UNIVERSITY OF GHANA

Foreign Direct Investments and Economic Growth – Investigating the place of Financial Stability

BY

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DECLARATION

I, Boison Angmortey Angmosi, do hereby declare that this thesis is a record of an original work done by me and the results herein contained have not been submitted in whole or part to any other university or institution for the award of any degree.

I am solely responsible for any errors that may be present herein.

Signed: ..... Date: June 25th, 2021

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CERTIFICATION

We hereby certify that this thesis was prepared from the candidate's own work and supervised in accordance with guidelines on supervision of thesis laid down by the University of Ghana.

Signed: ..... Date: JUNE 25, 2021

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DEDICATION

I dedicate this work to my junior brother, Immanuel Teye Angmosi. May the Lord make you better than myself.

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LIST OF ABBREVIATIONS

Abbreviation	Definition
AB	Arellano-Bond
AH	Anderson–Hsiao
BLUE	Best Linear Unbiased Estimator
DPD	Dynamic Panel Data
FDI	Foreign Direct Investments
FSI	Financial Soundness Indicators
GDP	Gross Domestic Product
GFD	Global Financial Development
GMM	Generalized Method of Moments
GNP	Gross National Product
HDI	Human Development Index
I.I.D	Independently and Identically Distributed
IMF	International Monetary Fund
IV	Instrumental Variable
ML	Maximum Likelihood
MNC	Multinational Corporations
NR	Natural Resource
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
ROA	Return on Assets
SES	Systemic Expected Shortfall
SFDI	Stock of Foreign Direct Investments
SGMM	System Generalized Method of Moments
SSA	Sub-Saharan Africa
TFP	Total Factor Productivity
UNDP	United Nations Development Program
VIF	Variance Inflation Factor
WDI	World Development Indicators

ABSTRACT

The role of financial stability in the relationship between foreign direct investments (FDI) and economic growth is extensively examined in this study to provide a much-needed understanding of the extent of financial stability required for economies in Sub-Sahara Africa (SSA) to reap positive benefits from FDI, if at all it has any relevance in the nexus.

Annual data on forty-six (46) SSA economies for thirteen years (from 2006 to 2018) is used in the investigation. The two-step System Generalized Method of Moments (SGMM) estimator is demonstrated to be a suitable technique for this study. Departing from the usual approach which depends on contemporaneous flows, stocks of FDI are generated and used in this study to account for both contemporaneous values and their lags in establishing the relationship.

The study reveals that FDI stocks as well as financial stability do have significant negative effects on economic growth as stand-alone factors. When FDI stocks and financial stability are interacted, however, a positive relationship ensues, implying that FDI stocks cause SSA economies to grow in the presence of stable financial systems and otherwise. Further investigation of this interaction shows that the impact of FDI stocks on these economies, at the margins, tend to change with the level of financial stability. That is, at low levels of stability (below the regional mean), the combined effects are negative and significant. These effects gradually change from negative to positive as the level of financial stability rises beyond one standard deviation above the mean, although not with significant coefficients. It is thus clearly demonstrated that the place of a stable financial system in ensuring sustained economic growth in SSA cannot be overemphasized, as the absence thereof may allow other factors to adversely affect these economies, which would have been beneficial otherwise.

Keywords and phrases: financial stability, foreign direct investments, FDI stocks, economic growth, system GMM

CHAPTER ONE

INTRODUCTION

1.1 Research Background

Theoretically, it can be expected that the rate of economic growth for any country experiences non-trivial sums of advancement by the flow of capital into that jurisdiction. It is generally expected that the inflow of foreign direct investments (FDI) contribute largely to an economy's capital accumulation as it tends to enhance the introduction of new technologies, while at the same time improving management techniques and kindling productivity spillovers (OECD, 2002). The protracted debate as to whether these theoretical prescriptions hold has classically not seen very much consensus and definiteness in the empirical literature on FDI and growth. Recent evidence, however, seems to converge towards agreeing on FDI inflows having quite a bearing on growth; at least through some identified channels, and in some specific settings (Agbloyor, Gyeke-Dako, Kuipo & Abor, 2016; Ausloos, Eskandary, Kaur & Dhesi, 2019; Iamsiraroj, 2016; Kohpaiboon, 2003).

Also, it is obvious that resources invested in an economy from abroad are very likely to pass through the financial system of that economy before reaching the real economy. It stands to reason then, that the financial system of an economy does affect the level of impact FDI has on that economy's growth. For this reason, myriads of previous studies had their focus on determining whether the development of financial systems within a country do affect the level of FDI flows into that country; and whether financial development does improve the economy's capacity to properly absorb the various benefits of FDI to indeed fuel growth (Ang, 2009; Kellard, Kontonikas, Lamla, Maiani & Wood, 2018). It is also worth taking note of the fact that, the financial system itself has a direct bearing on the growth of an economy. The volumes of work done in the empirical growth literature which examine the long-run association between finance and economic growth largely appear to suggest a highly positive and

statistically significant impact of the financial system and its development on economic growth (Beck & Levine, 2004; Bittencourt, 2012; Kargbo & Adamu, 2009; King & Levine, 1993; Levine, 1997). In his pioneering work in this area of finance and growth, Schumpeter (1911) identified five principal roles played by financial intermediaries in an economy. These roles comprise savings mobilization, projects evaluation, risk management, monitoring of managers, and the facilitation of transactions. He further argued cogently that the financial system does promote technological innovation and enhances economic growth and development. Other studies such as Mishkin (1999) and Bain and Howells (2009) also outline the roles played by the financial sector. They argue that the role of the financial system encompasses effective and efficient fund mobilization and allocation, risk sharing and abatement, monitoring of corporate insiders, as well as providing credit information with which investors can make informed investment decisions. In fact, Levine (1997) sums this up so well by arguing that the preponderance of theoretical reasoning and empirical evidence suggests a positive, first-order relationship between financial development and economic growth.

Emerging thus from the existing literature on this subject of FDI and growth is this set of very intricately connected concepts which are of immense relevance in determining whether foreign direct investments will be a blessing or a curse to an economy. Especially in the present wake of governments within the Sub-Saharan Africa region vigorously seeking to woo foreign investors and draw investors' attention to their countries, there arises the pronounced need for policymakers to be guided by robust academic research to ensure that in the plethora of factors that enhance the impact of FDI, absorptive capacity, the issues of risk-taking and financial stability are neither relegated to the background nor overemphasized.

Financial stability is particularly a very sensitive issue to investigate as it affects both the confidence of investors in an economy, and how the financial system impacts growth. That is, both FDI and economic growth are possibly directly affected by financial stability aside from

its potential impact through other channels; making its intervening weight in the relationship between FDI and growth worth studying. What makes financial stability even more sensitive is the fact that both its level and impact essentially flow from basic risk-taking and risk management habits of institutions, their managers, and other individual actors that are at play within a financial system. The very heart of this study thus originates from an attempt to demonstrate to individual players in the financial system the extent to which their day-to-day risk behaviour can affect their economies as a whole, and even beyond.

1.2 Problem Statement

There recently appears to be quite a divergence from merely examining whether there exists any association between FDI and economic growth due to the lack of consensus and the mixed nature of available evidence. The focus rather seems to be turning to investigations of the various channels through which FDI possibly affects growth (Kohpaiboon, 2003). Recent studies such as Ausloos et al. (2019) and Iamsiraroj (2016) corroborate this observation and seem to further call out stridently to researchers to reconsider the methods used in ascertaining the association between FDI and growth.

Ausloos et al. (2019) especially express wonder at why time delays are not taken into consideration in most previous studies, knowing that new investments from abroad in an economy may not result in an immediate impact on that economy. Their approach, which was to demonstrate the presence of a time delay as regards the influence of FDI inflows on GDP growth, solely focused on assessing the association between the two variables using a time-lag dependent correlation technique. They, however, strictly indicate that their study was not in any way an attempt to establish any form of a causal link between FDI and growth, constantly stressing the conceptual difference between causality and correlation. Interestingly, their findings suggest that there may exist causal links between time-lags of FDI and economic

growth (both positive and negative), as well as other non-linear relationships therein which have been left unexamined in the existing literature.

Further, one may easily observe three strands of evidence in the classical empirical literature attempting to point out the different observed effects of FDI on economic growth (Almfraji & Almsafir, 2014; Ausloos et al., 2019; Ozturk, 2007). One strand of literature finds FDI to either have a significant and positive or negative impact on growth; and adjoining these, those who find a bi-directional causal link between FDI and growth. The second strand presents evidence that asserts that FDI has no significant influence on growth. Meanwhile, a third strand of the empirical literature propositions that there are country-specific attributes that serve as channels through which the inflow of FDI promotes growth or otherwise (Agbloyor et al., 2016; Ang, 2009; Duasa, 2007).

According to Agbloyor et al. (2016), recent thinking purports that the long chain of inconclusive results may be due to unique attributes that are particularly true of the receiving economies. They argue that it is increasingly appearing evident that FDI promotes growth only under some particular conditions which may include the economy's level of human capital development, macroeconomic stability, financial development, infrastructural development, trade openness, institutional quality, and good governance (Alguacil, Cuadros, & Orts, 2011; Alfaro, Chanda, Kalemli-Ozcan, & Sayek, 2004; Azman-Saini, Baharumshah, & Law, 2010). An important gap that has, however, been left unattended to in the extant literature in this regard has to do with the role of financial stability within the FDI-growth nexus. This is a crucial issue to investigate as this missing link may give some very useful insights on why some economies have not benefited much from FDI flows as suggested in theory. Additionally, while it is true that there have been studies examining how absorptive capacities may influence a country's ability to reap the benefit of FDI, Agbloyor et al. (2016), however, note that such studies of absorptive capacities have been done in isolation. They strongly argued that the impact of FDI

on growth may well be dependent on how these capacities interact with each other, and also the specific contextual characteristics that come to play, hence their recommendation that policymakers should really pay much attention to their specific contexts before executing policies in order to be able to realize the growth effects of FDI. This therefore makes it pertinent to investigate how financial stability influences the impact of FDI on growth within the specific economic context of SSA.

It is very crucial to understand here that, the abundant evidence suggesting that finance promotes growth – and is thus not merely a sideshow or a passive response to growth as established by Levine (1997) and others (Beck & Levine, 2004; Bittencourt, 2012; Cournède & Denk, 2015; Kargbo & Adamu, 2009) – do point out so clearly the fact that the presence of any system-wide episodes that lead to improper functioning of the financial system (which is what is generally referred to as financial instability), has the potential to directly upset the growth of that economy and as well influence the economic effects of foreign capital flows, at least theoretically.

It is amazing, however, that the empirical literature is virtually silent on this possibility of financial stability/instability influencing the impact of FDI on economic growth. It is easy to see that, a likely reason for this is the possibility that many assume a developed financial system is necessarily stable, for which reason much of the theoretical and empirical literature which focus on financial development do ignore the aspect of stability. Even though as per the World Bank's Global Financial Development Database, it is generally held that financial development has four basic aspects encompassing financial depth, access, efficiency, and stability, recent studies seem to challenge this assertion with evidence suggesting that a relatively more developed financial system is not necessarily more resilient to system stress, and in some cases, may prove to even be more prone to dysfunction when subjected to stress. Batuo, Mlambo, and Asongu (2018) in studying the interconnections between financial development, instability,

liberalization, and economic growth in Africa, present findings which suggest that financial development and financial liberalization do have positive effects on financial instability. They seem to reason that, attempts to reduce financial repression so as to boost the development of the financial system may have adverse implications on that financial system as some regulations which may be necessary to keep it stable may be forfeited in the quest for financial liberalization and development. This then suggests that close attention be paid to the stability of financial systems and the roles they play in moderating the impact of FDI on economic growth. Beyond that, even the studies which scrutinise the effect of financial development and its place within this FDI-Growth nexus primarily proxy financial development with variables that mostly communicate financial depth and access, with financial efficiency and stability variables hardly appearing. This then reinforces the need to pay attention to financial stability as a 'stand-alone' factor and investigate its influence on how FDI impacts economic growth.

1.3 Purpose of the Study

The main purpose of this study is to investigate whether or not the stability of a country's financial system does matter in the relationship between FDI and economic growth in the SSA region, and by that provide an understanding of the extent of financial stability required for SSA countries to reap positive benefits from FDI.

1.4 Research Objectives

More specifically, this study will seek to:

- examine the effects of FDI Stocks on economic growth in SSA.
- analyse the role of financial stability in determining the impact of FDI on economic growth in SSA.

1.5 Research Questions

The study seeks to answer the following questions.

- Do FDI flows accumulated into stocks over time affect the economic growth of host countries in SSA?
- Does financial stability play a role in determining the impact of FDI on economic growth in SSA?

1.6 Research Hypotheses

H_0: FDI stocks do not have any effect on economic growth in SSA.

H_0: Financial stability does not have any impact on economic growth in SSA.

H_0: Financial stability is not necessary for the impact of FDI stocks on economic growth in SSA.

1.7 Significance of the Study

The outcome of this study will be beneficial to practice, policy as well as research. With a strong predisposition to driving policy, the empirical evidence from this study will add a great deal to the present state of knowledge on which particular factors policymakers are to consider within the SSA context before pushing forth policies to attract foreign investors.

The contribution of this study to research is however in three main directions. First of all, it will add to the current literature on FDI and economic growth, making inputs to the still ongoing debate in this area. A crucial contribution of this study, evident in its departure from merely using contemporaneous values of FDI and its lags to the use of FDI stocks, stands out as the second major contribution to research. Thirdly, the study will blaze the trail for new studies which will examine the long-neglected role of financial stability in enhancing the impact of FDI on various aspects of host countries' economies such as industrialization, political stability, quality of life, etc.

With regards to practice, managers of financial institutions and corporate workers through this study will be exposed to the extent of an impact their activities and risk-taking behaviour has

on the entire economic atmosphere of the region within which they operate, far beyond the scope of their organisations. It will be clear the extent to which these activities and such risk-taking behaviour and decisions stabilise or destabilise the financial system and the economy at large.

1.8 Scope and Limitations of the Study

The study will focus its investigation on forty (46) Sub-Saharan Africa countries for the period 2006 to 2018. Despite the expected benefits of this study, there are a few general limitations that must be mentioned. A notable limitation is that only a very short time-series dimension of the data could be incorporated in the study because of challenges with the availability of data for the entire region the study seeks to consider. A longer time dimension would have made the panel data for the study richer, and hence provided a clearer picture of what the study seeks to achieve. Further limitations with the methodology are explained in chapter 3 of the study. Also, the obvious time constraint of having to work on this thesis within just one academic year proved to be restrictive as the available time is not enough to exhaustively explore every aspect of the topic as so desired.

1.9 Thesis Structure

The remaining parts of the study are organised as follows: chapter two (2) follows immediately with a comprehensive review of the current state of knowledge, considering both the theoretical and empirical foundations based on which the study is conducted. This chapter will have two major sections, the first will elaborate on the FDI-growth-related concepts and theories that are necessary to guide the thought process in the conduct of this study. The second part wholly considers the array of empirical studies conducted in this area in laying a solid foundation for this study.

The third chapter presents a clear and elaborate description of the research strategy and methodology employed in the study, showing a description of the data, empirical models and

estimation strategies relied on for this study; the results of which is presented and discussed in the fourth chapter. In the fifth chapter, the findings of the study are summarized, based on which conclusions, inferences, policy directions and recommendations are made.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter of the study presents a comprehensive review of the available literature, focusing on both the conceptual/theoretical and empirical literature underpinning this study. Structured in two main parts, this chapter will have the first part elaborating on the conceptual and theoretical aspects of the FDI-Growth nexus as well as financial stability, making use of as much of the literature as are necessary to guide the thought process herein. The second part will largely focus on presenting a review of empirical studies conducted on the subject.

2.2 Conceptual and Theoretical Review

As indicated in the previous chapter, the subject under study entails a set of connected concepts of immense relevance which through constant interaction shape the kinds of relationships that emerge in the nexus being investigated. It is important to note that each of these concepts worth considering has, undergirding it, diverse assumptions that guide the reasoning and intuition behind it. The body of literature on this subject presents these various ideas with an array of diverse approaches. This part of the chapter brings these ideas into a synthesis that is relevant to the study.

2.2.1 Foreign Direct Investments (FDI)

FDI is generally viewed in the literature as an effective means of transferring capital in many different forms from one jurisdiction to another. In the drive towards economic globalization, FDI happens to be one of the most discussed issues. This primarily appears to be a consequence of the fact that FDI happens to be considered a very critical means through which multinational corporations restructure their operations across borders in synchrony with their various corporate strategies as well as host country characteristics. An additional factor observed is the fact that host countries regard FDI as an opportunity for economic development since it

provides a significant avenue to further integrate their economies into global markets (Long, 2005). Understanding these, among the various dimensions to the processes through which FDI feeds into the various operational aspects of economies (and is likewise fed into) has therefore been of keen interest to scholars. This has led to the quantum of literature on FDI – both conceptual and empirical – with continuing attempts to conceptualize the various links it has with both origin and host economies. By way of definition, FDI is generally known as that class of investment by an entity which acquires a lasting interest amounting to 10% or more voting power in an enterprise located in an economy other than that of the direct investor, and by that establishes a long term relationship which comes with a level of significant influence over the management of the enterprise (OECD, 1996).

FDI is classically shown to take four distinct forms, or better still flows to four broad economic sectors, namely the extractive industries, infrastructure, manufacturing and assembly, and the services sectors; each of these making distinct contributions to the economy – along with their respective dangers and threats, as well as policy challenges (Moran, 2011, 2012). The literature reports very clearly that the attraction of foreign capital to all these sectors seemed to have been the goal of some policies rolled out by countries – which included the easing of restrictions and aggressive offers of tax incentives and subsidies (Aitken & Harrison, 1999). This may have been the result of the fact that commercial bank credit to emerging economies had diminished since the 1980s. Coupled with the sudden rise in private capital flows from non-commercial banks to developing economies which was experienced in the decade that followed, such policies led to a swell in private capital flows to emerging economies to the tune of $320 billion and beyond in 1996. By the year 2000, the amount of such private capital flows was more than quadruple the peak of commercial bank lending to these economies less than three decades earlier, with FDI contributing more than 60% of these flows (Carkovic & Levine, 2005). It may thus be safe also to account for this as a result of the view that FDI may serve as a spur for

industrial development, having the ability to supplement local firms; driving towards the establishment of local industrial sectors. Such local sectors, according to this view, may outgrow and overtake, and even eventually force out the foreign-owned entities (Markusen & Venables, 1999).

Another aspect of the literature on FDI focuses strongly on the determinants of FDI, describing mainly the political and economic conditions that attract FDI into a country among other possible classes of determinants. Economically, for instance, higher real per capita Gross National Product (GNP) and lower Balance of Payment deficits are empirically proven to attract more FDI into an economy. A classic example of this is given by Schneider and Frey (1985), who also report that political stability, as well as the sources of aid received by a country, are some significant determinants of FDI flow into a country. They observed that bilateral aid from western nations and multilateral aid stimulate FDI inflows, while aid from communist countries seems to have an impact in the opposite direction. Other political factors such as corruption and government stability, democratic accountability of governments, ethnic tensions, law and order, internal and external conflict, as well as institutional quality are also found to be extremely significant in determining FDI flows (Busse & Hefeker, 2007; Habib & Zurawicki, 2002).

It is also worth mentioning that a non-trivial chunk of the literature does focus on FDI to and from specific countries, most of which now form part of the nations considered as advanced. It is thus not unusual to find an appreciable amount of literature attempting to examine FDI to or from countries like the UK, USA, China, Japan, and the like (Latorre & Hosoe, 2016; Mihut, 2014; Milner, Reed, & Talerngsri, 2006; Tang & Gyasi, 2012; Wang, Alba, & Park, 2012). Studies limited to specific countries seem to have a limit to how far they go in uncovering the various mechanisms and dynamics through which FDI is both impacted and does impact other factors; due to the inadequacy of sufficiently disaggregated data to fully permit such analysis,

as found in the case of China. This is reported by Buckley et al. (2007) who also posit that the result of this is the notable preponderance of descriptive research on FDI trends. There is, however, a corresponding amount of literature that also consider FDI analysis on regional and sub-regional levels such as studies on Sub-Saharan Africa, the context in which this particular study falls. While it may be fair to say these cross-country studies are on an aggregated level for which reason data for research in such contexts is much more available - seeing there is not much need for disaggregation - the results of such research produce nothing far different in terms of understanding of the subject. Consequently, all the conflicting predictions of theory as well as the lack of consensus in the empirics do remain.

It is critical to indicate here that, the economic implications of FDI for both sending and host countries are taken extremely seriously in the literature. Aside from its general effects on economic growth and its implications for quality of life, it is fairly easy to observe from the extant literature that the effects of FDI on different sectors within an economy, as well as its impact on sections of the populace such as on the working class and labour markets, are critically examined. Driffield and Taylor (2000) for example investigated the impact of FDI inflows on labour markets in the UK. The crucial impact of FDI inflow on wage inequality was observed and demonstrated as particularly being through two possible channels. The first being a hike in the demand for skilled labour by multinational enterprises which increases wage inequality, while the other is through technology spillovers from foreign to domestic entities which lead to an upgrade of skills and the increased relative demand for skilled labour by local firms – thus consequently resulting in a contribution to aggregate wage inequality. These have policy implications, and therefore drive the discussion back to the broader economic picture of how FDI affects the growth of an economy in general.

2.2.2 Economic Growth

The volume of goods and services produced in a nation over a specific time period may increase as a result of many different factors. The market value of such increases per head of the population within that nation is in simple terms what is referred to as economic growth. That is to say, the rise in the inflation-adjusted market value of output per head in any economy over time is the economic growth experienced by that economy (Almfraji & Almsafir, 2014). This is by convention measured as the percentage change in real gross domestic product (GDP) per capita.

The extent of impact the economic wellbeing of every nation has on its populace indeed justifies the amount of work that has gone into studying the phenomenon, with many of these attempts targeted at discovering which factors fuel economic growth. The strenuous efforts to both model how these factors affect economic growth and to find out whether these models are backed empirically has birthed a huge stock of literature. Efforts like that of Kaldor (1961) in which were presented his 'six remarkable historical constancies' as revealed by the then available empirical evidence have long served as a compelling basis for many to appraise the strength of economic growth models, despite the many modifications suggested by others. That is, a model is as strong as its ability to generate forecasts consistent with these empirical hypotheses.

The basic consensus is that any model should be able to explain the primary features that characterize the economic process as found in reality. For instance, some make suppositions communicated through the 'stylized facts' that any theoretical growth model when tested empirically must show per capita output as growing over time with its growth rates being non-diminishing; physical capital per worker growing over time while the rate of return to such capital remains nearly constant; physical capital to output ratio, as well as the shares of labour and physical capital in national income also remaining constant; while the rate of growth of

output per worker significantly differs from country to country (Barro & Sala-I-Martin, 1990; Blankenburg, 2003; Kaldor, 1961). These claims have notably had an avalanche of empirical backing in the growth literature to a very great extent (Christensen, Cummings, & Jorgenson, 1980; Denison, 1974; Dougherty, 1991; Gollop, Fraumeni, & Jorgenson, 1987; Maddison, 1982; Young, 1994). Meanwhile, growth theorists such as Kuznets (1973, 1981) do unravel some other features of contemporary economic growth. In these works, Kuznets particularly remarks on the rapid rate at which structural transformations are taking place, including shifts from a focus on agriculture to industry, and then to the services sector. Such a course entails urbanization, changes from home-based subsistence work to employee status, and the growing role formal education gets to play. He further contends that modern growth seems to entail a bigger role of foreign trade, and that technological progress does imply decreasing dependence on natural resources. To end with, he debates the increasing significance of government, arguing for more emphasis on the need for configuration in national sovereign units.

It thus becomes imperative to pay heed to these in every attempt to explain how and why economies do or do not grow, and when assessing economic growth theories on any front. Generally, in the extant growth literature, the neoclassical and endogenous growth theories have been purported to have wielded the most explanatory power in the light of some of the discussions above. The criticisms levelled against the neoclassical growth theory around the 1970s as having grown obsolete in explaining economic growth more or less served as the spur for the endogenous growth theory, which can be said to have come flying on the backs of the limitations identified in the economic thought of the Neoclassicals in explaining economic growth (Salifu, 2019).

Neoclassical Growth Models (Solow-Swan)

The neoclassical growth theory posits that long-run economic growth emanates from capital accumulation, labour/population growth, and the exogenous rate of technical progress.

Essentially, the neoclassical models of growth are extended versions of the 1946 Harrod–Domar model that is augmented by the addition of a novel term to capture growth in productivity. Major contributions to this came through the independent works of Solow (1956) and Swan (1956). Assuming the property of diminishing returns to capital, the model sees capital as accumulating through investments; with its level or stock continually reducing nonetheless as a result of depreciation. This model explains that as capital per worker increases in the absence of technological progress, output per worker subsequently gets to the point where on account of diminishing returns to capital, the capital per worker and output per worker remains constant since annual depreciation becomes equal to annual capital investment. This is the condition referred to as the 'steady-state'.

In this model, therefore, as productivity rises through technical progress, output per worker gets to increase even with the economy in a steady state. If we thus have productivity increasing at a constant rate, output per worker also gets to rise at an associated steady-state rate. Consequently, growth, as given by this model, can come about as a result of raising the portion of GDP invested, or through technological progress. Regardless of the share of GDP invested, however, capital per worker in due course converges towards the steady-state, with the growth rate of output per worker left to be determined ultimately by only the rate of technical progress. The neoclassical growth models thus posit that the engine of economic growth is exogenous technological progress – initiating and implementing new ideas and technologies. Consequently, once world technology is made available to every country and progresses at a regular rate, each country gets its economy growing at a uniform steady-state rate, with different levels of GDP per worker, however, varying with the share of GDP invested by each, though all will have the same growth rate.

The model, therefore, explains why some countries are rich; identifying them as those who have invested a greater portion of their GDP over a long period. Those that are poor can thus

follow suit by raising their proportion of GDP invested, leading us to a crucial prediction of this model called conditional convergence. This refers to the proposition that poor countries will grow at a faster rate in order to catch up with their rich counterparts so far as they have similar rates of investment (and savings) as well as the same technology. This prediction is usually supported by the empirics, although not mostly observed in reality (Barro & Lee, 1994; Barro & Sala-I-Martin, 1990).

It is obvious from the above that the model neither offers any explanation of the variations in the share of GDP invested by countries, nor why technology advances over time. Both the investment rates and the rate of technical progress are exogenous, for which reason the model is also termed exogenous. Among the limitations of this model is its failure to explain what determines these rates, leaving its value to lie only in the fact that it predicts how economic growth will occur once these rates are specified.

Endogenous Growth Models

The inability of the neoclassical growth model to explain what accounts for the changes in the growth of economies over time as well as the persistent and non-trivial variations in income per capita across countries, among other limitations, seems to have fuelled the attempts to explain growth from within the models, thus making it endogenous. The resulting endogenous growth theory markedly deviates from the neoclassical thought which held that economic growth is principally a consequence of unexplained, exogenous technological progress. With the major initial contributions coming from Romer (1986) and Robert (1988) who insist that growth is primarily a function of endogenous factors, they hold the stance that inherent attributes of each country determine its growth trajectory in the long term.

The novel concept of human capital was therefore built-in to capture the skills and knowledge that explain worker productivity in addition to an aspect that explains technological advancement through innovation. The important difference to note here is the fact that human

capital is unlike physical capital, as it has increasing rates of return. The endogenous growth models include in the stead of technological progress, investment in human capital which results in a spillover effect on the economy, hence, decreasing the diminishing returns to capital accumulation. According to the endogenous growth model then, human capital, knowledge, and innovation are essential contributors to growth and must be invested heavily. Policy provisions that subsidize research and development (innovation) and education will thus spark the spillover effects and externalities that will affect growth positively.

Nevertheless, it is vital to also mention that these models are not without their shortcomings; an easily noticeable one being the inability to explain the conditional convergence brought out by the empirics (Sachs & Warner, 1997), as well as the income divergence between developed and developing economies (Parente, 2001). Another limitation that is heavily criticized is the abstract nature of its assumption, making it nearly impossible to empirically assess (Krugman, 2013).

2.2.3 FDI and Economic Growth

As properly observed by Ozturk (2007), both the neoclassical growth models and the endogenous growth models do provide the foundational basis for the majority of the empirical work on the FDI-growth nexus. Very clear evidence of this is provided by the number of studies which has been hinged on influential papers like Mankiw, Romer, and Weil (1992), Dinopoulos and Thompson (1996), etc. These papers extended the development of these growth models, which are now used as benchmark models; and as a standard approach now, investments can be divided into the domestic as well as the foreign direct components which makes it easier to investigate the FDI-growth relationship (Ketteni & Kottaridi, 2019). The exploration of this relationship appears to have encompassed four major areas in the literature. The first happens to be the factors that determine economic growth; with the next being on the determinants of FDI. The role of multinationals is largely the third area of focus, while the direction of causality

between FDI and growth happens to be the fourth area of interest in the literature (Barro & Lee, 1994; Chowdhury & Mavrotas, 2005; Li & Liu, 2005; Ozturk, 2007). An ample exploration of these theoretical models of growth as attempted above serve a good purpose in helping to clarify the conceptual underpinning for the empirical work carried out in this study.

The neoclassical theory of growth typifies economic growth as emanating from two basic sources. The first source generally identified is factor accumulation, while the second is technical progress, measured by total factor productivity (TFP) (Felipe, 1999). It may be quite easy for one to observe that the empirical literature has been more focused on factor accumulation with not so much attention on total factor productivity. Some authors directly attribute this to the fact that the former is far easier to both quantify and analyse, while challenges are plentiful in attempting to measure growth in total factor productivity. Ozturk (2007) for example identified the unavailability of appropriate data and the lack of appropriate econometric modelling techniques as being among the major reasons why this is so. One of the conclusions of Felipe (1999) is that the theoretical problems underlying the notion of TFP are so substantial that the entire concept must be seriously questioned.

The endogenous growth models however present a framework that permits growth to stem from different channels. In the case of FDI for example, the literature outlines three major paths through which the flows of FDI affects growth. Firstly, capital accumulation in destination countries is augmented through the ushering in of new technologies and inputs. Next, the level of knowledge and skills in such countries is increased through the training of labour and managers. The third channel has to do with increased competition in the destination countries' industries by the knock-down effect of FDI on entry barriers and reduction of existing firms' market power (Blomstrom, Lipsey & Zejan, 1996; de Mello, 1996; Borensztein, De Gregorio, & Lee, 1998; Dunning & Lundan, 2008).

What this means is that, by indicating that FDI does also augment the level of skill and knowledge through labour training and skill acquisition apart from capital accumulation and technology transfers, the endogenous growth models subtly attribute more contribution of FDI to economic growth than the neoclassical growth models (Blomstrom et al., 1996; Borensztein et al., 1998; de Mello, 1997, 1999; Ozturk, 2007).

2.2.4 FDI Impact and Absorptive Capacities

As explained early on, multinational entities use FDI as a means of restructuring in accordance with their corporate strategies and goals. This implies that no entity expands abroad without a specific goal in mind. This reality has filtered itself into the literature by classifying various FDI based on the primary aim resource owners seek to achieve by investing in a particular host country. The first of three broad categories in this regard is referred to as resource seeking FDI. Such investments are motivated by an investor's attempt to have access to and exploit natural resources existing in the host country. The effects of such FDI on the host economy are considered in the literature as limited and negligible; as it yields very little or no positive spillover effect on that economy relative to other kinds of FDI, and thus typically stimulate less job creation and other economic paybacks. The implication of this is that the return on the capital potential of such FDI does not benefit host economies as mostly observed in the case of countries in SSA (Meier zu Selhausen, 2009). It is found in the literature that such flows of FDI neither lead to sustained growth of host economies nor institutional change. The resources in the SSA region are rather traded away instead of being processed therein. Such FDI ultimately crowd out certain industries in the economy eventually.

There is however another category of FDI (mainly in the services and manufacturing sectors) that is generated by an investor's desire to reach out to markets outside of its domestic reach. It is referred to as the market seeking FDI. Such FDI can lead to the creation of more jobs, productions of good quality goods and services to earn a market share, in addition to the

development of domestic products and markets in that jurisdiction. The positive spillovers of such FDI to host countries is said to be quite significant. They are more likely to get better incorporated into the host country, make better use of domestic markets, and enable the provision of support to suppliers as compared to other kinds of FDI (Farole & Winkler, 2014). Besides, there is a third category of FDI which seeks to integrate into the global economy by expanding into the host country. It is referred to as the efficiency-seeking FDI and is known to have stronger effects on economic growth as compared to the other two categories. Mainly flowing into manufacturing sectors, efficiency-seeking FDI is more effective at instigating technology and knowledge transfers to host economies and contribute positively to these economies through innovation, adjustment and imitation, which can be reaped by domestic firms and suppliers to generate more earnings and thus impact growth (Nunnenkamp & Spatz, 2004).

The other side of the coin which must also be critically looked at is whether host country characteristics affect how their economies benefit from the FDI they host. The literature reports that for the benefits of FDI to be reaped, a minimum capacity must be in place as a threshold level beneath which FDI productivity spillovers will be negligible or even negative. The benefits an economy reap are seen to usually increase with the level of absorptive capacity up to some level, above which the benefits reaped become less pronounced (Girma, 2005). This is particularly true on the micro-level of manufacturing sectors which have huge multinationals interested in exploiting new technologies; but can also apply on the macro scale to whole economies. Furthermore, other characteristics such as the intensity of research and development (R&D), type of markets, level of physical infrastructure, human capital, financial development, institutional quality and many others do have a bearing on how FDI impacts growth and can either become an enhancing factor or a hindrance to the economy's ability to maximize the gains of FDI that flow into it (Agbloyor et al., 2016; Durham, 2004; Kinishita &

Lu, 2006; Kinoshita, 2001; Nguyen, Duysters, Patterson, & Sander, 2009; Zhang, Li, Li, & Zhou, 2010).

2.2.5 Financial Stability

Financial stability affords an economy some very crucial gains which are worth noting. These include efficient resource allocation, financial risk assessment and management, sustaining of employment levels at a rate close to the natural rate of the economy, as well as the elimination of relative price movement of financial and real assets having the potential to upset employment levels or monetary stability. When a financial system is resilient to stress and is without system-wide functional failures and crises as explained earlier, it is said to carry with itself the ability to drive away financial imbalances that arise from within the system itself or from exogenous sources. Also, it can through self-corrective mechanisms absorb shocks from unforeseen adverse incidents, preventing the possible negative effects such episodes may have on the country's real economy or even the system itself. Financial stability is therefore clearly a crucial element for economic growth since the majority of the transactions undertaken within the real economy are carried out through the financial system.

As aptly communicated by the World Bank, the actual value of stable financial systems can best be seen in periods of instability like in the case of the global financial crisis (Čihák & Demirgüç-kunt, 2013; Cihák, Demirgüç-Kunt, Feyen, & Levine, 2012). Such situations have the potential to severely wreck confidence in the financial system and can even lead to hyperinflation, bank runs, and/or a crash of the stock market. These are the seasons when banks may be unwilling to provide funds for profitable projects, payment delays are experienced, and asset prices begin to depart markedly from their intrinsic values. Čihák & Demirgüç-kunt (2013) present results that suggest that factors like misleading risk-taking incentives as well as poor regulatory frameworks are mostly to blame for such times of instability.

Measures of Financial stability

Cihák et al. (2012) comment on the vast literature regarding the array of tools and methods, specifically concerning attempts to quantify financial stability through measures of systemic risk, stress tests, and the like. They point out the fact that stability is a critical feature of any financial system, and although it is generally an aspect of financial development, it is treated a lot of times as a separate topic due to how crucial it is for macroeconomic stability on the broader note.

A key measure of institutional stability in the extant literature is the institution's z-score. It is presented as a comparative measure of buffers (capitalization and returns) and risk potential (return volatility) (Cihák et al., 2012). In the literature, it is generally used to quantify the soundness of individual financial institutions (Boyd & Runkle, 1993; Čihák & Hesse, 2010; Demirgüç-Kunt, Detragiache & Tressel, 2008 for instance). Mathematically, it is expressed as follows:

$$z \equiv \frac{(\mu + k)}{\sigma} \tag{2.1}$$

where μ is the institution's return on assets (ROA), k is equity as a percentage of total assets, and σ represents the standard deviation of ROA – as a measure of return volatility. This measure has an inverse relationship with the probability that a financial institution will become insolvent. In plain terms, it shows the inverse of the probability that the value of the financial institution's assets will turn out to be lower than its debt value – also called the probability of default. The implication of this is that, once returns have a normal distribution, the z-score shows the number of standard deviations by which returns would need to fall in order to completely drain equity. And even when ROA is not normally distributed, the z-score is by Chebyshev inequality the lower bound on the probability of default, showing us that a high z-score means a low chance of becoming insolvent. The firm-level z-score (as well as other firm-

level stability measures) have also been aggregated in the literature into system-wide measures of financial stability by taking a weighted average of the institutions in that financial system based on their relative sizes.

It is obvious from the above that the z-score is purely based on accounting data, making them as Cihák et al. (2012) observed, only as sound as the accounting and auditing framework that underlie it. They point this out as perhaps the most critical limitation of the z-score among others, arguing that should the financial institutions be able to manipulate the data they report, we end up with an overestimation of the institution's stability. Another challenge that may confront the system-wide aggregate measure is the fact that the z-score considers financial institutions idiosyncratically, which may amount to overlooking possible contagion among the institutions within the systems. Its advantages however stand out as it allows for comparison between institutions of different classes which face insolvency risk and can even be applied to firms that do not have more sophisticated market-based data available.

Alternative measures of stability such as nonperforming loans to total gross loans, regulatory capital to risk-weighted assets, 'excessive' credit growth, and the asset value model measures such as Distance to Default are also used as measures of soundness, but not without their limitations. Most of these alternatives are known to be lagging indicators of financial soundness (Čihák & Schaeck, 2010). Other systemic measures like the First-to-Default probability, the Systemic Expected Shortfall (SES) and its predictive version – the systematic risk measure (SRISK) modelled by Brownlees and Engle (2017) – are also used in the literature as proxies of stability though not without limitations as well.

2.3 Empirical Review

That there are a host of disagreeing authors when it comes to empirical research on the relationship which exists between FDI and economic growth is not a difficult conclusion to come by after just a little interaction with the literature on this subject. References on this must

thus be advisedly few for the sake of conciseness. It is worth noting that Ozturk (2007) and Almfraji and Almsafir (2014) among others have conducted very extensive reviews of the FDI and economic growth literature. What is presented in this section therefore simply outlines the various clusters of evidence, followed by an assessment of how the literature attempts to make sense of these empirical outcomes.

Generally, there appear to be three camps of evidence in the empirical literature assessing the link between FDI and growth. The first of these are those who find a positive association between FDI and economic growth. The second camp is comprised of those who find a negative connection between the two, and those who find no significant relationship at all make up the third camp. It is easy to notice that majority of the empirical literature lean towards FDI having a significant positive effect on growth. Examples of such studies include Alfaro et al. (2004), Blomstrom and Kokko (1998), de Mello (1999) etc. There is, however, a fair body of literature that challenges this stance of a positive relationship. A few of such studies are Sjöholm and Lipsey (2006), Caves (1971) and Hymer (1960). It is pertinent to note that, most of the studies that find a positive relationship in the nexus are macro in nature and make use of aggregate FDI data, while those that report a negative relationship are micro or firm-level studies.

There are two broad explanations from the camp of positivists. First, that FDI fuels growth via increases in a country's capital stock while also making room for technology and knowledge transfers which consequently result in the creation of new job opportunities and increased productivity (De Gregorio, 2005), and secondly that economic growth presents host countries with new investment openings which subsequently result in increases in FDI inflow (Mah, 2010). The former is called the FDI-led growth hypothesis while the latter is termed the market size hypothesis. On the other hand, the negative relationships are explained with a number of reasons in the literature, including what is usually called the control theory (Caves, 1974; Hymer, 1960). This covers a range of issues including the realization that FDI can lead to

monopolization which will cause a lag in domestic demand (Huang, 1998, 2003), repatriation of returns beyond the level of investment inflows (Bos, Sanders, & Secchi, 1974; Görg & Greenaway, 2016), and reduced competition leading to a fall in the level of local investments which result in fewer job opportunities, lower wages and lower tax revenues (Braunstein & Epstein, 2004). Firm-level studies thus tend not to throw ample weight behind the notion that FDI promotes growth. A non-negligible chunk of the literature, however, find no significant link between FDI and growth. Many are the studies that failed to find conclusive and robust evidence that growth stems from FDI despite the wide range of data analysis techniques used. These include Aitken and Harrison (1999), Mansfield and Romeo (1980), Haddad and Harrison (1993), Ericsson and Irandoust (2001), Carkovic and Levine (2005), Herzer, Klasen, and Nowak-Lehmann, (2008), Belloumi (2014) and Temiz and Gokmen (2014).

2.3.1 Gaps in the empirical literature

Furthermore, there are some of the studies such as Agbloyor et al. (2016), Alfaro et al. (2004), Alguacil et al. (2011), Azman-Saini, Law, and Ahmad (2010), and many others which empirically test many different characteristics within various countries and regions to determine if those features play any role in the association between FDI and growth. As indicated earlier, financial stability does not feature in the extant literature in this regard as many be expected. Some of the characteristics rather studied as mentioned in the previous chapter include institutional quality, human capital development, trade openness, macroeconomic stability, financial development, infrastructural development, and good governance. As a matter of fact, there seems to be no study that has even examined the relationship between financial stability and FDI in the literature so far. These therefore remain a gap in knowledge to be addressed, and the goal of this study is to begin that journey.

2.3.2 Contemporaneous values, stocks and time lags

As Ausloos et al. (2019) rightly observed, almost all studies that sought to establish the link between FDI and growth used contemporaneous values with very few looking beyond to think about the possible effects of lagged values of FDI. A study that moved quite in this direction is that of Griffiths and Sapsford (2004) who investigated the case on only one country (Mexico) and also put forth that there is a substantial delay between the moment FDI flows into a host country and the point from which the operations in that host country will be 'up and running' for most initial investments. Although they found most of the lags they studied statistically insignificant, they found the two-period lag very highly significant, and this by implication calls for further investigation of the same, as the recent findings by Ausloos et al. (2019) seem to suggest that there is time delay dependence of up to the third lag, some of which are negative and others positively significant, subject to the characteristics of the host country in question (in their case, the country's level of human development rated by the inequality-adjusted Human Development Index (HDI)). The challenge with the use of FDI lags however is that every inflow of FDI comes to meet already existing resources that arrived previously, and their possible impact on the economy may not have been fully realized yet. This implies that new investments are integrated into the existing ones and thus accumulates into stocks. The only studies in the literature which recognize this in their approach, to the best of the author's knowledge, are Bornschier, Chase-Dunn and Rubinson (1978) and Barrell and Nahhas (2018).

2.4 Contribution to Knowledge

As explained earlier, the study makes contributions to the existing literature in three main phases: making inputs to the ongoing debate on whether or not FDI enhances economic growth by establishing a causative link between stocks of FDI and economic growth, and at the same time exploring the role of financial stability within the FDI growth nexus.

2.5 Chapter Summary

As comprehensively and concisely as possible, this chapter presented a fair appraisal of the present state of knowledge in the FDI-growth literature by reviewing both theoretical and empirical studies such as are relevant to this study. The place of FDI and financial stability as presented in the literature is assessed in the chapter, as well as various studies in which attempts were previously made to establish an empirical link between FDI and growth. The literature shows variation across studies which cannot be attributed to differences in the methods used or the various study settings.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This study employs a dynamic panel data estimation technique in its investigation with data culled from the Financial Soundness Indicators (FSI) of the IMF, the World Bank's World Development Indicators (WDI) and Global Financial Development (GFD) databases, as well as the Human Development Index (HDI) of the UNDP. Macroeconomic data on variables such as gross domestic product (GDP) per capita and others used as controls are sourced from the WDI and GFD databases, while data on bank z-scores (the measure of financial institutions' stability) is gleaned from the FSI and the GFD databases. The different data sources were consulted for data triangulation purposes. Forty-six (46) out of the forty-eight (48) SSA economies are examined in the study, forming the unbalanced panel of data (for the period ranging from 2006 to 2018) which is employed in the regression models used to investigate the place of financial stability within the FDI-growth nexus.

3.2 Empirical Strategy and Models

To achieve the objects of the study, the empirical strategy adopted here attempts to maximize the use of both cross-sectional and time dimensions of the available data for which reason the annual frequency of data is used. This strategy is quite a departure from a lot of the available empirical literature on economic growth. It is not uncommon to see many papers in the empirical growth literature averaging out the available data over the span of three, five or even ten-year horizons, typically aiming to take into account the steady-state relationships between the different variables under study. This, however, does not always achieve the goal and more so, such smoothening out of the time-series dimension of the data most likely eliminates useful chunks of variation in the data sets which could have aided the estimation of more precise parameters for the variables of interest. The use of annual data for the study, therefore, demands that an allowance be made for the possibility of annual observations of economic growth not

being representative of long-run equilibrium rates for any particular year, possibly as a result of the 'not-too-swift' adjustment to fluctuations in other variables. This possibility of partial adjustment is allowed for in some literature by the inclusion of a lag of the dependent variable in the specified models (see Baltagi, Demetriades and Law (2009) for instance), which is why a dynamic panel data econometric model is employed for this study.

Due to the issue of possible endogeneity caused by measurement errors, simultaneity and the self-reinforcing nature of economic growth as reported in the literature, however, the two-step System Generalized Method of Moments (SGMM) estimator, which is a dynamic panel data econometric technique is employed, being a suitable and robust technique for founding the relationship this study seeks to establish. The specified model is similar to those employed for investigations in this area (Agbloyor et al., 2016; Alfaro et al., 2004). Other extensions made for the purpose of this research are based on the objectives of this study and the recommendations of studies such as Ausloos et al. (2019).

The Model

Many of the studies in this area indeed employ dynamic models because of the need to severally take into account the pattern of growth for the various economies being studied over time. As mentioned earlier, the need to make room for the possibility of partial adjustment because economic growth is self-reinforcing demands that previous levels of economic growth (being the lagged dependent variable) be included in the models as independent variables, which render static models inefficient due to the endogeneity, and thus calls for the use of dynamic models. Earlier studies in this area, including Agbloyor et al. (2016), Feeny, Iamsiraroj and McGillivray (2014), and Iamsiraroj (2016), employ the System GMM estimator to overcome this challenge. In their study which sought to investigate the role of institutions in the relationship between FDI and growth, Agbloyor et al. (2016) specified the dynamic model presented in (3.1) below.

$$y_{it} = \beta_1 y_{it-1} + \beta_2 FDI_{it} + \beta_3 Institutions_{it} + \beta_4 (FDI * Institutions_{it}) + \sum_{j=5}^{N} \beta_j X_{it-1} + \varepsilon_{it} \quad (3.1)$$

where y_{it} is GDP per capita for country i at time t;

FDI_{it} is FDI as a percentage of GDP for country i at time t;

$Institutions_{it}$ is the measure of institutional quality for country i at time t;

$FDI * Institutions_{it}$ is the interaction term between FDI and institutional quality;

X_{it} is a vector of control variables; and

ε_{it} is the composite error term with both time and country invariant dimensions for country i at time t.

The model specified for estimation in this study follows that of Agbloyor et al. (2016) shown above. The basic differences between the model for this study and theirs include the obvious focus on financial stability measured by the z-score, as well as the use of FDI stocks in this study. The use of FDI measured as a percentage of GDP in Agbloyor et al. (2016) indicates that their focus was on the impact of contemporaneous FDI flows on growth, which happens to be one of the biggest differences between this study and theirs. The empirical model for this study is therefore specified as follows:

$$lnGDP_{it} = \delta_1 lnGDP_{i,t-1} + \delta_2 lnSFDI_{it} + \delta_3 lnZ_{it} + \delta_4 (lnSFDI_{it} \times lnZ_{it}) + \delta_5 lnFD_{it} + \delta_6 lnLAB_{it} + \delta_7 lnTR_{it} + \delta_8 lnNR_{it} + \delta_9 lnHDI_{it} + \epsilon_{it} \quad (3.2)$$

where $\epsilon_{it} = \alpha_i + \mu_t + \varepsilon_{it}$;

and α_i is the country fixed effect constant over time;

μ_t is the time effect fixed across countries;

ε_{it} is the idiosyncratic error term which is independently and identically distributed;

$lnGDP_{it}$ is the log of GDP per capita for country i at time t, with $lnGDP_{i,t-1}$ being the first

lag thereof;

$lnSFDI_{it}$ represents the log of FDI stocks for country i at time t; and

lnZ_{it} is the log of countrywide bank z-score (measuring financial stability) for country i at time t.

The term $(lnSFDI_{it} \times lnZ_{it})$ is the interaction term of the stock of FDI and financial stability, while $lnFD_{it}$, $lnLAB_{it}$, $lnTR_{it}$, $lnNR_{it}$ and $lnHDI_{it}$ are the various control variables standing for the natural logs (for country i at time t) of the stock of the level of financial development, labour force, trade openness, natural resource endowment and the score of human development index (as a measure of human capital) respectively. The coefficients $\delta_j, where\ j = 1, \dots, 9$ are the parameters to be estimated.

The interaction term included in the model is to provide further insight on the impact of FDI stocks on growth in the presence of financial stability. This is further investigated by finding the effects of a marginal change in the stocks of FDI on the explained variable at specific levels of financial stability. Such effects are what are subsequently referred to as marginal effects. At the margin, therefore, such effects of a change in the interacted variables can be computed by assessing the partial derivatives of $lnGDP_{it}$ with respect to $lnSFDI_{it}$ as shown in (3.3) below. The combined effects are evaluated at the mean value of *lnZ*, two (2) standard deviations above and below the mean, as well as at the minimum and maximum values of *lnZ*. This is meant to help further explore the regional characteristics that may be helpful in making sense of the outcome of this study for the region.

$$\frac{\partial lnGDP_{it}}{\partial lnSFDI_{it}} = \delta_3 + \delta_4 lnZ_{it} \tag{3.3}$$

3.3 Estimation Techniques

Based on the attributes of the data employed and the empirical strategy described earlier in this chapter, a panel data econometric technique best suited must be sought for the investigation.

Arguably, the most widely used estimator is the Ordinary Least Squares (OLS) estimator [pooled OLS for that matter] and is considered to yield the best linear unbiased estimates (BLUE). This is however premised on the condition that the data under investigation has characteristics of linearity, no multicollinearity, homoscedasticity and no auto-correlation. Given the data at hand, at least two of these characteristics (homoscedasticity and no autocorrelation) can be contested as shown in the diagnostics test results in the next chapter, rendering the pooled OLS estimator inappropriate for this investigation. A technique that allows for both of these to be absent must therefore be employed. The closest set of panel data estimators that can be employed are the fixed effects or random effects estimators.

A fixed effects model in very simple terms is a regression model which has fixed group means, unlike the random effects model in which group means happen to be random samples from the population (Ramsey & Schafer, 2002). In panel data where the data is grouped by entity, the means for the groups could be modelled as random effects or fixed effects. The fixed effects estimator (also called the within estimator) assumes that the independent variables are correlated with the entity-specific effects (country-specific in this case), as opposed to the random effects estimators which assume no correlation between the two. The random effects estimator, assuming no correlation, specifies the influence of all such unobserved variables in the regression model using all available data and hence estimates unbiased parameters with the smallest standard errors. Although the random effects estimator has the advantage of including time-invariant variables, the unobserved individual-specific variables result in the omitted variable bias.

Assuming, on the other hand, that the time-invariant characteristics inimitable to each entity are not correlated with that of others and with the error term, the within estimator helps control for omitted variable bias resulting from unobserved heterogeneity when such heterogeneity is constant over time. This can be eliminated through differencing – demeaning the data to clear

any components that are time-invariant. The estimator, therefore, uses different intercepts for each entity to capture and absorb any influence of all country-specific and time-invariant omitted variables. Introducing this term leads to a fixed effects model specification as follows:

$$Y_{it} = \varphi X'_{it} + a_i + b_t + u_{it} \tag{3.4}$$

where Y_{it} is the outcome variable and X'_{it} is the set of regressors, a_i is the entity-specific effect b_t is the time specific effect, and u_{it} is the idiosyncratic disturbance term. Since the presence of the individual-specific term could bias the coefficient estimates, the fixed effects estimator attempts to address it by employing a two-step approach to the estimation. It first subtracts the average of the entity-specific effect from each observation, and then goes ahead to run the regression with the demeaned variables. Eliminating the country-specific effects through the demeaning process leaves the model above as shown below.

$$y_{it} = \varphi x_{it} + b_t + u_{it} \tag{3.5}$$

where y_{it} and x_{it} are the entity demeaned variables used in the estimation, b_t and u_{it} remain intact. It is easy to see that the process has removed the individual-specific effect from the model while the error term remains intact. The assumption of heterogeneity in the error terms across countries also make it apt for handling heteroscedasticity in panel data regressions.

It is crucial nonetheless to realise that, although the within estimator by controlling for fixed effects handles the omitted variable bias (making it superior to the pooled OLS), it potentially compounds the challenge of measurement errors, which suggests we possibly look beyond to other estimators (Hauk & Wacziarg, 2009).

3.3.1 Dynamic Panel Data (DPD)

As clearly seen above, it is usually necessary to deal with the issues of unobserved heterogeneity by applying the technique of within transformation (demeaning) when dealing with panel data (in the case of one-way fixed effect models for instance), or by taking the first

differences of the panel should it have the second dimension being a proper time series. This ability of first differencing to deal with the issues of unobserved heterogeneity also underlies the crop of estimation techniques that have been formulated for handling DPD models. Such models have one or more lags of the dependent variable as an independent variable like the one being estimated in this study, and thus allows for a partial adjustment mechanism to be modelled as illustrated below.

$$a_{it} = \eta a_{i,t-1} + \beta c'_{it} + u_{it} \tag{3.6}$$

where $u_{it} = \mu_i + \varepsilon_{it}$ and ε_{it} is normally distributed with zero mean and constant variance; η is the autoregressive parameter, $a_{i,t-1}$ is the lagged dependent variable a_{it} and c_{it} is the vector of other independent variables. The problem that arises with a model like the one in this illustration is that the lag of the dependent variable $a_{i,t-1}$ is endogenous. This means that there is a correlation between the lag of the dependent variable and the idiosyncratic error term $\{\mathbb{E}(\varepsilon_{it}|a_{i,t-1}) \neq 0\}$. The implications of this include the fact that static panel data estimators such as the Fixed Effect and the Random Effect will yield inconsistent coefficient estimates. In this case, both η and β will show a level of bias, which will depend on both the time dimension (T) and the parameter η, calling for a different kind of estimator that can handle this challenge to be used.

3.3.2 The Dynamic Panel Bias (Nickell Bias)

Beyond this, however, a severe challenge arises when using the one-way fixed effects models with panel data that is dynamic, especially in the context of small *T* (time dimension) and large *N* (number of entities). Nickell (1981) lucidly observes this and shows how the demeaning process which subtracts the individual mean of the dependent value and each independent value from those respective variables; thus creating a regressor-error correlation, make this problem arise. In such a case also, the mean of the dependent variable's lag will have observations running from time zero (0) through time (*T-1*) on the dependent variable y, and the mean of the

error term (which will be conceptually subtracted from the error term, ε_{it}) will have contemporaneous values of the error term for times $t = 1, \ldots, T$. This results in a correlation which creates a dynamic panel bias in the coefficient estimates of the lagged dependent variable, such as cannot be lessened by expanding the number of individual units, *N*. This bias is what has come to be known as the Nickell Bias.

The process of demeaning results in a regressor not distributable independently of the error term. It is demonstrated by Nickell (1981) that the inconsistency of ρ as $N \to \infty$ follows the order $\frac{1}{T}$, a condition which will yield a sizeable value, even with a small *T*. An invariably negative bias results if $\rho > 0$ leading to a situation where the persistence of *y* is underestimated. In such a case, even if additional regressors are added, the bias is still not dealt with.

Further, when the regressors are to some extent correlated with the lag of the dependent variable their coefficients may be very biased as well. It is pertinent to also take note that this bias is not the result of an autocorrelated error process. One can have the error still arising even if the error process is independently and identically distributed. The problem is even more severe with an autocorrelated error process, owing to the challenge in deriving a consistent estimate of the autoregressive parameters in the given context. This same problem also upsets the one-way random effect model, with the error component (u_i) entering each y_{it} value by assumption; with the result that the lag of the dependent variable becomes hardly independent of the composite disturbance process.

Addressing the Nickell Bias

One of the solutions to this problem of a bias is to take first differences of the original model. Transforming by first differencing takes away both the constant term and the individual effect. This still leaves the differenced lagged dependent variable and the error process correlated. However, once we have the individual fixed effect removed, one can directly apply a

straightforward instrumental variables estimator. Instruments may be constructed from the second and the third lags of *y* for the lagged dependent variable, whether as differences or as lagged levels. If the disturbance process is independently and identically distributed (i.i.d.), one would have these lags of *y* being highly correlated with the lag of the dependent variable and its difference, but not so with the composite error term. Once the time series is long enough, even in a situation where there is enough reason to believe that the composite error process might be following a first order autoregressive process, this strategy could still be applied by stepping back for one period and making use of the third and fourth lags of *y*. This kind of strategy recommended by Anderson and Hsiao (1982) is known as the Anderson–Hsiao (AH) estimator, and it paves the way for the birth of the DPD Estimators.

3.3.3 Dynamic Panel Data (DPD) Estimators

The set of estimators for dynamic panel data are primarily based on the conception that the approach of instrumental variables described early on does not fully exploit the entirety of available information within the samples. Popularized by Arellano and Bond (1991), this technique originally formulated by Holtz-Eakin, Newey, and Rosen (1988) proposes an approach that may yield more efficient estimates for the dynamic panel, by making use of the instruments in a Generalized Method of Moments (GMM) context. The argument by Arellano and Bond (1991) is that, though the AH estimator is consistent, it does not take into account all the potential orthogonality conditions that ensue, thus making it a gap which the Arellano-Bond (AB) estimator addresses. A principal aspect of the AB strategy, which of course duly reflects that of Anderson-Hsiao (AH), is the primary assumption that the necessary instruments are based on lagged values of the instrumented variable(s), and are thus referred to as being 'internal'. It must, however, be noted that the AB estimators permit the inclusion of external instruments as well. How these estimators work can be pictured as follows.

$$y_{it} = X_{it}\beta_1 + W_{it}\beta_2 + V_{it} \tag{3.7}$$

where $V_{it} = u_i + \varepsilon_{it}$, with X_{it} strictly including only exogenous regressors, W_{it} being predetermined explanatory variables which may comprise lags of *y* and other regressors that are endogenous, all of which may correlate with the unobserved individual effect, u_i, and β_1 and β_2 being vectors of parameters to estimate. This u_i is done away with by first differencing the model, and it goes away alongside the omitted-variable bias associated with it. The AB estimator then constructs a Generalized Method of Moments (GMM) problem wherein this model's specification is done as a system of equations – one for each time period – with differing instruments applied to each equation. Further, the GMM demands only a set of necessary moment conditions such as are implied by the underlying econometric model's assumptions, unlike the standard classical methods like the Maximum Likelihood (ML) approach which demands a complete specification of the model under consideration, even including the probability distribution of the interest variables. These reasons make the GMM (both the Arellano-Bond and its extension to the System GMM) approach attractive in cases where:

- there is a small-time frame, *T*, and a large set of individual units, *N*, being studied;
- a linear functional relationship is assumed;
- a dependent variable depends on its past realizations (lags);
- the independent variables are not strictly exogenous; being correlated with either present or past values of the error term;
- there exists unobserved heterogeneity, implied by fixed individual effects;
- there exists heteroscedasticity and/or autocorrelation within (but not across) the errors of individual units, etc.

3.3.4 The System GMM Estimator

Lagged values used as instruments often prove to be rather poor instruments for variables that are first differenced. This is especially so when one has variables that are close to a random walk. This potential weakness in the AB dynamic panel data estimator was later brought to light by Arellano and Bover (1995) as well as Blundell and Bond (1998). The modifications applied in response to this as an expansion is to have the lagged levels as well as the lagged differences included in the estimator. The extended estimator is named the *System* GMM, while the original one is termed the *Difference* GMM. Blundell and Bond (1998) proposed a set of further moment restrictions on the preliminary conditions necessary for the process generating the *y* values. This expansion is added on in the System GMM estimator as additional moment restrictions imposed on the distribution of the initial *y* values.

This estimator is, therefore, best suited for analysing the empirical model as specified in (2) above, seeing the data to be analysed has 'small *T*' and 'larger *N*' dimensions (46 countries over 13 time periods). The model specified also has the lagged dependent variable as a regressor since GDP per capita (the dependent variable) is known to be self-reinforcing, making the right-hand variables not strictly exogenous. Diagnostics checks are further conducted which prove the presence of heteroscedasticity and autocorrelation within the errors of the individual economies, making this approach more attractive. Further, we can be sure that the system GMM will take care of the various moment and orthogonality conditions assumed by the model.

In estimating the System GMM models in STATA 13, the -*xtabond2*- command of Roodman (2009) was used to run the two-step System GMM as mentioned earlier. Also, it must be noted that adding the lagged dependent variable to the model implies that the resulting estimated coefficients represent short-run effects. A non-linear combination of the significant coefficients and that of the lagged dependent variable must therefore be run to derive the long-run effects.

Estimating these long-run coefficients was done in STATA by using the -*nlcom*- command. Long-run effects for the kth parameter is computed as being equal to $\beta_k \div [1 - \delta]$, where δ is the coefficient estimate of the lagged dependent variable. The -*margins*- command was then finally used to compute the marginal effects of the interacted variables in the model as well.

3.4 Variable Descriptions

The various variables employed in the empirical model for this study do conform to the theoretical and empirical stance of the available literature. The extant evidence shows that these variables are indeed essential variables that explain economic growth. Economic growth drivers from a theoretical point of view could be both direct and indirect. The variables described below in addition to the dependent variable are a set of carefully hand-picked variables with their various measurements and proxies well defined for this study. The natural logs of these variables are taken to linearize the production function as demonstrated in deriving the model above.

3.4.1 Main Variables

Gross Domestic Product (GDP) per capita

The regressand in this analysis is the natural log of Gross Domestic Product (GDP) per capita, which is meant to capture the level of annual output of the economy, changes in which will amount to annual economic growth. The World Bank's World Development Indicators (WDI) which is the source of this data indicates that GDP at purchaser's prices is the total of gross value added by all resident producers within an economy in addition to any product taxes and less any subsidies not included in the value of the products. This is divided by mid-year population to obtain the per-capita values. These calculations are done without deductions for depreciation of fabricated assets or depletion and degradation of natural resources being made. Taking the natural logs of this enables us to interpret changes in the series as changes in

economic growth since to a very close approximation, changes in the natural log of a variable are directly interpretable as percentage changes.

Stocks of Foreign Direct Investment ($SFDI$)

FDI as explained earlier refers to the amount of investments in acquiring lasting managerial interest, such as will constitute 10% or more of voting stock in an entity domiciled in a different economy other than that of the investor. The series used to generate the stocks for this study show the total net inflows of investments that capture the total of equity capital, reinvestment of earnings, other long-term capital, as well as short-term capital as captured in the economy's balance of payments. The use of FDI inflows (as against the generally used measure of FDI as a percentage of GDP) in this study is predicated on earlier studies like Iamsiraroj (2016) whose focus was on the value of the new foreign capital flows coming into the host country in a particular year. This serves as an additional source of capital made available to fuel the production process within the host economy for the specified period. This paradigm of using flows is also sustained in the works of Alfaro et al. (2004) and Bornschier, Chase-Dunn and Rubinson (1978). The use of this measurement here is also mainly because it lends itself to the computation of FDI stocks which is discussed below; a pursuit that cannot be accomplished using the FDI measure as a percentage of GDP.

Additionally, since investments in any area will generally take some time before coming to fruition, it is imperative to recognize the time lag in any attempt to analyse the effects of such flow of investments. This argument accounts for why the inclusion of the lags of FDI is advocated by studies like Ausloos et al. (2019) to account for the time lapse before its contributions to the growth of the economy are experienced. They recommend that the effects of such time lags be reconsidered when discussing and analysing relationships in this regard. In their time-lag dependent correlation study, they reported as statistically significant the correlation between the FDI and growth measures to the third lag.

There have been studies from the previous century which used up to six-year lags in analysing the impact of official development assistance (ODA) and other investments. This was done with the empirical grounding that projects then funded by the world bank required an average of seven years for the initial investments to be equalled by the cumulative cash flows from such investments – as suggested by the 1984 report of the world bank and as also reported by Aboagye (1998). Examples of such studies are Kherallah, Beghin, Wesley, Peterson and Ruppel (1994), Mosley, Hudson and Horrell (1987), and Norton, Ortiz and Pardey (1992). This provides some further insight into the importance of time lags in analysing the impact of investments from overseas.

Although including the lags of FDI inflows help to better capture the effect of FDI inflows on economic growth than the mere contemporaneous values, the use of lags is not without problems. Aboagye (1998) argues that this lag structure approach is somewhat ad-hoc, being akin to the 'payback period' approach to capital budgeting, in which only the length of time required for the sum of discounted cash flows from a project to match up to the original amount of investment is accounted for. That study proposes a method that is equivalent to the net present value approach to capital budgeting which accounts for all cash flows accruing to an investment regardless of their time of occurrence, arguing that is why the flow of investments, population, and human capital used in growth models are mounted up into stocks. That is to say, they are accumulated into an estimated amount that reflects the actual level of that variable which is still effectively contributing to an economy after accounting for its growth, depreciation and new flows. Accumulating FDI flows into stocks thus appear to make more sense than using just the contemporaneous values or lags.

This somewhat helps also to differentiate the approach here from that of Iamsiraroj (2016) whose focus as stated earlier was to examine the impact of additional capital flow made available for production in a country from abroad within a period and not the total existing

direct foreign capital in the economy. The latter is rather the focus of this study, as the former cannot fully account for the benefits derived from foreign direct investments.

Stocks of FDI for each of the countries used in this study were computed using the perpetual inventory method, following Aboagye (1998). The stock of FDI at time t, was obtained using the function

$$SFDI_t = SFDI_{t-1}(1-\delta) + FDI_t \tag{3.8}$$

where $SFDI_t$ is the stock of FDI at time t, and FDI_t is the time t FDI flow, and δ is the rate of depreciation of the SFDI. The initial stock of FDI ($SFDI_0$) is also computed as follows.

$$SFDI_0 = \frac{FDI_0}{(g+\delta)} \tag{3.9}$$

where FDI_0 is the flow of FDI at time 0, and g is the estimated average growth rate of foreign direct investments. These are both obtained by following the modified Harberger (1978) method as adapted by Nehru and Dhareshwar (1993). This is done by estimating a linear regression of the log of FDI flows (from 2000 to 2018) against time, and then taking the anti-logs to obtain the fitted value of the initial level of flows and the estimated average growth rate, which is then used to calculate the initial stock of FDI with the function above.

The rate of depreciation of the stock of FDI (δ) is set at 10% following Aboagye and Gunjal (2000). It is not unusual for a fixed rate of depreciation to be assumed for such purposes despite the possible consequences of misestimating the rate of decay. Due to the abject lack of such data, most studies resort to picking a particular depreciation rate. Nehru and Dhareshwar (1993) for example used a 4% depreciation rate in computing the capital stock for all the 92 developing countries in their study.

It is therefore easy to recognise from the discussion above that the stocks of FDI automatically take care of both lags and contemporaneous values, and at the same time has the added

advantages earlier mentioned. As a main variable in this investigation, it is interacted with the measure for the level of financial stability to ascertain the combined effect on growth. It is expected here that the impact of FDI stocks on growth in the presence of financial stability will therefore be significantly positive.

Financial Stability (*Z*)

The commonly used proxy for financial institutions' stability in literature is the bank z-score as earlier mentioned. The countrywide aggregate from the Global Financial Development database is employed in this study as the measure of financial stability, and the same data from the IMF's Financial Soundness Indicators are used for triangulation and 'filling in' where there were missing data points from the former source. Other measures were generally not considered either because of unavailability or the many missing data points in those series. The z-score tells us how close or otherwise the financial institutions is to insolvency. Because it is inversely related to the probability that an institution becomes insolvent, higher values of the z-score are better. A stable financial system can be expected to facilitate higher productivity and so a positive relationship between this variable and growth is expected.

Also, the z-score is interacted with the stocks of FDI to ascertain the impact of FDI on the economy in the presence of a stable financial system as mentioned earlier. Since the z-score for a country in a particular year describes the state of the financial system, previous states of the system can be said to have been captured even in the contemporaneous values, for which reason it will not be necessary to add lagged values of this variable to the model.

3.4.2 Control Variables

Financial Development (FD)

The level of financial depth measured by broad money is used as a proxy of financial development in this study. This comprises the sum of currency outside banks; demand deposits

other than those of the central government; the time, savings, and foreign currency deposits of resident sectors other than the central government; bank and traveller's checks; and other securities such as certificates of deposit and commercial paper. A positive relationship between financial development and economic growth is hypothesised in this study as much of the finance-growth literature so purports.

Labour Force (LAB)

The total labour force is a measure of the supply of labour available for the production of goods and services in a country. It comprises people who are presently in employment and people who are unemployed but in search of jobs, as well as first-time job-seekers. It is important to note that not everyone who works is considered as part of the labour force, since unpaid workers, family workers, and students are mostly excluded, and there are even countries that do not include members of the armed forces as part of the labour force. It can be expected that the larger the labour force in an economy, the higher the level of productivity to be expected, for which reason a positive relationship between this variable and the dependent variable is hypothesized.

Trade Openness (TR)

The measurement of trade openness is the sum of imports and exports of goods and services in the economy. A positive relation is expected between trade openness and economic growth. Opening up a country for trade is usually meant to promote the level of economic activity. Much of the empirical literature finds that trade openness promotes economic growth in spite of other findings which show that trade barriers also seem to positively and significantly impact growth.

Natural Resource Endowment (NR)

Total natural resource rents are used to measure the level of natural resource endowments in this study. This comprises the sum of oil rents, natural gas rents, coal rents (hard and soft),

mineral rents, and forest rents. More natural resources in a country imply a larger resource base to scale up the productive capacity of that country, hence economic growth. A positive relationship with the regressand is therefore expected.

Human Capital (*HDI*)

The human development index is used as a control in this study to capture the level of human capital. The index covers the average achievements of countries in the most fundamental dimensions of human development. Variables capturing standards of living, access to knowledge (education), and health (long and healthy lives) are considered in this index. The literature generally reports a significant and positive relationship between human development and economic growth.

Below is a tabular summary of the variables discussed above, their measurements/proxies and expected relationship with the dependent variable (Exp. Sign):

Table 3.1 – Summary of Variables

Variable	Proxy/Measure	Source[1]	Exp. Sign
GDP	Annual Gross Domestic Product per capita.	WDI	
SFDI	Annual Stocks of Foreign Direct Investment inflows.	Author's	+/-
Z-Score	Country-wide bank z-score as a proxy of Financial Stability.	GFD/FSI	+
FD	Broad Money (M2) measuring financial depth as a proxy of financial development.	WDI	+
LAB	The total size of the labour force.	WDI	+
TR	Trade openness – the sum of imports and exports of goods and services.	WDI	+
NR	Total natural resource rents.	WDI	+
HDI	Human Capital measured by the Human Development Index score.	UNDP	+

Source: Author's Construction

[1]The Annual Stocks of FDI (SFDI) are computed by the author; WDI, GFD, FSI and UNDP refer to World Development Indicators, Global Financial Development, Financial Soundness Indicators, and United Nations Development Project respectively.

3.5 Diagnostics Tests

A series of diagnostic tests are conducted to prevent the estimated model from suffering any biases when the panel regression analysis is carried out. Pre-estimation and/or post-estimation tests for endogeneity, multicollinearity, heteroscedasticity, and serial/autocorrelation were carried out to warrant the general fit of both the model and the data employed.

3.5.1 Endogeneity

When there exists a correlation between the independent variables and the error term within a model, endogeneity is said to be present. That is to say, the X variables and the u_{it} do co-vary (thus, $Cov\ (X_j, u_{it}) \neq 0$); a phenomenon which may be due to an omitted variable, reverse causality and/or errors in measurement. When an OLS estimation is applied to a model from which is absent a key variable due to unavailability of data or any other reason; and the absent variable is correlated with at least one of the regressors and also in part explains the dependent variable, the regression will be subject to an omitted variable bias. Reverse causality is when there is a mutual causal link between the dependent and independent variables. This study particularly seeks to examine the role of financial stability within the framework of the relationship between FDI and economic growth. Available literature asserts the probable presence of reverse causality between Economic growth and FDI as well as financial stability. Measurement errors occur because of inaccuracies in reporting and/or coding. To confirm the presence of endogeneity or otherwise, the coefficient of the lagged dependent variable is assessed. This was used as a post-estimation test to determine the presence or otherwise of endogeneity. A significant coefficient for this variable will indicate that its use as a regressor is justified. The lagged dependent are previous values of the regressand correlated with the error process, hence confirming the presence of endogeneity in the model. This primarily bears out the choice of estimation technique employed.

3.5.2 Multicollinearity

There is multicollinearity in a regression model when the explanatory variables are correlated with each other. Cohen, Cohen, West, and Aiken (2013) explain that highly correlated explanatory variables should not be used in the same model as they will tend to yield the same effect. Including such variables may end up generating biased regression estimates. Generally, correlation coefficients above 0.5 are considered high. The Variance Inflation Factor (VIF) was used to test for collinearity among the regressors to check which of them should be dropped if at all any.

3.5.3 Heteroscedasticity and serial/autocorrelation

The condition of homoscedasticity (that is, the error terms having a constant variance) is one of the assumptions underlying the OLS estimation. In panel regression analysis, however, this assumption caves in because there may exist the presence of unobserved variables which although may be constant over time, vary across countries within the data, and this leads to heteroscedasticity. Heteroscedasticity is said to be present when the variance of the unobserved heterogeneity (u_{it}) given the independent variables, is non-constant. Although the presence of heteroscedasticity does not lead to biased estimates in an OLS estimation, it will lead to inefficient estimates. The Breusch-Pagan/Cook-Weisberg test, as well as the White's test, were employed to test for the presence of heteroscedasticity.

Another important assumption for the OLS estimation is the absence of autocorrelation. Autocorrelation is present when for a specific entity, the error term (u_{it}) is correlated over time. This is said to be the case if, and only if $Cov(u_i, u_j) \neq 0$, for $i \neq j$. Data manipulation, spatial ordering, event inertia, or even misspecification of the model itself may lead to autocorrelation. Additionally, the presence of country-specific, time-invariant effects in the longitudinal data may result in autocorrelation as individual countries do have unique and distinct features that must be considered in estimating the model. One will end up with

estimates that are not best linear unbiased estimates (BLUE) if the OLS estimator is used ignoring this condition. In this study, Wooldridge's test of autocorrelation for panel data sets is used to check for autocorrelation. To address the probability of autocorrelation and heteroscedasticity within the panel data set used in this study, robust two-step estimates of the standard errors were applied where necessary.

3.6 Limitations of the Methodology

The limitations of some of the measures used to proxy some of the variables are duly recognized as indicated earlier. A clear example is the fact that the computation of the z-score – the measure of financial stability – is purely based on accounting data, which subjects it to the level of quality of the underlying accounting system. Aggregating it further into an economy-wide measure as well ignores the possibility of contagion among the various financial institutions.

Further, in computing the stocks of FDI, the assumption of a fixed rate of depreciation is arguably going to over or under-estimate the level of FDI stocks. The unavailability of data for such purposes however make it such that there is little more that can be done in that regard. Other researchers may vary the rate of depreciation here to check how sensitive the results presented here are to the varying rate of depreciation. This is an important aspect that could have been considered in this study. However, it raises many other different questions like how many other rates to consider, which of those will best relate to reality, and to what extent, etc.? Attempting to gather all these into one study may rob it of the hard-earned simplicity within an already 'complicated' methodology, and even possibly obscure the comprehension of the average reader. The best option remaining for a study like this, in the opinion of the author, is to benchmark the rate of depreciation to what had been historically used for studies in the region. Other studies can attempt using some other proxies or approaches to measure these variables to confirm if the findings herein do hold.

3.7 Chapter Summary

This chapter of the study presented the specified empirical models for examining the role of financial stability in the relationship between FDI and economic growth. The data used in the study is comprehensively discussed, as well as the estimation strategy and techniques employed and the limitations thereof.

CHAPTER FOUR

EMPIRICAL RESULTS

4.1 Introduction

In this chapter, the estimated results from the empirical model specified in Chapter 3 for the investigation carried out in this study and the corresponding findings are presented. These are discussed in the light of the research hypotheses presented in section 1.6 and thus analysed to answer the research questions raised. Summary statistics of the various variables used in the analysis are presented and discussed first, followed by the results from the diagnostics tests carried out. The main regression results and the associated robustness checks are then presented and discussed.

4.2 Summary Statistics

Table 4.1 below displays the summary statistics of the data used in this study – both regressors and regressand. The number of observations, mean, standard deviations (overall, between and within), minimum and maximum values of these variables are presented below. These provide a general description of the variables used in the regression model.

Table 4.1 – Summary statistics

Variable	*Obs.*	*Mean*	*Overall Standard Deviation*	*Between Standard Deviation*	*Within Standard Deviation*	*Minimum*	*Maximum*
GDP	591	2422.81	3482.05	3387.32	889.39	167.38	22942.58
SFDI ('000,000)	598	4660	8340	7920	2860	-8390	47700
Z-Score	508	10.8469	5.7618	5.2783	2.5357	2.2039	44.4128
FD ('000,000)	576	2370000	4720000	4110000	2350000	148	32700000
LAB	578	7793610	10800000	10700000	1265592	51500	58400000
TR ('000,000)	571	18500	37900	36900	8710	240	250000
NR	546	13.5492	12.1094	10.9464	5.3454	0.00113	59.6196
HDI	598	0.5048	0.1013	0.099	0.027	0.29	0.801

Source: Author's Computations (2020)

As displayed in Table 4.1 above, some of the independent variables express high levels of variability, with their standard deviations even greater than their mean values. These include the stock of FDI (SFDI), financial development (FD), size of the labour force (LAB), and the level of trade openness. Although the variations in these regressors can be attributed to both the variation in time and across country. In the case of all these variables (as also with the rest of the variables), the variation is more due to variation between countries. The mean value of the total labour force is 7,793,610, indicating the average size of the labour force per country in the region; such a value appears not to quite conform to reality, seeing that the minimum and maximum values show that some countries, such as Sao Tome and Principe, had as few as about 51,500 people in the labour force as at 2006, while a country like Nigeria in 2018 had over 58,400,000 people in the labour force, hence the high variability. The standard deviation of GDP per capita (the natural log of which is the regressand) is also high (larger than the mean), attesting to heterogeneity in the sample. Much of the variation is between-variation, signifying the differences in the level of productivity between countries in the region.

The mean value of GDP per capita indicates that on average, most of the countries in SSA are lower-middle-income countries according to the World Bank classification. Middle-income countries, in general, are considered to be home to about 75% of the world's population, being a diverse group on many fronts. Although they also host about 62% of the world's poor, they produce about a third of global GDP and are highly instrumental in global growth. Those countries in this group which are classified as lower-middle-income are those with per capita GDP ranging between $1,036 and $4,045. Most of the countries involved in this study fall within this category.

Furthermore, the mean value of SFDI is $4,660,000,000 showing that averagely, the stock of FDI is about six times more than the net flow of FDI into SSA economies (when compared to the summary of the original data used in computing the stocks). The levels of variation are as

well almost likely at par. This further attests to the reason why the use of contemporaneous FDI flows is not very optimal in establishing the relationship between FDI and growth. The minimum value of SFDI is negative (recorded by Angola in 2013). This is alongside other countries such as Benin, The Gambia, and Togo, which recorded some negative values within the period under study. This indicates that the level of disinvestment in some countries, probably through closures and repatriation of returns from the region, did outweigh the amount of new investments received (for some particular periods), therefore decreasing the stock further in those economies over time. On the flip side, the maximum SFDI within the sample is above $47,000,000,000 and was recorded by Nigeria in 2013. This, of course, can be expected seeing the size of the Nigerian economy and even its sheer land size, resource endowments and population alone.

A mean value of 0.5048 for the human development index is reported, showing that on average, the SSA region is just about halfway on the human development scale ranging from 0 to 1. This indicates that the region has low human development according to the UNDP classification since the mean falls below the cut-off point of 0.550. The maximum value of 0.801, however, shows that there is at least one country within the region that has experienced very high human development within the period.

The Z-Score has a mean value of 10.8469, with a maximum of 44.4128. This maximum score could be thought of as an outlier because both the between and within variations (and even the total variation) are far below the mean. When data prior to the study period is considered, however, it becomes clear that historically, there have been instances where some economies within the study sample had recorded values of the Z-score which are well above the maximum recorded here. The maximum value is, therefore, safe to include in the study without being treated as an outlier.

4.3 Diagnostics Test Results

The diagnostics carried out on the data to ensure that the model estimation does not suffer from any inconsistency and bias are presented below. Tests for multicollinearity, heteroscedasticity, autocorrelation and endogeneity were conducted, and the results for these tests are presented in this section.

Multicollinearity

The correlation matrix shown in Table 4.2 below indicates that not many of the regressors are highly correlated with one another.

Table 4.2 – Correlation Matrix

	lnGDP	*lnSFDI*	*lnZ*	*lnFD*	*lnLAB*	*lnTR*	*lnNR*	*lnHDI*
lnGDP	1							
lnSFDI	0.2605	1						
lnZ	0.2406	-0.0007	1					
lnFD	-0.0731	0.1219	0.1140	1				
lnLAB	-0.4231	0.2794	-0.0282	0.4694	1			
lnTR	0.5223	0.5461	0.1540	0.3055	0.5070	1		
lnNR	-0.3556	0.0650	-0.2801	0.0683	0.2792	0.0044	1	
lnHDI	0.8235	0.2690	0.2305	-0.0549	-0.2880	0.4714	-0.4732	1

Source: Author's Computations (2020)

From the table above, *lnHDI* and the dependent variable, *lnGDP*, have the highest correlation coefficient of 0.8235, followed by that of *lnTR* and *lnSFDI* (both of which are regressors), with a coefficient of 0.5461, and then *lnTR* and *lnGDP* with a coefficient of 0.5223. The only other correlation coefficient above 0.5 is the correlation between *lnTR* and *lnLAB*. The rest are all below 0.5. This indicates that only *lnTR* may be collinear with other regressors – *lnSFDI* or *lnLAB* – as their correlation coefficients are above 0.5. Though this can be thought to indicate the possible presence of multicollinearity, the variance inflation factor (VIF) table presented

below (Table 4.3) shows that the VIF of all these variables and the mean VIF are all less than 10. The high correlations can thus be ignored.

Table 4.3 – Variance Inflation Factor (VIF)

Variable	*VIF*	*1/VIF*
lnTR	3.65	0.2737
lnHDI	3.17	0.3154
lnLAB	2.90	0.3449
lnNR	1.51	0.6640
lnSFDI	1.46	0.6872
lnFD	1.32	0.7578
lnZ	1.14	0.8778
Mean VIF	2.16	

Source: Author's Computations (2020)

Heteroscedasticity and Autocorrelation

The presence of heteroscedasticity and autocorrelation are both detected in the data through the tests conducted. Tables 4.4 and 4.5 below show the test result for heteroscedasticity and autocorrelation respectively. Both the White's and Breusch-Pagan/Cook-Weisberg tests for heteroscedasticity shows a p-value of 0.0000. The null hypothesis for these tests is that the variance within the residuals is constant, meaning they are homoscedastic. With these p-values however, the null hypothesis has to be rejected in both tests, thus confirming the presence of heteroscedasticity. In the case of the Wooldridge test for autocorrelation in panel data, the null hypothesis is that there is no first-order autocorrelation in the error terms (that is, they are not serially correlated with one another). The p-value of 0.0000 however demands that the null hypothesis be rejected, confirming the presence of first-order serial correlation.

These test results imply that estimation techniques that allow for both heteroscedasticity and autocorrelation must be adopted for the study, justifying the use of the System GMM estimator.

Table 4.4 – Tests for heteroscedasticity

White's test for homoskedasticity	***Breusch-Pagan/Cook-Weisberg test for heteroskedasticity***
H_0: homoskedasticity H_A: unrestricted heteroskedasticity	H_0: Constant variance Variables: lnSFDI lnZ lnFD lnLAB lnTR lnNR lnHDI
chi2(35) = 135.44 Prob. > chi2 = 0.0000	chi2(7) = 38.41 Prob. > chi2 = 0.0000

Source: Author's Computations (2020)

Table 4.5 – Wooldridge test for autocorrelation in panel data

Wooldridge test for autocorrelation in panel data
H_0: no first-order autocorrelation
F(1, 40) = 73.197 Prob. > F = 0.0000

Source: Author's Computations (2020)

Endogeneity

The post estimation test employed to detect the presence of endogeneity in the data involved an assessment of the coefficient of the lagged dependent variable in the estimated model. The significant coefficient for the lag of *lnGDP* as shown in the regression results in table 4.6 below justifies its use as a regressor, showing us that the previous values of the regressand are indeed significantly correlated with the error process, therefore confirming the presence of endogeneity in the model and lending further support to the choice of estimation technique used in this study.

4.4 Regression Results

As clearly demonstrated in the previous chapter, the two-step system GMM estimator is the preferred technique for addressing the objectives of this study. The results of the estimated dynamic model are presented in table 4.6 below.

The first column in table 4.6 shows the general coefficients and standard errors (in parentheses) which are also considered short term, while the other column shows the long-run estimates of the short term coefficients that are significant, with their associated standard errors also in

parenthesis. The results for the marginal effects of the interacted variables are subsequently presented in tables 4.6 and figure 4.1.

Table 4.6 – Two-step System GMM Regression Output

Regression Results		
VARIABLES	Main estimates	Long-run estimates
lnGDP Lag 1	0.302***	
	(0.0618)	
lnSFDI	-0.240***	-0.344**
	(0.0912)	(0.1332)
lnZ	-1.551**	-2.222**
	(0.701)	(0.993)
lnSFDI × lnZ	0.0703**	0.1008**
	(0.0313)	(0.044)
lnFD	0.0163	
	(0.0136)	
lnLAB	-0.437***	-0.626***
	(0.0633)	(0.0889)
lnTR	0.544***	0.7799***
	(0.0613)	(0.0894)
lnNR	-0.0191	
	(0.0264)	
lnHDI	0.719*	1.0302**
	(0.378)	(0.5245)
Constant	5.069**	
	(2.090)	
Observations	418	
Number of groups	41	
Number of Instruments	40	
Hansen test: Prob. > Chi-sq.	0.323	
Sargan test: Prob. > Chi-sq.	0.243	
AR(2) Pr. > z	0.289	
AR(1) Pr. > z	0.026	
Wald Chi-sq. (Prob. > chi2)	1584.42 (0.000)	
Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.		

Source: Author's Computation

The first thing to mention from the results presented above is the fact that the Wald Chi-Square statistic of 1584.42 with its associated p-value of 0.0000 speaks of the joint significance of the

regressors used in explaining the dependent variable. Also from the regression output in table 4.6 above, it can be seen that the lagged dependent variable is significant at a 1% level of significance, attesting to the fact of GDP growth being self-reinforcing and the endogenous nature thereof. This lends support to the appropriateness of the choice of estimation technique as earlier mentioned. Furthermore, the number of instruments is lower than the number of groups, which is a good signal of how reliable the estimates are according to Roodman (2009b) since the estimates would have been biased otherwise. Also, both the Hansen test of over-identification and the Arellano-Bond test for second-order autocorrelation do bear out the validity of instruments used for the estimation (the list of instruments used are provided in Appendix A).

The stocks of FDI are found to be statistically significant at a 1% level of significance in the results above, with a negative coefficient. This is also the case for the level of financial stability, but at a 5% level of significance in the short run. These negative effects, however, are translated into a positive effect when the variables are interacted in the model. This implies that in the SSA region, while at a 1% level of significance, a percentage change in the stock of FDI in an economy is associated with a 0.24% decrease in GDP in the short run, holding all other variables constant, it rather leads to a 0.07% increase in the GDP growth in the presence of a stable financial system on average, *ceteris paribus*.

From the above, it is clear that all the null hypotheses being investigated in this study can be rejected. The first null hypothesis asserts that FDI stocks do not have any effect on economic growth, while the second posits that financial stability does not have any impact on economic growth in SSA. On the contrary, evidence provided from the results in this study indicate that both FDI stocks and financial stability have significant negative effects on economic growth in the region. The third hypothesis states that financial stability is not necessary for the impact of FDI stock, if any, on economic growth. This claim must, however, be rejected since results

from the study, again, show that the combined effects of FDI stocks and financial stability on economic growth in the region are positive and significant.

The directions of these relationships at least tell us there is some value in having a financial system with stable institutions. While the negative impact of FDI stocks as a standalone factor is contrary to expectations, this can be very well attributed to the kind of FDI that flows into the region as will be soon made clear. The subtle suggestion from the results here is that in the absence of stable financial systems, the impact of accumulated FDI may be more detrimental to SSA economies than can be imagined. This particularly makes sense in the SSA context since the majority of FDI that come into the region are arguably resource-seeking FDI, which as explained earlier typically yield very negligible returns to host economies (Meier zu Selhausen, 2009). Coupled with the intense level of returns repatriation by multinationals beyond investment inflows (Bos et al., 1974), monopolization, and the subsequent crowding out of local investments in the region, this helps to make almost perfect sense of the situation as observed in reality.

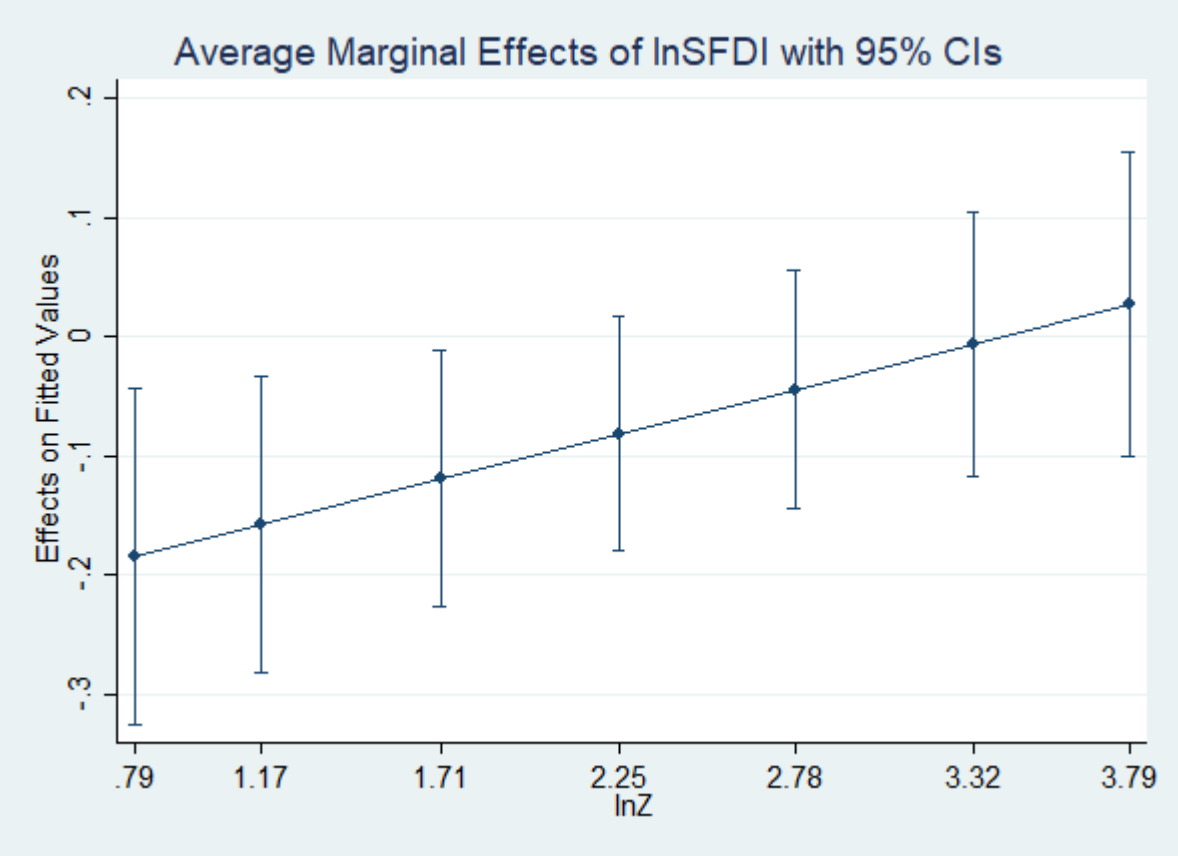
The place of financial stability in offsetting this trend can thus not be overemphasized. Intuitively, a financially stable economy would at least provide a safe environment for multinationals to retain and reinvest returns, which will bring down the problem of mass profit repatriation. In spite of this, it is clear from the results above that when it comes to financial stability as a standalone variable, we have a significant negative coefficient, indicating that the level of financial stability within the Sub-Saharan Africa region results in an adverse effect on economies in the region. At a 5% level of significance, a percentage change in the level of financial institutions' stability is associated with a 1.55% decline in economic growth on average, all other things being equal. Financial stability and GDP are thus shown to exhibit a negative elastic relationship. This is very contrary to expectations; and although it is so counterintuitive, it begins to make sense when assessed in the light of previous evidence from

studies like Batuo et al. (2018). They provide insight into the phenomenon of financial instability becoming higher as countries liberalise their financial sectors to enhance financial development in the SSA region. Their explanation for this is hinged on the fact that as countries liberalise their financial system in pursuit of financial development, they have to forgo some restrictions and regulations that help to keep their financial systems stable. Appraising the results of this study in the light of that, it is easy to understand that as countries strive to attain financial stability, they keep or tighten the regulations and restrictions that enhance stability, and that consequently keeps their financial systems repressed to an extent, hindering financial development and hence, the adverse effect on their economies. It is pertinent to note here that despite this inverse relationship, it is still necessary to keep financial systems stable because of their influence on how factors like FDI stocks affect the economy.

The question that now remains be addressed therefore is this: at what level of financial stability will the stocks of FDI be made to have a positive impact on growth? In other words, how stable must the financial system in an economy be for the effects of SFDI on growth to become positive as indicated earlier? This calls for the probing of the interaction between SFDI and the z-scores to find the marginal effect of stability in the nexus. This is done by generating and testing the marginal effects of SFDI at the mean and two (2) standard deviations above and below the mean, as well as the minimum and maximum of the financial stability measure as earlier described. The results of that can be seen in Table 4.7 and Figure 4.1 below.

As can be seen below, the marginal effects of SFDI on growth computed at the various levels of *lnZ* as earlier indicated are displayed in figure 4.1 above and table 4.7. It is easy to see from figure 4.1 that the average marginal effects of SFDI on growth are initially negative at lower z-score values, but gradually shift to become positive at higher z-scores. At values of *lnZ* above 3.32 (2 standard deviations above the mean), the marginal effects of SFDI on growth change from negative to approximately zero, beyond which the effects become positive.

Fig. 4.1 – Graph of Average Marginal Effects of lnSFDI with 95% Confidence Intervals



Source: Author's Construction (2020)

Table 4.7 – Average Marginal Effects of lnSFDI

lnSFDI	***Average marginal effects***	***Delta-method***
_at	Expression Fitted Values, predict() dy/dx w.r.t.: lnSFDI	dy/dx
Min.	1._at: lnZ = 0.79	-0.1844** (0.072)
$-\sigma_2$	2._at: lnZ = 1.17	-0.158** (0.064)
$-\sigma_1$	3._at: lnZ = 1.71	-0.1196** (0.055)
Mean	4._at: lnZ = 2.25	-0.0819 (0.0502)
$+\sigma_1$	5._at: lnZ = 2.78	-0.0442 (0.051)
$+\sigma_2$	6._at: lnZ = 3.32	-0.006 (0.057)
Max.	7._at: lnZ = 3.79	0.0268 (0.065)
Number of obs.	418	
Model VCE	Corrected	

Source: Author's Computations (2020)

It is important to note also that, the negative marginal effects are only significant for the values of *lnZ* below the mean. This shows that only economies in the region with below-average levels of financial stability are negatively impacted by *lnSFDI*. The implication of this is that SSA countries need a level of financial stability which is at least as high as the regional mean to be spared the significant negative effects of accumulated FDI on their economies. Again from table 4.7, the fact that although the coefficients are not significant, they are still negative, except for economies with levels of financial stability higher than two (2) standard deviations above the regional mean, is a disturbing discovery. This goes to simply show that the level of financial stability within the SSA region is still not high enough to help its economies reap the positive effects of FDI on growth as theory suggests. This is a serious wake-up call for policymakers to understand that the dynamics of the region demand levels of financial stability far higher than the present state to benefit from the stocks of FDI accumulating more and more in the region. At best, the countries with relatively higher financial stability are only spared from FDI negatively impacting their economies. Those with lower levels of financial stability rather have FDI being more of a curse than a blessing to their economies.

With regards to the control variables employed in this study, three of them: labour force (*lnLAB*), trade openness (*lnTR*), and human capital (*lnHDI*), are found to be statistically significant, while the rest (financial development (*lnFD*) and natural resource endowment (*lnNR*)) are statistically insignificant. All the control variables were expected to have a significant positive effect on growth. Only two of them, however, meet this expectation – trade openness (at 1% level of significance, and human capital (at 10% level of significance). The other significant variable, which is the size of the labour force, is shown to have a significant negative coefficient, indicating that countries with larger sizes of labour force are negatively impacted. This is indeed counterintuitive, and must therefore be investigated further. It is however not altogether surprising as the size of the labour force does not necessarily indicate

that all the people captured in that category are productive individuals contributing to the total output of the economy. In fact, with the dynamics of the SSA region, it is possible that a huge chunk of these people may actually be unemployed and are therefore just consuming while producing nothing.

When it comes to the statistically insignificant variables, the case of financial development is particularly intriguing. It shows a positive but insignificant coefficient; a result that is contrary to what the general finance-growth literature suggests. One may, again, have to take stock of the fact that the dynamics of the SSA region makes it such that, financial development as a force is overpowered by other prevailing realities in the region in its attempts to significantly advance growth. Also, even though financial development is accounted for, financial stability still had a significant role to play in explaining the regressand. This adds to the efforts to explain the observed phenomena in the region as it corroborates the explanation offered earlier to explain why financial stability must still be investigated even when we generally have an idea of what financial development may lead to in the literature.

Another important thing to note from the results is that the long-run estimates generated for the significant GMM estimates all turn out to be statistically significant and in the same direction as their short-run counterparts. These long-run effects interestingly happen to have greater coefficients indicating that in the long run, the effects of these variables are in the same direction with even greater magnitudes. This implies that in the absence of stable financial institutions, for example, the negative impact of piling FDI stocks are going to be more ominous in the long run than in the short run.

In that case, all the three null hypotheses proposed for this study have to be rejected both in the short and in the long run, as the results presented above succinctly provide evidence for the fact that both FDI stocks and financial stability do impact growth, and that financial stability is necessary for the impact of FDI stocks on economic growth in SSA.

4.5 Chapter Summary

This chapter presented results from the estimation of the models specified in the preceding chapter. This shows the relationship between foreign direct investments and economic growth in SSA, as well as the place of financial (institutions') stability in this nexus. The results were discussed as concisely as possible, with attempts to also make sense of them in the light of previous evidence.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This final chapter concludes the study by providing a summary of the findings from this study, from which conclusions are drawn. These are followed with recommendations based on the findings, as well as suggested areas for future research.

5.2 Summary of Findings

The general intent of this study is to examine the place of financial stability in the relationship between FDI and economic growth in SSA. This was approached by examining the effects of FDI stocks on growth, as well as the role of financial stability in shaping the effects of FDI on economies in the region. It was hypothesized that both FDI stocks and financial stability have no impact on economic growth in the region. The estimation results presented in the previous chapter to establish this link brought out some very eye-opening discoveries.

First of all, it is found in the study that the lagged dependent variable is significant as was suspected, lending support to the fact that economic growth is self-reinforcing, and the process thereof dynamic. Further, the stocks of FDI accumulated over time were found to be significantly related to growth both in the short and long run, with the impact as an independent factor being negative. The direction of this relationship is however reversed in the presence of a stable financial system. The study, therefore, finds that FDI accumulated into stocks over time only impact growth positively in the presence of stable financial institutions.

It was found upon further investigation of the combined effects, however, that a level of financial stability that is above the SSA regional mean is required for an economy to be spared significant negative effects of FDI stocks on growth. The levels of stability in the SSA region, however, are found to be far below a level that will procure significantly positive returns from FDI stocks for its economies. At best, countries in the region with relatively high levels of

financial stability (higher than the mean) are spared significant negative effects of FDI stocks on growth, and while those with levels of financial stability higher than two (2) standard deviations above the mean record positive coefficients, these effects are not statistically significant.

It is surreal, however, to discover as a key finding of the study, that financial stability as an independent factor in itself, actually has a significant negative effect on economies in the region. This was found to be a result of the dynamics of the SSA region as attested to in the literature, which result in economies with more liberalised and developed financial systems also having more unstable financial systems and otherwise. This is found to be the case both in the short run and in the long run. In addition, two of the control variables (financial development and natural resource endowment) showed no evidence that they had any effect on growth in the region. Both trade openness and human capital are found to have significant positive effects on growth in the region, while the size of the labour force is found to have a significant negative impact. The findings from the study, therefore, largely justify the direction in which it sought to move although some of these findings were contrary to what was anticipated.

5.3 Conclusion

It is wrong, following from the findings of the study, to assert that both FDI stocks and financial stability have no impact on growth and that financial stability is not necessary for the impact of FDI stocks on growth. What is clear from the study is that the findings are very sobering and revealing, and must therefore bring all stakeholders to the realisation that the dynamics in the SSA region need a lot of attention and work. Generally, it must be understood that per the dynamics of the region, the role of stable financial institutions in ensuring sustained growth cannot be overemphasized as demonstrated in the results.

The fact that very clear evidence was found showing that financial stability does independently impact economies in the region negatively should point out that something fundamental must be wrong with the socio-economic, and even political landscape of the region. Recognisably, economies in the region with more stable financial systems are those who have refused to forgo the regulations and rules that help stabilise their financial institutions in exchange for financial liberalisation and development. The effect of such a stance can be seen in the negative impact the resulting stability of their financial systems may be having on their economies.

It can, however, also be argued that those who have more liberalised and developed financial systems are not any better off, as they do not reap any significant positive returns from their positions either. This tells us that by no means do the results of this study suggest that the pursuit of financial stability be sacrificed or relaxed. As explicitly portrayed, the importance of financial stability stems from the fact that its absence allows for other factors (including FDI stocks) to further negatively impact SSA economies. As it stands now, it cannot be pointed out boldly how many other factors are negatively impacting economies in the region because of the low level of financial stability. These are factors that would have otherwise immensely benefitted such economies in the presence of stable financial institutions.

Furthermore, the negative impact of FDI stocks found in the study implies that although contemporaneous FDI flows may have a different impact on these economies (as found in other studies), once accumulated over time, the impact of FDI becomes pronounced and undesirable. As discussed earlier, this negative impact is most likely due to the kind of FDI that flows into the region (resource-seeking FDI). This points out clearly that not all investors that come to the region come as a blessing to the economies in which they operate. As such, efforts to attract investors must be tailored to get the right kind of FDI flowing into the region.

5.4 Recommendations

Following the discussions and conclusion above, the following recommendations are made for the consideration of policymakers:

- Since the negative impact of FDI stocks is most likely due to the kind of FDI that flows into the region (resource-seeking FDI), policymakers should begin to adopt measures that will streamline the kind of FDI that flow into their economies. Efforts should be made to attract less of the investments that only seek to exploit the natural resources of the country. Policies should focus on attracting FDI into sectors that would most likely lead to the least repatriation of returns; such investments as would rather develop the various sectors of their economies and lead to the creation of more jobs and greater productivity. FDI in agribusiness and the services sector will very likely lead to the creation of more jobs (as they will demand direct involvement of locals to a large extent) and productivity spillovers through the transfer of technology and improvements in management techniques; as against investing in sectors like mining and real estate which may either require more specialized and/or unavailable skills, or experience mass repatriation of returns.
- Policymakers should primarily focus on building very solid and stable financial systems by adopting approaches that will not keep the financial systems repressed and underdeveloped, even as they attempt to attract the right kind of FDI into their countries. While such FDI accumulates in their economies, a stable financial system would translate these investments into higher levels of economic output and hence, growth. Economies should aim at having a level of financial stability that is at least at the level of the current regional average for SSA. At that level of stability, they are spared the negative effects of FDI stocks on their economies. This calls for an approach to monitoring and regulation of financial institutions that will ensure their actions do

not result in levels of instability that would cause foreign investors to repatriate their returns to places they would feel safer investing. That stable financial environment that can court foreign investors to retain their resources in the economy while at the same time fostering financial development should be aimed at. Ultimately, such an environment will create more opportunities for investors and hence, promote growth

- Finally, policymakers should devise ways of getting heads of financial institutions and managers at the micro-level to recognise the impact of their actions and decisions on the economy at large. Attempts should be made to institutionalize a sense of patriotism that will affect the decision-making habits of managers and directors of financial institutions – knowing their actions affect the entire economy and even more lives than they imagine.

5.5 Suggestions for Future Research

The main contributions of the study lie in the fact that it, first of all, adds to the extant empirical literature on the FDI-Growth nexus, contributing to the long-standing debate of whether the theoretical prescriptions on the matter are truly borne out by the empirical data. The study further goes beyond the normal approach in its investigation to assess stocks of FDI instead of just cotemporaneous flows. This covers an aspect of the inquiry that has largely been ignored or at least left unaddressed in the literature. The study also sets the pace for new studies that will examine the role of financial stability in this relationship, another facet that was left unattended to, probably due to the assumption that stable financial systems are necessarily developed. It follows therefore from the discussions above that it will be expedient to explore the interlinkages between FDI, growth and financial stability further by using other measures of stability to confirm whether the findings here do hold or not.

Not only that, it appears even more imperative to further explore the dynamics that play out in how financial stability interrelates with financial development and liberalisation as well as

economic growth in the region, especially on country basis. This was carried out for the entire region by Batuo et al. (2018), but it will be more rewarding to know the dynamics for each country and bring out further insights as to how they should handle their financial systems.

Further, this study did not consider specific sub-samples of the countries within the region, bound by similar characteristics such as their levels of institutional quality or political stability; or even the smaller sub-regional groupings of SSA countries. This can be attempted by other researchers to serve as a confirmation or otherwise to this study, and will also help policymakers to realise the unique features of the specific contexts within which they are located and hence, further shape their decisions.

Other methods of dealing with endogeneity and the challenges posed by the data, such as the two-stage least squares estimation, can be used by other researchers in future studies. Such authors may also want to go the extra mile to vary the level of depreciation in computing the stocks of FDI to provide further support for their findings.

Finally, the role of other factors (such as industrialization) in the FDI growth nexus can also be explored in later studies as they may be very useful additions to the present state of knowledge. This study can also be replicated in other regions aside from SSA to check if the findings hold elsewhere or are peculiar to the SSA region. Country specific studies to determine the peculiar case of each economy is encouraged, and may also prove useful for decision making within those jurisdictions.

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APPENDICES

Appendix A: List of instrument sets

	Instruments	Description
GMM Style	*l.lnGDP*	Lag 1 of the dependent variable (natural log of GDP per capita)
	lnZ	Financial Stability (country-wide bank z-score)
	lnSFDI	FDI stocks
IV Style	*lnFD*	Financial Development
	lnTR	Trade Openness
	lnHDI	Human Capital (Human Development Index)
	lnNR	Natural resource endowment

Source: Author's Construction

Appendix B: Panel Summary Statistics

Variable		*Mean*	*Std. Dev.*	*Min*	*Max*	*Observations*
GDP	overall	2422.81	3482.05	167.38	22942.58	N = 591
	between		3387.32	243.91	16088.37	n = 46
	within		889.39	-4415.23	9277.03	T = 12.8478
SFDI	overall	4660	8340	-8390	47700	N = 598
('000,000)	between		7920	-815	40000	n = 46
	within		2860	-13300	15900	T = 13
ZScore	overall	10.8469	5.7618	2.2039	44.4128	N = 508
	between		5.2783	3.4448	27.4586	n = 45
	within		2.5357	3.0743	44.8300	T = 11.2889
FD	overall	2370000	4720000	148	32700000	N = 576
('000,000)	between		4110000	488	17400000	n = 46
	within		2350000	-11500000	17700000	T-bar = 12.5217
LAB	overall	7793610	10800000	51500	58400000	N = 578
	between		10700000	62004	53200000	n = 45
	within		1265592	-94017	16800000	T = 12.8444
TR	overall	18500	37900	240	250000	N = 571
('000,000)	between		36900	380	207000	n = 45
	within		8710	-34000	98000	T-bar = 12.6889
NR	overall	13.5492	12.1094	0.0011	59.6196	N = 546
	between		10.9464	0.0052	45.3864	n = 46
	within		5.3454	-10.9693	47.8308	T = 11.8696
HDI	overall	0.5048	0.1013	0.2900	0.8010	N = 598
	between		0.0987	0.3349	0.7724	n = 46
	within		0.0268	0.4343	0.5703	T = 13

Source: Author's Computations