major short-term influence on economic growth, other factors such as the rule of law, the lag value of economic expansion, fiscsal market development, gross fixed capital creation, and trade openness do. It was also found that lag value of economic growth increasing by one units cause the present value of economic growth to rise by 0.883 units; a unit increase in fiscal market development raises economic growth by 3.958 units; a unit rise in rule of law increases economic expansion by 104.5 units; a percentage increase in gross fixed capital formation rise economic expansion by 71.59 units; a percentage increase in

foreign aids decreases economic growth by 149.9 units; and a percentage rise in trade openness rises economic growth by 133.6 units in the short run.

Voice and accountability were added to the economic expansion and development of the fiscal markets under model (7) from Table 8. Despite a favourable association, the findings indicated that voice and responsibility had little impact on economic progress. The lag of economic growth, the development of the fiscal markets, gross fixed capital creation, foreign aid, and trade openness all have a substantial influence on economic expasion, although inflation had no immediate impact on it.

The result further showed that a unit rise in the lag of economic expansion and financial market development respectively causes 0.916 units and 4.334 units rise in economic expansion in Sub-Saharan African economies in the short run. A percentage rise in gross fixed capital creation and trade openness respectively causes 82.19 units and 71.15 units increase in economic growth. Also, a percentage increase in foreign aid was found to cause a reduction in economic expansion by 101.9 units in the short run.

The diagnostics in Table 8 showed that year dummies were included in the respective models. The probability values of the F-statistics were all less than 5% alpha level. This implied that the respective models had high explanatory power. Also, autoregressive models (AR) tests were performed under the null hypothesis that there were no first and second order autocorrelation in the respective models. The null hypothesis was not rejected for all models for both the first order autocorrelation [AR (1)] and the second order autocorrelation [AR (2)] as their probability values were more than 5% alpha level. The Hansen test was performed under the null hypothesis that the

over-identifying restrictions in the models were valid. The probability values of more than 5% alpha level failed to reject the null hypothesis and the conclusion that the inclusion of the over-identifying restriction in the models was valid was drawn. The diagnostics also showed that the number of groups were more than the number of instruments used in the estimation of the models showed in Table 8. Thus, all the diagnostic tests indicated that the models in Table 8 were correctly specified.

**Long Run Relationship between Financial Market Development and Economic Growth**

The finding in Table 9 demonstrates the relationship between long-term economic growth in Sub-Saharan African economies and the expansion of the financial markets. Economic expansion served as the dependent variable in this model, while financial market development served as the independent variable. The institutional quality index, gross fixed capital creation, foreign assistance, and trade openness served as the control variables. The result showed that financial market development, institutional quality, gross fixed capital creation, and foreign trade positively and meaningfully influence economic expansion in the long run while foreign aid negatively influence economic in the long run in Sub-Saharan African economies. The result in Table 9 specifically shows the coefficients, standard errors, z-scores, probability values, and the 95% confidence intervals for the explanatory variables.

**Table 9: Long-run Coefficient Estimate**

| | | | | *Dependent Var. GDPPC* | | |
|---|---|---|---|---|---|---|
| Variables | Coef. | S. E | *Z* | P-value | 95% Conf. Internal | |
| *FMD* | 38.398 | 15.100 | 2.54 | 0.011* | 8.803 | 67.993 |
| *INST* | 922.959 | 359.894 | 2.56 | 0.010** | 217.578 | 1628.339 |
| *lnGFCF* | 630.322 | 294.828 | 2.14 | 0.033* | 52.469 | 1208.174 |
| *lnFAID* | -1240.208 | 135.928 | -9.12 | 0.000*** | -1506.622 | -973.794 |
| *lnTRADE* | 961.609 | 347.639 | 2.77 | 0.006** | 280.249 | 1642.968 |

Source: Fieldwork (2023)

Notes: *GDPPC* represents real per capita gross domestic product, *FMD* represents domestic credit to private sector by banks (% of GDP), *INST* represents institutional quality index, *GFCF* signifies gross fixed capital formation (% of GDP), *FAID* represents foreign aid (% of GNI), *TRADE* represents trade openness (% of GDP), $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$, Standard errors are in parentheses.

In the long run, fiscal market development, institutional quality, gross fixed capital creation foreign aid, and trade openness donates meaningfully to economic growth in Sub-Saharan Africa. Fiscal market development has positive coefficient (β = 38.398, z = 2.54, p-value = 0.011) and the implication is that a unit increase in fiscal market development rises economic expansion in the long run by 38.398 units. Furthermore, institutional quality has positive and significant coefficient (β = 922.959, z = 2.56, p-value = 0.010) and this means that a unit rise the quality of state institutions increases economic expansion by 922.959 units in the long run.

Additionally, Table 9's result demonstrates that the coefficient for gross fixed capital creation is positive and substantial ( = 630.322, z = 2.14, p-value = 0.033). The conclusion is that, over time, a percentage increase in gross fixed capital formation of economies leads to a 630.322 unit rise in economic expansion in Sub-Saharan Africa. Therefore, fixed capital formation promotes economic growth over the long term. Moreover, trade openness also pays positively and meaningfully to economic expansion in Sub-Saharan Africa (β = 961.609, z = 2.77, p-value = 0.006). This implies that a percentage rise in trade openness among Sub-Saharan African economies in the long run raises economic progress by 961.609 units. Foreign aid however has a substantial adverse effect on economic expansion in the long run (β = -1240.208, z = -9.12, p-value = 0.000). This result implies that a percentage rise in foreign aid in Sub-Saharan African economies reduces economic growth by 1240.208 units in the long run.

**Causality between Financial Market Development and Economic Growth**

The Granger Causality test was used to determine the direction of causality between fiscal market development and economic expansion in Sub-Saharan Africa. In this instance, it was demonstrated that both economic expansion and the progress of the fiscal markets were causally related to one another.

**Table 10: Granger Non-causality Test between Real Per Capita Gross Domestic Product (GDPPC) and Financial Market Development (FMD) in Sub- Saharan Africa**

| Test Stats | *FMD* →*GDPPC* | *GDPPC* → *FMD* |
|---|---|---|
| W-bar | 8.011 | 8.555 |
| Z-bar | 8.022 (0.000) *** | 9.109 (0.000) *** |
| Z-bar tilde | 0.610 (0.542) | 0.856 (0.392) |
| | *$H_1$: FMD does Granger-cause GDPPC for at least one panel var.* | *$H_1$: GDPPC does Granger-cause FMD for at least one panel var.* |

Source: Fieldwork (2023)

Notes: *GDPPC* (economic growth), *FMD* (financial market development), $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$, Optimal number of lags (AIC): 4 (lags tested: 1 to 4), P-values are in parentheses, Sample period: 2002-2019.

The result in Table 10 shows the granger causality output which shows three test results: W-bar, Z-bar and the Z-bar tilde output. For the purpose of robustness, the Z-bar (tilde) estimate is favour as it is considered as most appropriate when the number of samples is large (Dumitrescu & Hurlin, 2012). When determining whether financial market development leads to economic expansion, the null hypothesis was that it does, as opposed to the alternative hypothesis, which held that granger causality does not lead to economic growth. Considering the Z-bar (tilde) statistic (Z = 0.610, p-value = 0.542), the null hypothesis was not rejected and the conclusion was drawn that fiscal market development granger cause economic evolution in Sub-Saharan Africa. Regarding the question of whether economic expansion contributes to

the development of the financial market, the null hypothesis was that it does, as opposed to the alternative hypothesis, which was that economic expansion does not contribute to the development of the fiscal market. The Z-bar (tilde) value was not significant (Z = 0.856, p-value = 0.392), which implies that the development of the financial market precedes economic growth. As a result, in the economies of Sub-Saharan Africa, there is a reciprocal association between the development of fiscal markets and economic expansion.

The evidence from this study, which indicates that there is a causal link among the growth of the fiscal markets and economic expansion in both directions, is consistent with the findings of Boadu, Chen, and Zhang (2016), who found that there is a causal link among the growth of the fiscal markets and economic growth in sub-Saharan Africa. Likewise, the outcomes support Wait and Ruzive's (2016) assertion that there is a causal link among fiscal market expansion and economic growth. The implication of the bidirectional causality between fiscal market progress and economic is that growth in the real output of the SSA economies contributes to the development of the fiscal market just as the growth in the fiscal market contributes to the growth of the output of the SSA economies (Nyasha & Odhiambo, 2015).

Also, the bidirectional causality is as a result of the fact that development of the fiscal sector implies that financial institutional are able to provide adequate capital to the private sector for the purpose of production, distribution, and trade in general. This results in higher output which increases the growth prospect of economies. On the other hand, growth in SSA economies represents rised opportunities in the economic environment. Such

opportunities influence investors to invest in the financial market so as to leverage on the opportunities to increase their returns (Wait & Ruzive, 2016).

**Financial Market and Development and Economic Across Percentile Distribution**

The association link fiscal market expansion and economic expansion across the various percentile distributions in Sub-Saharan Africa was also assessed using the 5th, 25th, 50th, 75th, and the 95th percentiles. The pooled regression model was performed as the base model against which the various percentile distributions (quantile regression) were compared. The pooled ordinary least square regression model is shown in Table 11.

**Table 11: Pooled OLS**

| *Variables* | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| FMD | 2.595 | 7.554 | 5.816 | 1.218 | 16.31** | 0.287 | 23.90*** |
| | (6.624) | (6.301) | (6.991) | (5.175) | (6.864) | (6.564) | (6.541) |
| INST | 534.8*** | | | | | | |
| | (189.4) | | | | | | |
| CC | | 331.6* | | | | | |
| | | (174.4) | | | | | |
| GE | | | 358.2* | | | | |
| | | | (195.3) | | | | |
| PSAV | | | | 812.5*** | | | |
| | | | | (105.6) | | | |
| RQ | | | | | -76.51 | | |
| | | | | | (202.6) | | |
| RL | | | | | | 621.3*** | |
| | | | | | | (181.3) | |
| VA | | | | | | | -347.9** |
| *Control Var.* | | | | | | | (153.0) |
| lnGFCF | 10.29 | 65.54 | 56.03 | -77.95 | 160.7 | -34.76 | 235.0 |
| | (234.7) | (234.5) | (235.8) | (222.2) | (235.0) | (235.0) | (233.7) |
| lnFAID | -1,724*** | -1,725*** | -1,702*** | -1,700*** | -1,696*** | -1,726*** | -1,650*** |
| | (70.26) | (71.42) | (69.94) | (66.74) | (70.18) | (69.90) | (72.76) |
| lnTRADE | 1,832*** | 1,823*** | 1,900*** | 1,457*** | 1,859*** | 1,876*** | 1,869*** |
| | (194.2) | (195.9) | (195.3) | (193.3) | (196.8) | (193.1) | (194.2) |
| lnINF | -1.066 | -5.337 | -9.778 | 58.02 | 5.543 | -15.40 | 10.91 |
| | (80.06) | (80.51) | (80.74) | (77.04) | (80.60) | (79.99) | (80.27) |
| Constant | -2,475** | -2,803*** | -3,039*** | -652.4 | -3,709*** | -2,381** | -4,325*** |
| *Diagnostics* | (1,002) | (1,015) | (972.5) | (958.5) | (948.5) | (981.7) | (967.7) |

**Table 11 Continued**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $R^2$ | 0.650 | 0.648 | 0.648 | 0.679 | 0.646 | 0.653 | 0.649 |
| *Adj*. $R^2$ | 0.647 | 0.644 | 0.644 | 0.675 | 0.642 | 0.649 | 0.645 |
| F-stat | 177.98 | 175.93 | 175.81 | 202.08 | 174.30 | 179.75 | 176.66 |
| *p-value* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Root MSE | 1982.9 | 1990.4 | 1990.8 | 1901 | 1996.4 | 1976.5 | 1987.7 |
| Estimation | POLS | POLS | POLS | POLS | POLS | POLS | POLS |
| No. of Obs. | 581 | 581 | 581 | 581 | 581 | 581 | 581 |

Source: Fieldwork (2023)

Notes: *GDPPC* (economic growth), *FMD* (financial market development), *INST* (institutional quality index), *CC* (control of corruption estimate), *GE* (government effectiveness estimate), *PSAV* (political stability and absence of violence/terrorism estimate), *RQ* (regulatory quality estimate), *RL* (rule of law estimate), *VA* (voice and accountability estimate), *lnGFCF* (natural logarithm of gross fixed capital formation), *lnFAID* (natural logarithm of foreign aid), *lnTRADE* (natural logarithm of trade openness), *lnINF* (natural logarithm of consumer price inflation rate), $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$, Robust Standard errors are in parentheses, Sample period: 2002-2019.

Based on the result in Table 11, economic growth is the dependent variable, financial market development, institutional quality index, and the governance indicators being the explanatory variables; while gross fixed capital formation, inflation, trade openness, and foreign aids are the control variables. From the pooled regression result in Table 11, there are seven models in all. Model (1) includes institutional quality index, model (2) includes control of corruption, model (3) includes government effectiveness, model (4) includes political stability and absence of violence, model (5) includes regulatory quality, model (6) includes rule of law, while model (7) includes voice and accountability.

In model (1) which includes institutional quality index, economic growth was not influenced financial market development, gross fixed capital formation, and inflation as they have insignificant coefficient. Institutional quality has a positive and important influence on economic expansion (β = 534.8, S.E = 189.4); foreign aid has negative and noteworthy effect on economic growth (β = -1724, S.E = 70.26); while trade openness has positive and significant influence on economic growth (β = 1832, S.E = 194.2). The adjusted $R^2$ of 0.647 implies that the independent variables put together explain the variation in economic expansion by 64.7%. This further implies that model (1) has a good fit and the affiliation between economic growth and the independent variables is linear (F-statistic = 177.98, p-value = 0.000).

With model (2) which includes control of corruption in the estimation of the link between fiscal market expansion and economic, the result in Table 11 showed that fiscal market progress does not influence economic expansion and same result applies to gross fixed capital formation and inflation as their

coefficients are not significant. Control of corruption however has positive and important effect on economic expansion (β = 331.6, S.E = 174.4); foreign aid negatively and significantly influences economic growth (β = -1725, S.E = 71.42); and trade openness also has positive and important effect on economic growth (β = 1823, S.E = 195.9). The variation in economic expansion that is caused by the adjustment in the independent variables in model (2) is 64.4% ($R^2$ adjusted = 0.644, F = 175.93, p-value = 0.000).

Under model (3) which includes government effectiveness in the model estimation, the significant predictors of economic growth were government effectiveness having positive influence (β = 358.2, S.E = 195.3); foreign aid negatively influences economic growth (β = -1702, S.E = 69.94); trade openness positively and significantly influence economic growth (β = 1900, S.E = 195.3); but financial market development, gross fixed capital creation and inflation do not significantly influence economic growth. Goodness of fit was also achieved for model (3) as the independent variables put together explain up to 64.4% ($R^2$ adjusted = 0.644, F = 175.81, p-value = 0.000).

Regarding model (4) which includes political stability and absence of corruption in the model estimation, political steadiness and absence of corruption positively and significantly influence economic growth (β = 812.5, S.E = 105.6); foreign aid negatively and significantly influence economic growth (β = -1700, S.E = 66.74); trade openness influences economic growth positively and significantly (β = 1457, S.E = 193.3); while financial market development, gross fixed capital formation, and inflation do not influence economic growth significantly. Model (4) has a good-fit as the variation in the

dependent variable is explained up to 67.5% by the adjustment in the independent variable ($R^2$ adjusted = 0.675, F = 202.08, p-value = 0.000).

With model (5) which includes regulatory quality in the estimation model, fiscal market expasion has positive and noteworthy effect on market expansion (β = 16.31, S.E = 6.864); regulatory quality does not significantly influence economic growth, and gross fixed capital formation and inflation alike do not influence economic growth. However, foreign aid has negative and substantial influence on economic growth (β = -1.696, S.E = 70.18) while trade openness exerts significant positive relationship with economic growth (β = 1859, S.E = 196.8). The adjusted $R^2$ is significant implying that the independent variables put together explains the variation in market expansion by 64.2% ($R^2$ adjusted = 0.642, F = 174.30, p-value = 0.000).

Regarding model (6) which includes rule of law in the model estimation, it was found that rule of law positively and meaningfully influence economic growth (β = 621.3, S.E = 181.3); foreign aid negatively and significantly influence economic growth (β = -1726, S.E = 69.90); trade openness influences economic growth positively and significantly (β = 1876, S.E = 193.1); while financial market development, gross fixed capital formation, and inflation do not influence economic growth significantly. Model (6) has a good-fit as the variation in the dependent variable is elucidated up to 64.9% by the adjustment in the independent variable ($R^2$ adjusted = 0.649, F = 179.75, p-value = 0.000).

From the result under model (7), voice and accountability was included in the pooled regression model estimation. As indicated in Table 11, financial market development positively and significantly influence economic growth (β

= 23.90, S.E = 6.541), voice and accountability significantly negatively influence economic growth (β = -347.9, S.E = 153.0); foreign aid negatively and significantly influence economic growth (β = -1650, S.E = 72.76); trade openness negatively and significantly influence economic growth (β = 1869, S.E = 194.2); while inflation and gross fixed capital formation do not meaningfully influence economic expansion in SSA. Under model (7), the independent variables jointly explain up to 64.5% of the variation in market growth ($R^2$ adjusted = 0.645, F = 176.66, p-value = 0.000).

**Quantile Regression**

The study used quantile regression as a robustness test to evaluate the association between Sub-Saharan Africa's economic growth and the expansion of its financial markets across different quantiles. This was done by performing quantile regression for 5th, 25th, 50th, 75th, and 95th quantile of economic growth distributions. The $5^{th}$ quantile depicts economies within the lowest economic growth distribution and the effect of fiscal markets growth on such economies is shown in Table 12. The result in Table 12, includes institutional quality (model 1), control of corruption (model 2), state effectiveness (model 3), political stability and absence of violence (model 4), regulatory quality (model 5), rule of law (model 6), and voice and accountability (model 7).

**Table 12: Quantile: 5th**

| *Variables* | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| *FMD* | 9.344*** | 13.13*** | 5.365*** | 17.58*** | 9.782*** | 8.709*** | 4.697*** |
| | (0.0111) | (0.00538) | (0.0600) | (0.00230) | (0.00471) | (0.00182) | (0.00680) |
| *INST* | 829.6*** | | | | | | |
| | (0.366) | | | | | | |
| *CC* | | 368.9*** | | | | | |
| | | (0.150) | | | | | |
| *GE* | | | 602.7*** | | | | |
| | | | (1.874) | | | | |
| *PSAV* | | | | 325.7*** | | | |
| | | | | (0.0839) | | | |
| *RQ* | | | | | 207.3*** | | |
| | | | | | (0.189) | | |
| *RL* | | | | | | 707.9*** | |
| | | | | | | (0.0585) | |
| *VA* | | | | | | | 461.8*** |
| | | | | | | | (0.154) |
| *Control Var.* | | | | | | | |
| *lnGFCF* | -3.903*** | 39.27*** | -83.07*** | 35.71*** | 123.7*** | -59.00*** | -9.196*** |
| | (0.209) | (0.213) | (0.997) | (0.156) | (0.0771) | (0.0227) | (0.537) |
| *lnFAID* | -549.6*** | -461.1*** | -421.7*** | -508.5*** | -385.4*** | -535.4*** | -413.2*** |
| | (0.110) | (0.0302) | (0.159) | (0.0258) | (0.0238) | (0.00585) | (0.0781) |
| *lnTRADE* | 75.25*** | 25.17*** | 255.4*** | -120.9*** | -58.07*** | 198.5*** | 138.0*** |
| | (0.282) | (0.0995) | (0.453) | (0.406) | (0.0276) | (0.0382) | (0.211) |
| *lnINF* | 10.29*** | 96.06*** | -28.51*** | 116.2*** | 51.66*** | 45.36*** | 5.999*** |
| | (0.203) | (0.0300) | (0.264) | (0.409) | (0.112) | (0.0337) | (0.0317) |
| *Diagnostics* | | | | | | | |

**Table 12 Continued**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Pseudo $R^2$ | 0.198 | 0.171 | 0.209 | 0.161 | 0.147 | 0.191 | 0.169 |
| No. of Obs. | 581 | 581 | 581 | 581 | 581 | 581 | 581 |
| No. of grps. | 42 | 42 | 42 | 42 | 42 | 42 | 42 |

Source: Fieldwork (2023)

Notes: *GDPPC* (economic growth), *FMD* (financial market development), *INST* (institutional quality index), *CC* (control of corruption estimate), *GE* (government effectiveness estimate), *PSAV* (political stability and absence of violence/terrorism estimate), *RQ* (regulatory quality estimate), *RL* (rule of law estimate), *VA* (voice and accountability estimate), *lnGFCF* (natural logarithm of gross fixed capital formation), *lnFAID* (natural logarithm of foreign aid), *lnTRADE* (natural logarithm of trade openness), *lnINF* (natural logarithm of consumer price inflation rate), $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$, Robust Standard errors are in parentheses, Sample period: 2002-2019.

The results displayed that fiscal market growth has positive and important link with economic expansion for Sub-Saharan African economies that fall within the fifth quantile of the distribution for each of the seven models. Under model (1), financial market development (β = 9.344, S.E = 0.0111), institutional quality (β = 829.6, S.E = 0.366), trade openness (β = 75.25, S.E = 0.282), and inflation (β = 10.29, S.E = 0.203) positively and significantly influence economic growth while gross fixed capital formation (β = -3.903, S.E = 0.209) and foreign aid (β = -549.6, S.E = 0.110) negatively and meaningfully influence economic growth.

Under model (2), financial market development (β = 13.13, S.E = 0.00538), control of corruption (β = 368.9, S.E = 0.150), gross fixed capital formation (β = 39.27, S.E = 0.213), trade openness (β = 25.17, S.E =0.0995), and inflation (β = 96.06, S.E = 0.0300) positively and significantly influence economic growth while foreign aid (β = -461.1, S.E = 0.0302) negatively and significantly influence economic growth. Under model (3), financial market development (β = 5.365, S.E = 0.0600), government effectiveness (β = 602.7, S.E = 1.874), and trade openness (β = 255.4, S.E = 0.453) positively and meaningfully influence economic expansion while gross fixed capital formation (β = -83.07, S.E = 0.997), foreign aid (β = -421.7, S.E = 0.159), and inflation (β = -28.51, S.E = 0.264) negatively and significantly influence economic growth.

When political stability and absence of violence was included in model (4), financial market development (β = 17.58, S.E = 0.00230), political stability and absence of violence (β = 325.7, S.E = 0.0839), gross fixed capital formation (β = 35.71, S.E = 0.156), and inflation (β = 116.2, S.E = 0.409)

positively and significantly influence economic growth while foreign aid (β = -508.5, S.E = 0.0258) and trade openness (β = -120.9, S.E = 0.406) have significant negative relationship with economic growth of SSA economies with the lowest economic growth distributions (5th quantile).

After including regulatory quality into model (5), financial market development (β = 9.782, S.E = 0.00471), regulatory quality (β = 207.3, S.E = 0.189), gross fixed capital formation (β = 123.7, S.E = 0.0771) and inflation (β = 51.66, S.E = 0.112) had a noteworthy positive effect on economic expansion while foreign aid (β = -385.4, S.E = 0.0238) and trade openness (β = -58.07, S.E = 0.0276) exert negative and significant effect on economic expansion. After including rule of law in the model (model 6), it was found that financial market development (β = 8.709, S.E = 0.00182), rule of law (β = 707.9, S.E = 0.0585), trade openness (β = 198.5, S.E = 0.0382), and inflation (β = 45.36, S.E = 0.0337) have positive and significant effect on economic growth while gross fixed capital formation (β = -59, S.E = 0.0227) and foreign aid (β = -535.4, S.E = 0.00585) have a significant negative influence on economic growth.

Regarding model (7) which include voice and accountability the study found that financial market expansion (β = 4.697, S.E = 0.00680), voice and accountability (β = 461.8, S.E = 0.154), trade openness (β = 138, S.E = 0.211), and inflation (β = 5.999, S.E = 0.0371) have positive and significant effect on economic growth while gross fixed capital formation (β = -9.196, S.E = 0.537) and foreign aid (β = -413.2, S.E = 0.0781) have negative and significant effect on economic expansion.

**Table 13: Quantile: 25th**

| *Variables* | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| *FMD* | 36.69*** | 36.03*** | 39.38*** | 48.17*** | 58.23*** | 32.44*** | 53.03*** |
| | (0.0335) | (0.00766) | (0.0421) | (0.0256) | (0.0926) | (0.0790) | (0.420) |
| *INST* | 458.6*** | | | | | | |
| | (0.653) | | | | | | |
| *CC* | | 388.7*** | | | | | |
| | | (0.386) | | | | | |
| *GE* | | | 440.6*** | | | | |
| | | | (0.774) | | | | |
| *PSAV* | | | | 400.4*** | | | |
| | | | | (0.239) | | | |
| *RQ* | | | | | 269.3*** | | |
| | | | | | (4.653) | | |
| *RL* | | | | | | 537.3*** | |
| | | | | | | (1.110) | |
| *VA* | | | | | | | 46.00*** |
| | | | | | | | (5.065) |
| *Control Var.* | | | | | | | |
| *lnGFCF* | -129.0*** | -92.17*** | -61.25*** | -141.8*** | -129.3*** | -83.72*** | 88.19*** |
| | (0.578) | (0.583) | (2.045) | (1.965) | (7.352) | (1.646) | (10.12) |
| *lnFAID* | -733.4*** | -745.3*** | -691.0*** | -803.1*** | -670.2*** | -780.1*** | -699.7*** |
| | (0.360) | (0.164) | (0.348) | (0.399) | (1.184) | (0.246) | (6.100) |
| *lnTRADE* | 287.2*** | 232.9*** | 410.5*** | 173.1*** | 213.3*** | 369.4*** | 260.9*** |
| | (0.668) | (0.330) | (1.378) | (1.105) | (3.058) | (1.355) | (7.172) |
| *lnINF* | 113.6*** | 121.3*** | 106.6*** | 114.0*** | 145.5*** | 89.94*** | 158.2*** |
| | (0.291) | (0.0996) | (0.513) | (0.467) | (0.490) | (0.532) | (4.679) |
| *Diagnostics* | | | | | | | |

**Table 13 Continued**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Pseudo $R^2$ | 0.274 | 0.271 | 0.274 | 0.294 | 0.258 | 0.277 | 0.258 |
| No. of Obs. | 581 | 581 | 581 | 581 | 581 | 581 | 581 |
| No. of grps. | 42 | 42 | 42 | 42 | 42 | 42 | 42 |

Source: Fieldwork (2023)

Notes: *GDPPC* (economic growth), *FMD* (financial market development), *INST* (institutional quality index), *CC* (control of corruption estimate), *GE* (government effectiveness estimate), *PSAV* (political stability and absence of violence/terrorism estimate), *RQ* (regulatory quality estimate), *RL* (rule of law estimate), *VA* (voice and accountability estimate), *lnGFCF* (natural logarithm of gross fixed capital formation), *lnFAID* (natural logarithm of foreign aid), *lnTRADE* (natural logarithm of trade openness), *lnINF* (natural logarithm of consumer price inflation rate), $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$, Robust Standard errors are in parentheses, Sample period: 2002-2019.

Table 13 shows the result of the 25th quantile regression which depicts the nature of association among fiscal market expansion and economic growth for SSA economies that fall below the 25% of the economic growth distribution. The results under model (1) with the inclusion of institutional quality showed that financial market development (β = 36.69, S.E = 0.0335), institutional quality (β = 458.6, S.E = 0.653), trade openness (β = 287.2, S.E = 0.668), and inflation (β = 113.6, S.E = 0.291) have significant positive effect on economic growth while gross fixed capital formation (β = -129, S.E = 0.578) and foreign aid (β = -733.4, S.E = 0.360) have important negative effect on economic expansion.

Considering model (2) which includes control of corruption, it was found that financial market development (β = 36.03, S.E = 0.00766), control of corruption (β = 388.7, S.E = 0.386), trade openness (β = 232.9, S.E = 0.330), and inflation (β = 121.3, S.E = 0.0996) have important positive effect on economic growth while gross fixed capital creation (β = -92.17, S.E = 0.583) and foreign aid (β = -745.3, S.E = 0.164) have important negative effect on economic expansion.

Upon including government effectiveness in model (3), the study found that financial market development (β = 39.38, S.E = 0.0421, government effectiveness (β = 440.6, S.E = 0.774), inflation (β = 106.6, S.E = 0.513) and trade openness (β = 410.5, S.E = 1.378) affect economic growth positively and significantly while gross fixed capital formation (β = -61.25, S.E = 2.045) and foreign aid (β = -691, S.E = 0.348) affect economic growth negatively.

When political steadiness and absence of violence was included in model (4), financial market development (β = 48.17, S.E = 0.0256), political stability and absence of violence (β = 400.4, S.E = 0.239), trade openness (β = 173.1, S.E = 1.105), and inflation (β = 114.0, S.E = 0.467) positively and significantly influence economic growth while foreign aid (β = -803.1, S.E = 0.399) and gross fixed capital formation (β = -141.8, S.E = 1.965) have significant negative relationship with economic growth of SSA economies that are within the 25th quantile distribution.

After including regulatory quality into model (5), financial market development (β = 58.23, S.E = 0.0926), regulatory quality (β = 269.3, S.E = 4.653), trade openness (β = 213.3, S.E = 3.058), and inflation (β = 145.5, S.E = 0.490) had a substantial positive effect on economic evolution while foreign aid (β = -670.2, S.E = 1.184) and gross fixed capital formation (β = -129.3, S.E = 7.352) have negative and significant effect on economic evolution. Upon including rule of law in the model (model 6), it was found that financial market development (β = 32.44, S.E = 0.0790), rule of law (β = 537.3, S.E = 1.110), trade openness (β = 369.4, S.E = 1.355), and inflation (β = 89.94, S.E = 0.532) have impressive and substantial effect on economic expansion while gross fixed capital formation (β = -83.72, S.E = 1.646) and foreign aid (β = -780.1, S.E = 0.246) have a significant negative influence on economic expansion.

In terms of model (7) which includes voice and accountability the study found that financial market development (β = 53.03, S.E = 0.420), voice and accountability (β = 46.0, S.E = 5.065), trade openness (β = 260.9, S.E = 7.172), inflation (β = 158.2, S.E = 4.670), and gross fixed capital formation (β

= 88.19, S.E = 10.12) have positive and significant effect on economic growth while only foreign aid (β = -699.7, S.E = 6.1) have negative and noteworthy effect on economic expansion.

**Table 14: Quantile: 50th**

| *Variables* | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| *FMD* | 42.61*** | 43.35*** | 45.43*** | 48.37*** | 55.27*** | 45.29*** | 55.45*** |
| | (0.171) | (0.106) | (0.514) | (0.480) | (1.701) | (0.198) | (0.329) |
| *INST* | 426.3*** | | | | | | |
| | (5.235) | | | | | | |
| *CC* | | 572.9*** | | | | | |
| | | (7.570) | | | | | |
| *GE* | | | 236.2*** | | | | |
| | | | (3.655) | | | | |
| *PSAV* | | | | 334.5*** | | | |
| | | | | (6.250) | | | |
| *RQ* | | | | | 1.241 | | |
| | | | | | (47.49) | | |
| *RL* | | | | | | 407.3*** | |
| | | | | | | (4.772) | |
| *VA* | | | | | | | -72.60*** |
| | | | | | | | (6.790) |
| *Control Var.* | | | | | | | |
| *lnGFCF* | -288.5*** | -237.8*** | -307.6*** | -268.1*** | -221.8*** | -387.2*** | -24.29** |
| | (6.495) | (8.250) | (16.25) | (19.68) | (26.73) | (9.157) | (10.07) |
| *lnFAID* | -1,007*** | -998.8*** | -1,005*** | -955.5*** | -956.6*** | -1,025*** | -862.2*** |
| | (1.153) | (2.530) | (7.767) | (15.85) | (10.08) | (2.930) | (6.338) |
| *lnTRADE* | 682.7*** | 600.5*** | 736.8*** | 657.9*** | 652.5*** | 643.8*** | 337.2*** |

**Table 14 Continued**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | (5.513) | (5.041) | (4.298) | (9.062) | (29.38) | (7.964) | (11.88) |
| *lnINF* | 112.7*** | 29.02*** | 75.01*** | 63.24*** | 122.9*** | 79.18*** | 89.82*** |
| | (3.295) | (4.944) | (3.761) | (6.898) | (7.479) | (1.649) | (4.006) |
| *Diagnostics* | | | | | | | |
| Pseudo $R^2$ | 0.398 | 0.404 | 0.398 | 0.407 | 0.392 | 0.401 | 0.393 |
| No. of Obs. | 581 | 581 | 581 | 581 | 581 | 581 | 581 |
| No. of grps. | 42 | 42 | 42 | 42 | 42 | 42 | 42 |

Source: Fieldwork (2023)

Notes: *GDPPC* (economic growth), *FMD* (financial market development), *INST* (institutional quality index), *CC* (control of corruption estimate), *GE* (government effectiveness estimate), *PSAV* (political stability and absence of violence/terrorism estimate), *RQ* (regulatory quality estimate), *RL* (rule of law estimate), *VA* (voice and accountability estimate), *lnGFCF* (natural logarithm of gross fixed capital formation), *lnFAID* (natural logarithm of foreign aid), *lnTRADE* (natural logarithm of trade openness), *lnINF* (natural logarithm of consumer price inflation rate), $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$, Robust Standard errors are in parentheses, Sample period: 2002-2019.

Table 14 shows the result of the 50th quantile regression which depicts the nature of connection between fiscal market development and economic growth for SSA economies that fall below the 50% of the economic growth distribution. The results under model (1) with the inclusion of institutional quality showed that financial market development (β = 42.61, S.E = 0.171), institutional quality (β = 426.3, S.E = 5.235), trade openness (β = 682.7, S.E = 5.513), and inflation (β = 112.7, S.E = 3.295) have substantial positive effect on economic growth while gross fixed capital formation (β = -288.5, S.E = 6.495) and foreign aid (β = -1007, S.E = 1.153) have important negative effect on economic growth.

Considering model (2) which includes control of corruption, it was found that financial market development (β = 43.35, S.E = 0.106), control of corruption (β = 572.9, S.E = 7.570), trade openness (β = 600.5, S.E = 5.041), and inflation (β = 29.02, S.E = 4.944) have substantial positive effect on economic growth while gross fixed capital formation (β = -237.8, S.E = 8.250) and foreign aid (β = -998.8, S.E = 2.530) have substantial negative effect on economic growth.

Upon including government effectiveness in model (3), the study found that financial market development (β = 43.43, S.E = 0.514, government effectiveness (β = 236.2.6, S.E = 3.655), inflation (β = 75.01, S.E = 3.761) and trade openness (β = 736.8, S.E = 4.298) affect economic growth positively and significantly while gross fixed capital formation (β = -307.6, S.E = 16.25) and foreign aid (β = -1005, S.E = 7.767) affect economic growth negatively.

When political steadiness and absence of violence was included in model (4), financial market development (β = 48.37, S.E = 0.480), political

stability and absence of violence (β = 334.5, S.E = 6.250), trade openness (β = 657.9, S.E = 9.062), and inflation (β = 63.24, S.E = 6.898) positively and significantly influence economic growth while foreign aid (β = -955.5, S.E = 15.85) and gross fixed capital formation (β = -268.1, S.E = 19.68) have significant negative relationship with economic growth of SSA economies that are within the 50th quantile distribution.

After including regulatory quality into model (5), financial market development (β = 55.27, S.E = 1.701), regulatory quality (β = 1.241, S.E = 47.49), trade openness (β = 652.5, S.E = 29.38), and inflation (β = 122.9, S.E = 7.479) had a substantial positive effect on economic expansion while foreign aid (β = -956.6, S.E = 10.08) and gross fixed capital formation (β = -221.8, S.E = 26.73) have negative and significant effect on economic expansin. Upon including rule of law in the model (model 6), it was found that financial market development (β = 45.29, S.E = 0.198), rule of law (β = 407.3, S.E = 4.772), trade openness (β = 643.8, S.E = 7.964), and inflation (β = 79.18, S.E = 1.649) have positive and important effect on economic growth while gross fixed capital formation (β = -397.2, S.E = 9.157) and foreign aid (β = -1025, S.E = 2.930) have a significant negative influence on economic expansion.

In terms of model (7) which includes voice and accountability the study found that financial market development (β = 55.45, S.E = 0.329), trade openness (β = 337.2, S.E = 11.88), and inflation (β = 89.82, S.E = 4.006)have positive and important effect on economic growth while voice and accountability (β = -72.60, S.E = 6.790), gross fixed capital formation (β = -24.29, S.E = 10.07), and foreign aid (β = -862.2, S.E = 6.3381) have negative and substantial effect on economic expansion.

**Table 15: Quantile: 75th**

| *Variables* | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| *FMD* | 25.37*** | 30.52*** | 23.21*** | 34.46*** | 37.54*** | 23.10*** | 37.83*** |
| | (0.657) | (0.302) | (1.036) | (0.256) | (0.551) | (0.684) | (1.194) |
| *INST* | 500.5*** | | | | | | |
| | (25.68) | | | | | | |
| *CC* | | 431.7*** | | | | | |
| | | (5.787) | | | | | |
| *GE* | | | 441.5*** | | | | |
| | | | (15.63) | | | | |
| *PSAV* | | | | 456.8*** | | | |
| | | | | (4.209) | | | |
| *RQ* | | | | | -961.7*** | | |
| | | | | | (41.31) | | |
| *RL* | | | | | | 535.0*** | |
| | | | | | | (15.77) | |
| *VA* | | | | | | | -568.5*** |
| | | | | | | | (26.37) |
| *Control Var.* | | | | | | | |
| *lnGFCF* | -603.0*** | -773.8*** | -594.1*** | -661.7*** | -508.0*** | -561.6*** | 133.8** |
| | (45.76) | (4.735) | (39.87) | (32.36) | (41.36) | (16.46) | (52.63) |
| *lnFAID* | -1,456*** | -1,326*** | -1,469*** | -1,433*** | -1,252*** | -1,393*** | -1,656*** |
| | (6.802) | (6.365) | (16.30) | (2.024) | (9.931) | (3.319) | (14.91) |
| *lnTRADE* | 1,392*** | 1,239*** | 1,678*** | 1,393*** | 1,042*** | 1,477*** | 1,756*** |
| | (15.69) | (3.948) | (33.33) | (18.31) | (22.73) | (10.66) | (85.37) |

**Table 15 Continued**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *lnINF* | -77.66*** | 54.46*** | 5.608 | 80.58*** | 18.86** | -46.52*** | 25.25 |
| | (22.32) | (1.380) | (11.15) | (7.975) | (8.549) | (10.82) | (20.91) |
| *Diagnostics* | | | | | | | |
| Pseudo $R^2$ | 0.514 | 0.518 | 0.514 | 0.521 | 0.511 | 0.517 | 0.513 |
| No. of Obs. | 581 | 581 | 581 | 581 | 581 | 581 | 581 |
| No. of grps. | 42 | 42 | 42 | 42 | 42 | 42 | 42 |

Source: Fieldwork (2023)

Notes: *GDPPC* (economic growth), *FMD* (financial market development), *INST* (institutional quality index), *CC* (control of corruption estimate), *GE* (government effectiveness estimate), *PSAV* (political stability and absence of violence/terrorism estimate), *RQ* (regulatory quality estimate), *RL* (rule of law estimate), *VA* (voice and accountability estimate), *lnGFCF* (natural logarithm of gross fixed capital formation), *lnFAID* (natural logarithm of foreign aid), *lnTRADE* (natural logarithm of trade openness), *lnINF* (natural logarithm of consumer price inflation rate), $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$, Robust Standard errors are in parentheses, Sample period: 2002-2019.

Table 15 shows the outcome of the 75th quantile regression which depicts the nature of connection among fiscal market development and economic expansion for SSA economies that fall within the 75% of the economic growth distribution. The results under model (1) with the inclusion of institutional quality showed that financial market development (β = 25.37, S.E = 0.657), institutional quality (β = 500.5, S.E = 25.68), and trade openness (β = 1.392, S.E = 15.69) have significant positive effect on economic expansion while inflation (β = -77.68, S.E = 22.32), gross fixed capital formation (β = -603.0, S.E = 45.76), and foreign aid (β = -1,456, S.E = 6.802) have substantial negative effect on economic growth.

Considering model (2) which includes control of corruption, it was found that financial market development (β = 30.52, S.E = 0.302), control of corruption (β = 431.7, S.E = 5.787), trade openness (β = 1239, S.E = 3.948), and inflation (β = 54.46, S.E = 1.380) have significant impressive effect on economic expansion while gross fixed capital creation (β = -773.8, S.E = 4.735), and foreign aid (β = -1326, S.E = 6.365) have significant negative effect on economic growth.

Upon including government effectiveness in model (3), the study found that financial market development (β = 23.21, S.E = 1.036, government effectiveness (β = 441.5, S.E = 15.63), inflation (β = 5.608, S.E = 11.15), and trade openness (β = 1678, S.E = 33.33) affect economic growth positively and significantly while gross fixed capital formation (β = -594.1, S.E = 39.87) and foreign aid (β = -1469, S.E = 16.30) affect economic growth negatively.

When political steadiness and absence of violence was included in model (4), financial market development (β = 34.46, S.E = 0.256), political

stability and absence of violence (β = 456.8, S.E = 4.209), trade openness (β = 1393, S.E = 18.31), and inflation (β = 80.58, S.E = 7.975) positively and significantly influence economic growth while foreign aid (β = -1433, S.E = 2.024) and gross fixed capital formation (β = -661.7, S.E = 32.36) have significant negative relationship with economic growth of SSA economies that are within the 75th quantile distribution.

After including regulatory quality into model (5), financial market development (β = 37.54, S.E = 0.551), trade openness (β = 1042, S.E = 22.73), and inflation (β = 18.86, S.E = 8.549) had a substantial positive effect on economic expansion while foreign aid (β = -1252, S.E = 9.931), regulatory quality (β = -961.7, S.E = 41.31), and gross fixed capital formation (β = -508.0, S.E = 41.36) have negative and significant effect on economic expansion. Upon including rule of law in the model (model 6), it was found that financial market development (β = 23.10, S.E = 0.684), rule of law (β = 535.0, S.E = 15.77), and trade openness (β = 1477, S.E = 10.66) have positive and significant effect on economic growth while inflation (β = -46.52, S.E = 10.82), gross fixed capital formation (β = -561.6, S.E = 16.46) and foreign aid (β = -1393, S.E = 3.319) have a significant negative influence on economic expansion.

In terms of model (7) which includes voice and accountability the study found that financial market development (β = 37.83, S.E = 1.194), trade openness (β = 1756, S.E = 83.37), and inflation (β = 25.25, S.E = 20.91) have positive and significant effect on economic expasion while voice and accountability (β = -568.5, S.E = 26.37), gross fixed capital formation (β = -

133.8, S.E = 52.63), and foreign aid (β = -1656, S.E = 14.91) have negative and significant effect on economic expasion.

**Table 16: Quantile: 95th**

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| *FMD* | 0.00923 | -54.11*** | -11.29*** | -26.09*** | 10.65*** | 37.33*** | 1.903 |
| | (2.711) | (4.338) | (1.253) | (0.579) | (0.667) | (4.552) | (4.529) |
| *INST* | -1,741*** | | | | | | |
| | (38.76) | | | | | | |
| *CC* | | -1,219*** | | | | | |
| | | (68.29) | | | | | |
| *GE* | | | -841.5*** | | | | |
| | | | (77.21) | | | | |
| *PSAV* | | | | -387.9*** | | | |
| | | | | (8.694) | | | |
| *RQ* | | | | | -1,801*** | | |
| | | | | | (36.11) | | |
| *RL* | | | | | | -2,093*** | |
| | | | | | | (138.4) | |
| *VA* | | | | | | | -1,763*** |
| | | | | | | | (106.0) |
| *Control Var.* | | | | | | | |
| *lnGFCF* | 959.0*** | 1,772*** | 1,327*** | 637.9*** | 1,269*** | 1,183*** | 403.6** |
| | (74.47) | (73.46) | (106.4) | (16.53) | (16.29) | (172.4) | (178.6) |
| *lnFAID* | -1,901*** | -2,842*** | -1,857*** | -2,045*** | -1,933*** | -2,037*** | -1,658*** |
| | (19.85) | (88.35) | (39.53) | (11.85) | (4.837) | (82.66) | (31.63) |
| *lnTRADE* | 4,069*** | 5,922*** | 4,238*** | 4,131*** | 3,484*** | 3,665*** | 3,908*** |
| | (40.75) | (185.3) | (67.08) | (18.99) | (13.85) | (352.8) | (82.36) |

**Table 16 Continued**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *lnINF* | -324.6*** | -18.15 | -81.07** | -15.60 | -317.7*** | -401.0*** | -267.7*** |
| | (28.88) | (33.97) | (40.20) | (11.35) | (4.974) | (57.27) | (28.30) |
| *Diagnostics* | | | | | | | |
| Pseudo $R^2$ | 0.553 | 0.539 | 0.542 | 0.531 | 0.557 | 0.554 | 0.589 |
| No. of Obs. | 581 | 581 | 581 | 581 | 581 | 581 | 581 |
| No. of grps. | 42 | 42 | 42 | 42 | 42 | 42 | 42 |

Source: Fieldwork (2023)

Notes: *GDPPC* (economic growth), *FMD* (financial market development), *INST* (institutional quality index), *CC* (control of corruption estimate), *GE* (government effectiveness estimate), *PSAV* (political stability and absence of violence/terrorism estimate), *RQ* (regulatory quality estimate), *RL* (rule of law estimate), *VA* (voice and accountability estimate), *lnGFCF* (natural logarithm of gross fixed capital formation), *lnFAID* (natural logarithm of foreign aid), *lnTRADE* (natural logarithm of trade openness), *lnINF* (natural logarithm of consumer price inflation rate), $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$, Robust Standard errors are in parentheses, Sample period: 2002-2019.

Table 16 shows the result of the 95th quantile regression which depicts the association between fiscal market progress and economic expansion for SSA economies that fall within the 95% of the economic growth distribution. The results under model (1) with the inclusion of institutional quality showed that financial market development (β = 0.00923, S.E = 2.711), gross fixed capital formation (β = 959.0, S.E = 74.47), and trade openness (β = 4069, S.E = 40.75) have substantial positive effect on economic growth while inflation (β = -324.6, S.E = 28.88), institutional quality (β = -1741, S.E = 38.76), and foreign aid (β = -1901, S.E = 19.85) have significant negative effect on economic expansion.

Considering model (2) which includes control of corruption, it was found that gross fixed capital formation (β = 1772, S.E = 73.46) and trade openness (β = 5922, S.E = 185.3) have substantial positive effect on economic growth while financial market development (β = -54.11, S.E = 4.338), inflation (β = -18.15, S.E = 33.97), control of corruption (β = -1219, S.E = 68.29), and foreign aid (β = -2842, S.E = 88.35) have significant negative effect on economic growth.

Upon including government effectiveness in model (3), the study found that trade openness (β = 4238, S.E = 67.08) and gross fixed capital formation (β = 1327, S.E = 106.4) affect economic growth positively and significantly while financial market development (β = -11.29, S.E = 1.253, government effectiveness (β = -841.5, S.E = 77.21), inflation (β = -81.07, S.E = 40.20), and foreign aid (β = -1857, S.E = 39.53) affect economic growth negatively.

When political stability and absence of violence was included in model (4), trade openness (β = 4131, S.E = 18.99) and gross fixed capital formation (β = 637.9, S.E = 16.53) positively and significantly influence economic growth while financial market development (β = -26.09, S.E = 0.579), political stability and absence of violence (β = -387.9, S.E = 637.9), inflation (β = -15.60, S.E = 11.35), and foreign aid (β = -2045, S.E = 11.85) have significant negative relationship with economic growth of SSA economies that are within the 95th quantile distribution.

After including regulatory quality into model (5), financial market development (β = 10.65, S.E = 0.667), trade openness (β = 3484, S.E = 13.85), and gross fixed capital formation (β = 1269, S.E = 16.29) had a important positive effect on economic expansion while inflation (β = -317.7, S.E = 4.974), foreign aid (β = -1933, S.E = 4.837), and regulatory quality (β = -1.801, S.E = 36.11) have negative and significant effect on economic growth. Upon including rule of law in the model (model 6), it was found that financial market development (β = 37.33, S.E = 4.552), and trade openness (β = 3665, S.E = 352.8), and gross fixed capital formation (β = 1183, S.E = 172.4) have positive and substantial effect on economic progress while inflation (β = -401.0, S.E = 57.27), rule of law (β = -2093, S.E = 138.4), and foreign aid (β = --2037, S.E = 82.66) have a significant negative influence on economic expansion.

In terms of model (7) which includes voice and accountability the study found that financial market development (β = 1903, S.E = 4.529), trade openness (β = 3908, S.E = 82.36), and gross fixed capital formation (β = 403.6, S.E = 178.6) have positive and substantial effect on economic growth

while voice and accountability (β = -1763, S.E = 106), inflation (β = -267.7, S.E = 28.30), and foreign aid (β = -1658, S.E = 31.63) have negative and substantial effect on economic expansion.

From the results in Table 12 to 16, the relationship among fiscal market development and economic expansion for low-growth and high-growth economies tends to be similar for economies that fall within the 5th, 25th, 50th, and 75th quantiles but looks different for economies that fall within the 95th quantile. While the relationship between financial market expansion and economic growth was positive for SSA economies within the 5th, 25th, 50th, and 75th quantiles the relationship was largely negative for those in the 95th quantile under the models controlled for control of corruption, direction effectiveness, and political stability and absence of violence.

Furthermore, the association between institutional quality, the governance indicators and economic expansion for economies that falls in the 5th, 25th, 50th, and 75th quantile distributions were found to be positive but the relationship turned to be negative for economies in high-growth economies (95th quantile). This implies that economies in the highest growth regimes generally have fewer effective institutions and governance indicators quality and this reduces the level of growth of such economies. The story is different for economies within the 5th to the 75th growth distribution. For these economies, they tend to have high institutional quality and effective governance indicators which reinforce their growth.

Moreover, increased trade openness increases the growth of all economies that fall in the 25th, 50th, 75th, and 95th growth distributions as well as those in the 5th quantile growth distribution; with the exception of

models controlled for regulatory quality and political stability and absence of violence where increased trade openness reduces growth of lower-growth economies. Also, increased in gross fixed capital formation for economies in the 5th, 25th, 50th, and 75$^{th}$ quantile distribution generally reduces the growth of these economies. It is only high-growth economies (those in the 95th quantile distribution) that have higher gross fixed capital formation impacting their growth positively.

Increased inflation is detrimental to high-growth economies as it reduces an economy's growth. Based on this result it can be argued that high-growth economies that achieve full employment status risk having price spiral as demand increases. This is so because such economies get to attain full employment output and as demand increases there is little potential for output to increase. The result effect is that output grows slower than the growth in demand and this increases the general price level (Dziwornu & Awunyo-Vitor, 2013). However, higher inflation rather increases economic growth for economies that fall within the 5th, 25th, 50th, and 75$^{th}$ quantile distributions. This also means that low-growth economies have high potential to increase output (as they operate below full employment equilibrium) as price increase; and the increased output results in higher national output hence higher economic growth (Dziwornu & Awunyo-Vitor, 2013).

Also, increased foreign aids reduce the growth of all economies under all circumstances considered in this study. This result confirms that fact that foreign aids make less developed economies (such as the SSA economies) overly dependent on developed donor countries which increases indebtedness, political and economic pressures, and could make political official corrupt by

diverting funds into private hands (Churchill, Arhenful & Agbodohu, 2013). This ends up reducing the growth prospects of less developed economies.

## Summary

In relation to the connection among fiscal market development and economic expansion in SSA economies, this chapter presented the findings and comments. The study discovered a positive relationship between fiscal market development and economic expansion on the short and long terms. Other elements including trade openness, institutional quality, and gross fixed capital development stimulate economic expansion in SSA over the long and short terms. On the other hand, more foreign aid slows down economic growth over the long and short terms. Additionally, there was evidence of a causal link between the expansion of financial markets and economic expansion. Quantile regression models further demonstrated that, while financial market expansion slows the growth of 95th quantile expansion distributions, it enhances economic growth from the 5th to the 75th quantile distributions. The results were discussed in relation to empirical studies.

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## Introduction

The summary of the study's motivation, methods, and major conclusions is presented in this chapter. This chapter also includes the conclusion, suggestions for improvement, and ideas for additional research.

## Summary of the Study

To reiterate, the study recognised the uneven growth distribution across Sub-Sahara Africa (SSA) and hence employed the quantile regression approach to assess the relationship among fiscal market development and economic growth in SSA. The direction of causality between financial market development and economic expansion in Sub-Saharan Africa was also established as well as the relationship among the variables across the various percentile distributions in Sub-Saharan Africa.

In furtherance, the study achieved the aforementioned objectives by employing the positivism paradigm, the explanatory design and the quantitative approach. Economic growth was the dependent variable while financial market development was the independent variable with other variables such as institutional quality, governance indicators, inflation, gross fixed capital formation, foreign aid, and trade openness serving as the controlled variables. The also study employed the granger causality test, pooled panel regression model, and the quantile regression models jointly to assess fiscal market progress and economic nexus in the Sub-Saharan Africa regions.

**Summary of Key Findings**

The following key outcome were obtained:

- In respect of the relationship amid fiscal market development and economic growth, the study found that in the short run, financial market development positively influenced economic growth for SSA for each of the models estimated. Institutional quality, control of corruption, government effectiveness, political stability and absence of violence, and rule of law were also found to positively influence the growth of SSA economies in the short run. While inflation generally did not significantly cause economic growth, gross fixed capital formation and trade openness positively influence growth of SSA economies in a positive direction whereas foreign aids negatively affected economic growth. In the long run, financial market development, institutional quality, trade openness, and gross fixed capital formation affected economic growth of SSA positively while foreign aid negatively influenced economic growth. Thus, the effect of financial market development and economic growth in the short run and the long run are all positive.
- Regarding the direction of causality among fiscal market growth and economic growth in SSA, the major finding was that bidirectional causality exists. That is, financial market development granger caused economic growth while economic growth also granger caused financial market development.
- In respect of the quantile regression analysis, the base model, the pooled regression models revealed that fiscal market development positively and meaningfully influence economic growth when the model was controlled

for regulatory quality and voice and accountability. The quantile regression showed that financial market development increases economic growth for the 5th to the 75th quantile growth distributions but for the 95th quantile distribution, financial market development reduces economic growth.

**Conclusions**

The following conclusions were drawn on the basis of the readings outcomes. The conclusions were presented in line with the three objectives stated for the study.

Conclusions drawn from the outcomes on research objective one indicates that short-term financial market expansions has a significant influence on the expansion of Sub-Saharan African economies, with institutional quality, corruption control, government efficiency, political stability, the absence of violence, and the rule of law being among the most important factors. Sub-Saharan African nations who are serious about improving their economic growth performance should consequently keep a close eye on these indicators.

With regards to the outcomes obtained for research objective two, it is concluded that increased financial market development through the provision of more credit, increased gross fixed capital formation and increased level of trade openness are the major factors influencing the trend or direction of causality between fiscal market development and economic expansion. As a result, governments in Sub-Saharan African economies should offer further financial system cushioning in order to provide credit to all segments of their

economies, especially the private sector as this will in turn stimulate economic activity and lead to growth.

The conclusion is therefore drawn with regards to the third research objective formulated for the study that the rise in economic expansion of Sub-Saharan African economies is not across all economies. However, the role of regulatory quality, voice and accountability of critical financial management institutions cannot be over emphasized as they have proved to be the drivers of economic growth across several regions of the Sub-Saharan African economies.

**Recommendations**

Based on the conclusions drawn, the following recommendations are made for policy formulation.

- The study recommends that governments of Sub-Sahara Africa economies should encourage the financial sector to increase financial support through granting of more credit to the private sector. This move, in the short term to the long term will increase productivity and cause growth expansion in the SSA economies.
- Governments of Sub-Saharan Africa should also ensure that they improve upon the quality of their institutions, control corruption, enhance government effectiveness, promote political stability and prevent violence, and also should promote rule of law as the financial market development and growth prospect is made possible by effectively managing the aforementioned indicators.
- For high-growth economies in SSA, there was the evidence that development of the financial market does not increase growth due to the

generally poor management of institutions. This study therefore recommends that high-growth regime economies in SSA should resource state institutions to improve upon their quality and control corruption; and also to ensure improved political stability to promote help promote the overall governance effectiveness. This condition can help to reverse the negative impact of expansion in the financial market on growth prospect.

**Suggestion for Further Studies**

Given the fact that the study did not control for the heterogeneity among the Sub-Saharan African economies, it is suggested that future studies should consider using the fixed effect, random effect and the polled regression panel models to assess the optimal model to improve the outcome of the fiscal market development and economic expansion nexus.

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