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FINANCIAL INCLUSION, FINANCIAL SECTOR DEVELOPMENT AND INCLUSIVE DEVELOPMENT: EVIDENCE FROM FRONTIER AND EMERGING MARKETS

JOSEPHINE OFOSU-MENSAH ABABIO

DEPARTMENT OF FINANCE

JULY 2017

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FINANCIAL INCLUSION, FINANCIAL SECTOR DEVELOPMENT AND INCLUSIVE DEVELOPMENT: EVIDENCE FROM FRONTIER AND EMERGING MARKETS

BY

JOSEPHINE OFOSU-MENSAH ABABIO (MRS.)

(10256153)

A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES, UNIVERSITY OF GHANA IN PARTIAL FULFILMENT OF THE AWARD OF DEGREE OF DOCTOR OF PHILOSOPHY (PhD) IN FINANCE

DEPARTMENT OF FINANCE

JULY 2017

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DECLARATION

I, JOSEPHINE OFOSU-MENSAH ABABIO (MRS.), do hereby declare that except for references to other academic works, which have duly been acknowledged, this thesis is the product of my own hard work produced from research undertaken under stern supervision. This thesis has not been presented or submitted to this or any other academic institution for any academic award. I also do declare my full responsibility for any errors, omissions or shortcoming in this thesis.

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CERTIFICATION

I hereby certify that this thesis has been supervised in accordance with the laid down regulations of the University of Ghana.

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PROFESSOR KOFI A. OSEI **DATE**

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ABSTRACT

This thesis analyzes financial inclusion, financial sector development and inclusive development with evidence from frontier and emerging markets. It employed the dynamic panel Generalized Methods of Moments (system GMM) approach for the empirical analysis. It examined whether the level of economic development drives or hampers financial inclusion in frontier markets. It finds that income level, financial literacy and healthy lives are the decisive factors for promoting financial inclusion in the banking sector, bond and stock markets. It shows new evidence that the underlying cause of low financial inclusion is low human development. The thesis further examines the role of financial inclusion in financial sector development in frontier markets. It finds that bank account penetration is important for expanding the depth of the banking sector, but it plays no decisive role in expanding the access (breadth) and efficiency of the banking sector. Also, it finds that borrowers' penetration is very critical for scaling up the breadth of the banking sector. In addition, it shows that ATM penetration is a driver of the depth and the breadth of the banking sector. Besides, it documents empirical evidence that financial inclusion is essential in promoting the depth and access dimensions of bond and stock markets, but it worsens their efficiency. Contrarily, it finds new evidence of developed financial sector promoting financial inclusion. Additionally, the thesis contends that the banking sector and capital market cannot independently drive each other's progress unless there is the presence of greater financial inclusion. Employing the panel granger causality test, it empirically establishes evidence of a strong two-way causality between the banking sector and bond (debt) market development via the catalytic role of financial inclusion. But a one-way causality in the case of the banking sector and stock market development via the catalytic role of financial inclusion both in the context of emerging markets. Finally, the thesis investigates whether financial inclusion is a precondition for promoting inclusive development in frontier and emerging markets. It empirically shows evidence

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that financial inclusion empower the poor and vulnerable groups to engage in economic activities to obtain basic incomes, healthcare and education. It documents that mobile telephony, and internet are instrumental in promoting greater financial inclusion, developed financial sector and inclusive development. The thesis concludes with empirical evidence that frontier and emerging nations can better promote financial inclusion and inclusive development through banks and capital markets. Financial regulators, supervisors and providers musts therefore, provide affordable, diversified and customized financial products and services through more mobile banking, internet banking, on-line trading and other branchless avenues to promote inclusive finance and development by inclusion.

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DEDICATION

To God Almighty

Also to my husband Dr. Ofosu-Mensah Ababio Emmanuel; my children Nhyira Ofosu-Mensah, Nana Adwoa Aseda Ofosu-Mensah, Adom Anuonyam Ofosu-Mensah, Akyediɛ Nyameyɛ Ofosu-Mensah Ababio; and the entire family.

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ACKNOWLEDGEMENT

My profound and ultimate gratitude goes to the Almighty God for the initiative, wisdom, direction, guidance, strength and commitment for undertaking my PhD studies. It is His abundance grace and favour which have seen me through this arduous academic feat.

I am very grateful to my supervisory team Professor Kofi A. Osei, Professor Godfred Alufar Bokpin and Dr. Eric Osei-Assibey for their supervision, suggestions, and counseling in diverse ways which have contributed to the successful completion of this thesis. Also a special note of gratitude to all the lecturers in my department most especially Dr. Sarpong Koman-Kuma, Dr. Lord Mensah, Dr. E. K. Agbloyor, Dr. C. Andoh and Professor A.Q.Q Aboagye for their warm reception, advice, suggestions and several encouragements. I thank all the examiners for their review comments, and for their useful questions, constructive criticisms and suggestions during the Viva, which have all contributed to enrich this work.

My deepest and immeasurable gratitude to my husband Dr. Ofosu-Mensah Ababio, my children and the entire family. I say a big thank you for your sacrifices, patience, understanding, financial and spiritual support. Often times, I stay glued to my computer till very late in the night having little time or attention for you. Although, a very difficult situation, knowing it was for a good course you accepted it. May the good Lord bless each one of you to live long healthily, for you have been wonderful!

I am highly indebted to my late father, Mr. S. K. Ntiri (the first headmaster of Benkum Senior High School), although a male, you are a sacrificial example of true motherhood, you sacrificed marriage for our education, training and good nurturing. Ɔbaatanpa, may you continue to rest in the bosom of the Almighty God! My siblings and I are extremely grateful to you and you shall remain on our minds forever. To all my siblings in particular, Mrs. Jemima Afia Ntim my sister and first daughter, I am most thankful to all of you, for your invaluable support and for inspiring each other to bring out the best in us. Indeed, words cannot express my appreciation, God richly bless you all with long life in good health.

I am exceptionally thankful to Prof. Charles Adjasi of University of Stellenbosch Business School, Cape Town, South Africa for being proud to associate and openly recognizing me as your undergraduate mate, and also for identifying the potential in me and inspiring me

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to enroll in the PhD programme. Indeed, I shall forever remain very grateful to you, may the good Lord bless and expand your territories beyond human understanding!

I also wish to register my sincere appreciation to the lecturers who taught us at the coursework part of the PhD programme. I appreciate the sound tuition of Prof. A.Q.Q. Aboagye of the Department of Finance, University of Ghana Business School in Advanced Financial Economics. Equally, I appreciate the thorough instructions received from Dr. Simon Harvey of Bank of Ghana, in Advanced Econometrics, Advanced Micro- and Macro- economics which has grounded my understanding of econometrics models, economics theories and set the foundation for my interest in financial research.

I acknowledge with thanks and sincere appreciation the UG-Pan African Doctoral Academy, most especially the Director of the PhD programme Prof. Yaa Ntiamoah Boadu, the resource persons, the lecturers and the facilitators. I am very grateful for their periodic courses organized for doctoral students across the continent to give us deeper insights into research and upgrade us to a world class standard. I am particularly, appreciative of the knowledge and experiences shared by astute researchers and professors. Indubitably, it was an avenue for me to broaden my knowledge in research, and also acquire varied ways of delivery and sharing useful experiences. To all the resource persons I say a big thank you, may God continue to endow you all with much wisdom.

Deserving mention and appreciation is Mr. Innocent Kombla Agbelie of ISSER for his technical assistance, suggestions, and advice. Many thanks also goes to all his office mates for their constant encouragements. Also, I cannot fail to thank all who spent their hard to make time to read, correct, and made useful inputs to this thesis. I am really grateful, God richly bless you all.

A special gratitude goes to Rev. Paul Kwamena Hoyah, the librarian of the RIPS-ISSER library for being so kind to share their library space with me. Indeed, with a very grateful heart I say a big thank you to the administrative staff of UGBS in particular, the department of finance, the management of the University of Ghana Business School, and the entire University of Ghana.

Finally, I am exceptionally grateful to all who offered me academic assistance, suggestions, advice, reception, support and inspiration. Thank you and the good Lord bless you all!

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ABBREVIATIONS/ ACRONYMS

ACR	African Competitiveness Report
AFI	Alliance for Financial Inclusion
ATMs	Automatic Teller Machines
BSD	Banking Sector Development
CFI	Centre for Financial Inclusion
CGAP	Consultative Group to Assist the Poor
CMD	Capital Market Development
CP	Commercial Paper
DPI	Domestic Private Investment
ECA	Europe and Central Asia
FAS	Finscope Access Strand
FI	Financial Inclusion
FDI	Foreign Direct Investment
FSD	Financial Sector Development
GDP	Gross Domestic Products
GEM	Global Emerging Markets
GFD	Global Financial Development
GMM	Generalized Methods of Moments
GNI	Gross National Income
GPFI	Global Partnership for Financial Inclusion
HDI	Human Development Index
HDR	Human Development Report
IFS	International Financial Statistics
IMF	International Monetary Fund
JSE	Johannesburg Stock Exchange
LAC	Latin American and the Carribbean
MFI	Micro Finance Institution
NCDs	Negotiable Certificate of Deposits
OLS	Ordinary Least Square
PCA	Principal Component Analysis
RTBI	Rural Technology and Business Incubator
SDGs	Sustianable Development Goals
SMEs	Small and Medium Scale Enterprises
UNDP	United Nations Development Programs
WAMZ	West African Monetary Zone
WDI	World Development Indicators
WGI	Worldwide Governance Indicators

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CHAPTER ONE

GENERAL INTRODUCTION

1.1 Thesis Statement

This thesis examines how to promote and attain greater financial inclusion by the formal financial sector, in order to promote development that reaches the excluded and ensures equal opportunities for all (inclusive development). Accordingly, it verifies whether the level of economic development is a fundamental driver for promoting financial inclusion. It also, investigates how financial inclusion can improve and expand financial sector inclusiveness and development, and promote inclusive development in the contexts of frontier and emerging market nations. The thesis employed the dynamic panel Generalized Methods of Moments (system GMM) approach, and used fresh data mainly from Global Financial Development, World Development Indicators and Human Development databases for the empirical analysis.

1.2 Background to the Study

Inadequate domestic resource (funds) mobilization and allocation continue to obstruct attaining appreciable levels of financial sector inclusiveness and development, economic well-being and widespread development that trickles down to local people, sectors and communities. Financial inclusion is an effort to mobilize all idle funds and bring the entire population to benefit from mainstream financial products and services (Consultative Group to Assist the Poor, 2009 and 2010; World Bank, 2014). Financial inclusion refers to the vast majority people and enterprises having and using formal financial products and services (Global Findex, 2011 & 2014) that are affordable, readily available, customized and delivered in a more convenient and innovative means. Financial inclusion denotes

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'finance for all' (World Bank, 2014 & 2015; and Sustainable Development Goals- SDGs of UNDP, 2015), while it means the use of formal financial services (Allen et al., 2014). Also, Sarma (2008) refers to financial inclusion as the process of ensuring the accessibility, availability, and usage of mainstream financial system services by all members of a country. In view of the above definitions, it is worth noting that financial inclusion is a mechanism whereby individuals, households and firms that are unserved (excluded) or under-served (partially excluded) can have easy access to and can responsibly use formal financial products and services such as savings, credit, insurance, and payment services. It is also a means to mobilize and allocate funds from and to people, groups and sectors that do not have, use and/ or under-use formal financial products and services.

According to FinMark Trust report (2014) financial exclusion is taking the largest toll on the poor and vulnerable people, businesses, and communities. Indeed, finance is central to virtually every major opportunity and/or challenge the world faces currently. Be it for investment, economic activities, economic or business transactions, access to finance for all is indispensable. Inclusive finance i.e. financial inclusion is an 'opportunity' as it transforms lives, businesses and economies by alleviating poverty and income inequality. This assertion supports research that shows a number of benefits such as making savings and securing loans to pay school fees for children, buy land or build houses have been derived by individuals, households, firms and communities through financial inclusion initiatives (Asia Development Bank Report, 2015). It is therefore, critical to say that economic competence and resilience are crucial for achieving the Sustainable Development Goals by 2030. According to the Consultative Group to Assist the Poor (CGAP Report, 2010), and Asia Development Bank Report (2014), homegrown solutions have proven to be more effective than externally imposed policies, though factors that are common across countries provide a useful way forward.

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Low financial inclusion has been identified as the major cause of inadequate domestic resource mobilization and allocation by the financial sector. The World Bank research (2011; 2012) show that for developing economies 40 to 41% of adults are unbanked, for low-income countries 19% of adults are unbanked, for lower middle-income countries 28% of adults are unbanked, and for upper middle-income countries 58% of adults are unbanked compared to high-income economies where only 11% of adults are unbanked. Moreover, the vast majority of adults who do not save in developing countries are in Africa, where Southern Africa has 58%, Western Africa has 77%, Eastern Africa has 77%, Northern Africa has 80% and the Central Africa Republic has 93% of adults not having and using a bank account. Besides, account penetration among adults belonging to the poorest 20% in high-income countries is 23 % higher than that of adults belonging to the richest 20% in the developing world (Demirgüc-Kunt and Klapper, 2012). These statistics indicate that particularly, financial inclusion in developing regions compared to the rest of the world is very low.

The challenge of low financial inclusion has therefore been among the foremost concerns of development partners and policy-makers of both the developed and developing worlds. Subsequently, a widespread international consensus now exists on the need to promote more financial inclusion, in order to have more inclusive financial systems and foster inclusive development (Samans *et al.*, 2015; Consultative Group to Assist the Poor, 2010; Sustainable Development Goals, 2015). Therefore, it has become critical to mobilize and allocate funds domestically from the large presence of people, households and firms that under-utilize or do not use formal financial products and services at all. But, the strides to promote domestic resource mobilization and allocation through promoting financial inclusion are often hampered by socio-economic factors such as very low levels of income,

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healthcare and education. According to the goal one (1) of the Sustainable Development Goals too many people are still struggling for the most basic human needs (UNDP, 2015).

In the developing world, a large majority of the population are unemployed either as result of limited job opening opportunities or because they lack employable skills to engage in economic activities to earn decent incomes. So, in developing countries, most people as a result of no, unstable or low income are unable to afford basic necessities of life such as food, clothing and shelter, let alone have surplus monies to save for their future use. This is supported by the Sustainable Development Goals on poverty that globally, more than 800 million people are still living on less than $1.25 a day, most are lacking access to adequate food, clean drinking water and sanitation. Precisely, South Asia and sub-Saharan Africa account for 80 percent of the global total of those living in extreme poverty (UNDP, 2015). Sadly, this rate is expected to rise due to new threats brought on by limited financial opportunities, climate change, conflicts and food insecurity. Demirguc-Kunt & Klapper (2012) observe that approximately 80% of people in the developing world cited lack of adequate income as their main reason for either not having or using a formal account. Also due to no, unstable or low-income most people are not creditworthy, and as such they are unable to meet the conditions and collateral requirements of the financial systems that qualify them to be granted loans or credit. According to the Africa Competitiveness Report (2009), collateral requirement is the second highest problem in the developing world.

Worldwide, most people lack good healthcare which goes a long way to affect their ability to engage in productive activities to earn basic incomes and participate in the development process. According to Sustainable Development Goals (SDGs, UN, 2015), globally, adolescent girls and young women face gender-based inequalities, exclusion, discrimination and violence, which put them at increased risk of acquiring HIV. Sadly, at

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the end of 2013, 240 000 children were newly infected with HIV and 2.1 million adolescents were living with HIV as of 2013. Also, children born into poverty are almost twice likely to die before the age of five, compared to those from wealthier families. In addition, maternal mortality ratio- the proportion of mothers that do not survive childbirth compared to those who do- in developing regions is still 14 times higher than in the developed regions. Moreover, an interesting fact is that only half of women in developing regions receive the recommended amount of health care they need (SDGs, UN, 2015), let alone their male counter parts. Therefore, ensuring healthy lives by promoting sound health, increasing life expectancy and reducing common killers associated with especially child and maternal mortality, and promoting the well-being for all at all ages is necessary to meet the goal 3 of sustainable development. Having healthy lives imply having a more productive and capable people to scale up inclusive finance.

Similarly, most people lack basic education, resulting in the high presence of illiterates who do not understand and appreciate the importance of having and using formal financial instruments, products and services, as well as basic financial management. Another problem is that financial charges are too expensive for the ordinary person living in a developing region to bear. Also, financial systems or bank branches are mostly cited very far from potential customers and clients. This, therefore, tend to discourage most adults living in developing countries from having and using mainstream financial products and services. In addition, formal financial systems usually require official and rigid documents which most adults in developing regions normally lack. According to Demirguc-Kunt & Klapper (2012), approximately 20% cited cost, distance and documentation as the reason for not owning and using an account.

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Interestingly, other reasons given for not having a formal account include: in Sub-Saharan Africa 32 percent are unbanked because financial facilities are too far away, in Europe and Central Asia (ECA) 31 percent are unbanked because they do not trust banks or the financial institutions, and in Latin America and the Caribbean (LAC) 40 percent are unbanked because financial services are too expensive. Moreover, an African country like Benin has less than one (1) bank branch per 100,000 adults compared to an Asian country like Malaysia which has 11 branches per 100,000 adults. Also, a fairly advanced country like Morocco has 9 ATMs per 100,000 adults; Malaysia has 47.5 ATMs per 100,000 adults. India has almost 30 bank branch per 1000 square kilometre, while the United States has slightly more than 9 branches per 1000 square kilometre. Hence, the authors conclude that low level of accessibility to the financial system are as result of financial systems' proximity, lack of trust in banks, lack of required documentation, the cost of documentation, low level of income, religious and gender issues (Demirgüc-Kunt and Klapper, 2012). Perhaps, these socio-economic and other developmental factors are the fundamental drivers of financial inclusion in any economy. Therefore, promoting financial inclusion necessitates that the above-mentioned underlying conditions are properly put in place. This will foster the attainment of greater financial inclusion, inclusive financial sector, and ultimately accomplish the call for an all-encompassing development that impacts the lives and well-being of local citizens. These standard indicators show that developing nations' financial system inclusiveness lacks behind the rest of the world. Undeniably, this state of low financial inclusiveness is very worrying.

In comparison to financial inclusion, economic development generally refers to improvement in the well-being of people or economic agents. It is an increase in living conditions (such as income, employment, health, education et cetera), improvement of the citizens' self-esteem, and a free and just society (Todaro, 2014). According to World Bank

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Report (2008) empirical evidence which links finance directly and broadly to individuals, households, rural communities and smallholder firm's well-being, observes that studies in these areas are woefully inadequate hence they provide limited guidance for public policy initiatives on inclusive finance. This assertion implies that the proposition that the level of economic development drives or impedes financial inclusion seem to rest largely on theory than on empirical evidence. Accordingly, the first empirical study investigates whether the level of economic development fundamentally drives financial inclusion or the reverse is the case in the contexts of frontier markets.

Also, in spite of the low level of financial inclusion, financial systems tend to operate only in segments of the formal sector and have virtually ignored the large local population, low-income groups, middle-income groups, excluded groups, under-served groups, and medium-large enterprises in most developing regions. So, a common feature of many people, households or SMEs in developing regions is that they do not have and use the formal financial system. According to Demirguc-Kunt & Klapper (2012), the World Bank survey of households in 148 developing economies indicates that globally about 50% of adults do not have and/ or use accounts at a formal financial institution as at 2011. As a result, most of the financial systems are unable to mobilize and allocate their own funds from local sources thereby making the financial sector narrow, unstable, inaccessible and highly illiquid for undertaking effective intermediation activities. Yet, records show that large chunks of funds are lying idle under pillows, mattresses, and in bamboos in the rural areas of developing countries (Rutherford, 2000). In recent times more monies are still lying idle in wardrobes, suitcases and even in fridges. Consequently, large sums of funds which could be mobilized and allocated are left out of the main financial stream. Low financial inclusion will lead to limited financial intermediation which implies narrow,

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unstable, illiquid and inaccessible financial system which will, eventually, lead to low levels of economic growth and underdevelopment of the overall economy.

Therefore, given the special nature of developing economies, formal financial systems are adapting, varying and customizing their products and services to suit local demands. Kenya, for instance, has 'M-Pesa' which was launched in 2007. M-Pesa has become one of the most advanced mobile phone payment systems in the world. There are no registration charges, SMS is free for M-Pesa account holders and there are no hidden financial charges or monthly fee for using such account. Also for an M-Pesa account holder to withdraw 100 ksh to 2500 ksh, the charge is 25 ksh (US$.3251) which is lower than the cost of travelling to get the money from a bank's branch (Hughes and Lonie, 2007). Customers of M-Pesa are not required to maintain a minimum balance. Hence, the record shows amount transacted through the mobile networks in 2013 totalled about KShs 1.9 trillion, equivalent to 50% of Kenya's Gross Domestic Product (GDP). In addition, in Kenya, Equity Bank has specialized in providing small loans at very low-interest rates along with free savings accounts to rural populations and farmers who represent 75% of the working population. They have over three (3) million customers and it is the third largest bank in that country currently (World Bank, 2009).

Similarly, in South Africa, the country's largest banks have agreed, under the Financial Sector Charter, to create a special bank account for poor households called the Msanzi account. This initiative has had tremendous success with over 3.3million account holders in the first 18 months. Customers can also use any of the participating banks' ATM at no additional charge (Beck at al., 2015). Moreover, access to finance has been made easy and affordable through the use of mobile phones, mobile and doorstep banking. Mobile banking has removed distance and cost which impede access to finance. An example is the

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‘virtual bank in South Africa called the ‘Wizzit' which has no physical branches, but provides its customers with a debit card which they can use at any ATM to withdraw money. It also offers its customers access to use their mobile phones to make payments, transfers and buys prepaid airtime (Africa Competitiveness Report, 2009).

Also, in Ghana, in October, 2016, Access Bank launched public-offer of shares as efforts to promote financial inclusion i.e. greater use of equity instruments and products. It also raised equity capital to expand its operations and intermediation activities, and augments the local stock market. Likewise, promoting financial inclusion i.e. greater use of debt instruments and products, the government of Ghana issued 10 year GH¢ 200 million domestic bond at a face value of one Ghana cedi (GH¢ 1) only. It is also part of efforts to raise long-term debt finance and enrich the bond market (Bank and Financial Times, October 2016). Therefore, making financial systems work for productive and economic activities, and widespread development will require significant efforts aimed at strengthening the financial sector through promoting financial inclusion initiatives (Beck et al., 2015). In the light of the above discussions, the second study investigates how furthering financial inclusion will ameliorate the financial sector, and whether that in turn, promotes more financial inclusion in the contexts of frontier markets.

According to the Consultative Group to Assist the Poor Report (CGAP, 2009, 2010) financial inclusion is a mechanism to bring on board all households, individuals, businesses, organizations and institutions to have access and effectively use appropriate financial services and products at the easiest convenience to mobilize all idle funds. This implies that financial inclusion concept should not only be limited to poor people and micro enterprises' access or improving the use of financial services to only the existing customers, but, more significantly, to broaden access to include the unserved or under-

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served who do not fully patronize in financial services probably because their preferred products and/or services are not available. Also, the emphasis on formal financial system by Sarma (2008) implies that promoting financial inclusion initiative should not be left in the domain of only the informal and micro-financial institutions, but also it should be done by the formal financial institutions and markets such as banks, bond and stock markets. In addition the emphasis on all members of an economy means that financial inclusion should not be targeted at only the poor, excluded groups, micro and small businesses, but also the non-poor middle-income groups, medium and large enterprises, and all who are under-served probably because their preferred financial products and services are not reaching them (accessibility), are not available to them (availability) or their taste are unmet (usage).

Likewise, the recent thinking by researchers, practitioners, policy makers and development agencies that is "finance for all" (Chibba, 2009; Marshall, 2004; World Bank, 2008), includes finance for Small and Medium-sized Enterprises-SMEs- (Ardic, Mylenko, & Saltane, 2012), and should, in particular, include easy access and use of securities market products or instruments. Thus, there should be "finance for all" (Chibba, 2009; Marshall, 2004; World Bank, 2008), but this cannot be reached without the presence of increased financial inclusion within the formal financial sector. Beck *et al.* (2007) describe financial inclusion as a broad concept that relates to bringing into mainstream society all those who do not have access to finance to receive the benefits most people enjoy from using mainstream financial services. World Bank Report (2008) opines that those are often the non-poor middle-income groups who are more often excluded from many developmental policies in developing nations, like financial inclusion initiatives.

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Recent research on financial inclusion signifies that financial inclusion refers to *access to* and *use of* financial products and services at a formal financial sector (Demirguc-Kunt and Klapper, 2012). That is the *use of* an account or financial product at a formal financial institution and/ or financial market; *access to* borrow at affordable rates, lend at attractive rates or raise debt and/or equity finance; and *easy access to* and *use of* financial products/ services via modern technological devices such as through internet and mobile telephony. Against this backdrop, an inclusive financial sector is a formal financial sector with greater financial inclusion. A banking sector with greater financial inclusion is an inclusive banking sector while a capital market with greater financial inclusion is an inclusive capital market. All things being equal, inclusive banks and inclusive capital markets may have more mobilized and allocative funds to meet the demands of their existing and potential customers.

The third study therefore, looks at whether a banking sector with greater financial inclusion may promote or impede capital market development. Likewise, whether a capital market with greater financial inclusion may promote or impede banking sector development in the contexts of emerging markets. Thus, an inclusive banking sector may facilitate the development of the capital market, and equally an inclusive capital market fosters the banking sector's progress. For instance, an inclusive capital market can advise clients to open and use bank accounts to aid their operations, transactions and the monitoring of their investments with the capital market. Also, interests earned on bond purchase could be paid into a client's bank account, and monies raised from the issue of shares could also be paid into the bank account of the issuing company. Thereby making more funds available to the bank for effective intermediation, and in effect spurring the expansion of the banking sector.

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Equally, an inclusive banking sector can advise customers to raise long-term finance either in the form of a debt, equity or hybrid from the capital market, instead of from the banks where they could only offer short-term loans which will not be appropriate for undertaking capital investments and projects. They can also advise customers who buy short-term investments such as 91-days treasury bills and rollover for long period of time to rather buy long-term investments such as longterm fixed income instruments from the capital market. Inclusive banks could use greater financial inclusion opportunities to boost their profits by reassigning their excess liquidity held in reserves at the central banks into equities and bonds through the capital market. In such ways, inclusive banking sector could likewise promote the development of the capital market. In line with the above assertions, the third study investigates whether inclusive banking sector and capital market development on one hand; and on the other, inclusive capital market and banking sector development relationships compete or complement each other in emerging markets' context.

Furthermore, in spite of governments and policy-makers strides toward greater economic prosperity and competence in the developing world, their efforts are thwarted by a persistent myriad of challenges. One of such challenges is the presence of large exclusion of people, groups, and sectors from developmental processes, outcomes and opportunities. Another is inadequate domestic resource mobilization and allocation to financially empower the marginalized, the vulnerable, and excluded people, groups, and sectors. Inadequate domestic resource mobilization and allocation continue to hamper the optimal development inclusivity that the Sustainable Development Goals (SDGs, UNDP, 2015) is looking forward to achieving by the year 2030. In fact, among the regions of the world, the need for domestic resource mobilization and allocation to ultimately realize inclusive development is nowhere more pressing than in the developing world including frontier and

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emerging markets. It has, therefore, become important to scale up financial inclusion in order to promote inclusive development in the developing world in particular, frontier and emerging market nations, where comparatively a large majority of the population and sectors are excluded from actively participating and benefitting from the development processes, outcomes and opportunities. In this regard, the final and fourth study examines whether financial inclusion is a precondition for inclusive development and whether that can, in turn, promote more financial inclusion in the contexts of frontier and emerging markets.

In summary, financial inclusion is a means of offering a wide range of financial products and services to the vast under-served or unserved local population and the informal sector to adequately access and utilize affordable financial services and thereby expands the inclusiveness of the financial sector. Also, if finance must be for all, then promoting financial inclusion should not be limited to the informal financial enterprises and micro-finance institutions. The formalized financial system must as well promote financial inclusion in order to meet the preferred financial needs or demands of all economic agents, because different economic agents have different taste and preferences for different financial products and services. Moreover, financial inclusion- financial access- has been viewed in a much broader scope to cover the formal financial sector such as *banks, bond and stock markets* in a study advanced by Čihák et al. (2013***)***. This study, therefore, verifies the claims and the dataset constructed by that study.

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1.3 Research Problem

Achieving appreciable levels of financial inclusion to foster financial sector development, and development inclusivity is very crucial to policymakers of both frontier and emerging nations. Financial inclusion refers to access and utilization of affordable, available, accessible, convenient, diversified and customized financial products and services to the enormous un- or under- served economic agents and/ or excluded people, groups and sectors. Financial inclusion is a developmental policy priority that help to eradicate poverty by inducing savings and offering credit facilities to poor people, groups and vulnerable sectors. It empowers and shapes who can afford quality education and lifelong learning (knowledge acquisition), and healthy lives (healthcare /long life), earn decent income (improved living standards); who can reach and engage in a decent employment, business start-up; and who can pursue his/her economic dreams or prospects among others. Studies show that lack of access to financial services restricts growth and development (Demirguc-Kunt et al, 2008; World Bank, 2008) and hence inclusive development. Financial inclusion addresses the importance of access to and use of financial services for growth, equality and poverty reduction, as it offers widespread access and utilization of finance for un- or under- served people, groups and sectors. Also, it offers financial opportunities to everyone to empower, equip and build their capacities. Thus, financially empowered hitherto excluded groups could seek or afford basic education, healthy lives, earn income (living standards) and general wellbeing and freedom. Because, as more and more economic agents own an account, save, borrow, make payment with ease and manage their risk exposures via a formal financial sector, the more their income, health, education, employment opportunities and overall well-being improve, which is an indication of development by inclusion.

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Unfortunately, United Nations research indicates that approximately three (3) billion out of six (6) billion people around the globe, lack access to formal financial services such as a bank account, credit, insurance, payments, and pensions products (Chibba, 2007 and 2008). According to Sarma and Pais (2011), a country that lags behind in economic development cannot promote financial inclusion. In contrast, Bihari (2011) opines that financial inclusion is a necessary pre-condition to building a uniform economic development. He submits that access to financial services has a number of benefits to the individual, the community and the nation as a whole. These include providing people the opportunity to accumulate savings, access credit facilities, make investments, and protect themselves against income shocks. Also, to empower people to withstand emergencies such as illness, loss of employment or death in the family. However, in developing nations including frontier and emerging nations a large proportion of the population have low, irregular or no income, they are unemployed, they are financial illiterates, they have poor health facilities and care, they have limited market size, and their infrastructure is poor etc to facilitate the scaling-up of financial inclusion.

Prior studies such as Beck et al. (2009) and World Bank (2008) suggest that economic development is highly correlated to promoting financial inclusion. According to Beck et al. (2008) about 54% of total population in Cameroon, 94% in Malawi, 93% in Uganda and 81% in Kenya cannot afford the fees charged by banks for maintaining a checking account given their low and irregular level of income. In Sub-Saharan Africa close to 32 percent of adults are unbanked because the location of financial facility or branch is too far away (Allen et al, 2010). Also, Barr (2004), Connoly and Hajaj (2001), Kempson and Whyley (1998) conclude that the exclusion from the financial system takes place for persons who belong to low-income groups. These studies clearly show that financial inclusion cannot scale up when there is no or low economic development. The first

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research problem identified from literature is the presence of low financial inclusion in developing countries including frontier nations, and hence its underlying causes. That notwithstanding, it is obvious that empirical studies in these areas are woefully inadequate hence provides limited guidance for public policy initiatives on development-inclusive finance. But, without proven empirical evidence, frontier markets cannot design realistic developmental and financial policies intended to promote greater financial inclusion and thereby augment economic development and vice versa. Yet, other studies on financial inclusion have focused on the state of financial inclusion in developing countries (World Bank, 2012; United Nations, 2007); financial inclusion and poverty (Osei-Assibey, 2011; Chibba, 2009); determinants, challenges and opportunities of financial inclusion (Kumar, 2013; Dev, 2006); financial inclusion on banking sector development and/ or economic growth (Allen & Carletti, 2008; Beck *et al.*, 2008). All these studies either ignored or did not adequately analyze the role of economic development in financial inclusion from the perspective of frontier markets.

Besides, the current study differs from Sarma and Pais (2011) and Bihari (2011) in many ways; although the work of Sarma and Pais (2011) is on financial inclusion and development, and explored 49 countries, the study employed the OLS methodology which does not control for potential biases associated with omitted variables, simultaneity and reverse causality hence it ignored the possibility of bi-causal impacts. It also considered only the banking segment of the financial system, and moreover due to limited data, it applied the index of financial inclusion developed by Sarma (2008). But this study utilized the data from highly recognized international sources which are more comprehensive, standardized and reliable for the three market types- bank, bond and stock markets. On the other hand, Bihari (2011) probed financial inclusion impact on economic development and did neglect the possibility of economic development influencing financial inclusion, and

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moreover, the study focused only on one country: India. But the current study is conducted on twenty (20) frontier markets. Additionally, it considers the bi-directional relations by using dynamic panel instrumental variables methodology for the empirical analysis. Therefore, the contexts, time span, scope and methods applied in conducting the previous studies are different from that of the present study. In this light, this study is new, innovative and different from prior studies and will contribute uniquely to the limited extant literature, ongoing debates in diverse ways and redirect policy objectives on economic development and financial inclusion.

Financial sector development is an important component of every economic system, because economic transactions, business and investment activities are virtually impossible without a well-developed financial system. Usually, the financial sector mobilizes funds from diverse sources, facilitates payments, and allocates funds to the most productive activities which bring good returns that benefit the entire economy. Unfortunately, particularly in the developing world including frontier market nations, most financial systems are un- or under- developed and are therefore unable to perform these significant roles. For the financial sector in frontier markets to become well-developed and perform its imperative roles, there is a need to embark on greater financial inclusion. The more financial services are extended to potential and new savers, the more deposits will increase and all other things being equal the higher the supply of loanable funds to customers for productive purposes. Levine (2005) supports this claim by arguing that financial development improves macroeconomic performance as it help allocate scarce financial resources to the most profitable and productive investment projects. For instance, as more economic agents open and use bank accounts this can drive banking sector development, since more funds become available to the banking sector to intermediate effectively. In addition, as more and more enterprises and firms secure long-term debt facilities and/ or

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enlist and trade on the local capital market they expand and improve the trading activities of the capital market.

It is also plausible that a financial system that is more developed will promote financial inclusion. Since financial systems serve as an opportunity for economic agents to channel surplus or idle funds to the productive sector, a well-developed financial sector should, therefore, further promote more financial inclusion. For instance, the presence of a more advanced banking system will attract more customers, enterprises or firms to open and use bank accounts, use fast payment products, and seek credit facilities to finance their working capital and operations. Also, a more inclusive developed capital market may make more information available to investors with the consequence of faster transactions providing more opportunities to diversify risks, as markets expand through increased financial inclusion. Moreover, trading activities, particularly on the capital market, could be enhanced by promoting financial inclusion to attract corporate and business entities to desire to raise long-term capital through the bond and stock markets instead of through the credit and money markets such as banks. Further, modern development economists have emphasized that broader access to financial services should be a central development agenda of financial sector transformations and comprehensive financial sector development (Demirguc-Kunt et al, 2008).

However, research on financial inclusion promoting financial sector development and vice versa is limited. The limited studies on the area even though have probed whether financial inclusion ameliorates financial sector development, they ignored the possibility of bi-directional effects (Demirgüç-Kunt & Levine, 2008; World Bank, 2009). Also some focused on the state of financial inclusion in Africa (Klapper and Singer, 2014), on developing countries (Demirgüç-Kunt and Klapper, 2012; DFID, 2008; United Nations

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2007a) and financial inclusion and banking system (Allen & Carletti, 2008; Beck *et al.*, 2008). But the important issue of inquiry is could there be well-developed financial sector when its fundamental driver i.e. *financial inclusion* is either lacking or woefully inadequate? The present study therefore seeks to address this lacuna in the extant literature. Accordingly, the second research problem is that the financial sector in frontier markets is underdeveloped with limited outreach, and whether promoting financial inclusion can foster its development. To investigate this relationship, the study applied dynamic panel instrumental variables (IV) methodology since financial inclusion and financial sector development may be endogenously determined.

In contrast to the widely held literature that banking sector and capital market complement or compete each other regardless of their level of financial inclusiveness, the study argues that banking sector cannot independently impact the capital market unless there is the presence of greater financial inclusion. Likewise, the capital market cannot independently influence the banking sector unless there is the presence of greater financial inclusion. This claim is reinforced by the theoretical reasoning of Čihák *et al.* (2013). The third research problem is whether financial inclusion is an intervening factor in the linkage between banking sector development and capital market development in emerging markets. It must be pointed out that some prior studies have explored the relations between banking sector development and capital market development (Yartey, 2008b; Quartey and Gaddah, 2007; Demirguc-Kunt and Levine, 2001; and Levine, 1997). Some of these works establish no or weak correlation between banks and capital market development. Such findings show that there is generally low level of financial development in developing countries. Such studies also imply that factors other than the known ones might be responsible for the continuous lack of appreciable levels of the banking sector and capital market development.

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Yet, the extant literature has focused largely on the relation between banking sector development and capital market development (Kaserer and Rapp, 2014; Demirguc-Kunt *et al.*, 2012; Yartey, 2008; El-Wassal, 2005). They ignored the important role of financial inclusion on their interconnection. Others have also focused on specific countries or geographical regions, for instance, Quartey and Gaddah (2007) focused on only Ghana, while Garcia and Liu (1999) focused on only Latin American and Asian countries. In addition, most of the studies were conducted on the banking sector and stock markets but the bond market was neglected (Yartey, 2008b; Quartey and Gaddah, 2007; Demirguc-Kunt and Levine, 2001; and Levine, 1997). Moreover, some of the studies (Garcia and Liu, 1999; and Yartey, 2008b), in terms of the variables employed used only depth indicators as a proxy for the banking sector but they neglected breadth and efficiency indicators. Furthermore, some of the studies were based on only time series (Quartey and Gaddah, 2007; Yartey, 2008b) or only cross-sectional techniques (Levine, 1997; Beck *et al*, 2008). Although most of the findings of these studies show that there exists a positive relationship between the banking sector and capital market, a few (El-Wassal, 2005) or weak (Yartey, 2008b) find no relationship. Also, limited studies have been conducted on emerging markets which now serve as pacesetters or the model of development for other developing economies with regard to the subject matter.

This study is distinct, because financial sector development indicators utilized by the entire study include measures of: (1) size of the financial system (financial depth), (2) access or degree to which individuals and firms can and do use financial products and services (breadth), and (3) efficiency of the financial system in intermediating resources and facilitating financial transactions (liquidity). This implies the time frame, context and methods applied in conducting the extant studies are different from that of the present study. It is, therefore, unclear what the effects and interrelations of banking sector and

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capital market development are, considering the role of financial inclusion on their nexus in the context of emerging markets. Against this backdrop, this study seeks to address gaps identified in prior studies.

The Sustainable Development Goals' (global goals) agenda 2030 calls for action by all countries to improve the lives of people everywhere and build a better world with no one left behind through promoting inclusive finance and inclusive development among others (SDGs, UN, 2015). Goal 3 of the global goals of the SDGs (UN, 2015) aims at ensuring healthy lives and promoting well-being for all. Goal 4 aims at ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. Goal 8 aims at promoting inclusive and sustainable economic development, employment and decent work for all, while Goal 10 aims at reducing inequality within and among countries. These sections of the global goals can only be achieved by financially empowering vulnerable, marginalized, and excluded people, groups, businesses and communities to access and benefit from developmental processes. There is therefore, the need to ensure access to affordable, convenient, diversified, customized, and inclusive finance for all.

Inclusive development refers to '*progress in general well-being, freedom and emancipation combined with empowerment and equal opportunities for all citizens'*. Typically it consists of political (governance), social and economic dimensions such as basic rights, education, health, income, policy, finance and employment opportunities besides a few others. It focuses on creating opportunities and making them accessible to all, including the majority poor, illiterates, vulnerable individuals, households, excluded groups and sectors, but not just for the affluent and elite or the powerful minority. More often, many people are excluded from developmental resources, outcomes and opportunities simply because of their gender, ethnicity, age, disability, poverty or

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incapacity. The effects of such exclusion are rising levels of inequality worldwide (SDGs of UNDP, 2015). There is inclusive development when all members of a society benefit, participate in and contribute to the developmental processes equally regardless of their circumstances, i.e. economic resources and opportunities created are available to all. According to Ali and Zhuang (2007) inclusive development has addressed extreme poverty and rising inequalities in Asian countries: creating economic opportunities and broadening access to opportunities to support social and economic inclusion in the form of access to basic rights, education, health, income, employment, financial opportunities, and general wellbeing among a few others. It is undoubtful, that a pro-poor approach that equally values and incorporates the contributions of all stakeholders- including marginalized or disadvantaged people, groups and vulnerable sectors- is critical in addressing developmental issues.

But it is impossible to achieve inclusive development without promoting financial inclusion initiatives. This is buttress by World Bank research (2014; 2015) which document that lack of access to finance is often the most notable cause of persistent income inequality, poverty and slower or no growth and development. This view suggests that there is an inextricable relationship between financial inclusion and inclusive development. The concept of financial inclusion- inclusive finance- plays a prominent role in the general wellbeing and freedom of disadvantaged groups and vulnerable sectors. Notwithstanding, while the importance of financial inclusion and economic growth is recognized and fairly researched, there is very limited empirical literature if any, focusing on financial inclusion promoting inclusive development and vice versa. It is, therefore, unclear what the effects and bi-directional relations of financial inclusion and inclusive development are in the context of frontier and emerging markets. Thus, whether financial inclusion and inclusive development are inextricably related in the contexts of frontier and

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emerging markets. Therefore, the fourth and final research problem identified from literature is how to promote development by inclusion through financial inclusion initiatives i.e. financially empowering excluded people, groups and enterprises. Yet these identified research issues seem to rest largely on theories and development reports than on empirical evidence.

Besides, the World Bank (2008) call- "finance for all" implies all the key segments of the financial sector needs to be considered as an important conduit to promoting and obtaining varieties of financial products and services from and to the un- or under- served economic agents, especially in the informal sector. But, there has been some simplistic views that promoting financial inclusion is the preserve of the informal financial enterprises and micro finance institutions. Yet, financial inclusion has been viewed in a much wider perspective to cover formalized financial sector such as banks, bond and stock markets in a study advanced by Čihák *et al.* (2013). Additionally, financial inclusion has emerged as a commercially profitable engineering, therefore formalized financial system specifically capital markets practitioners and regulators need to think outside the box to unleash capital markets still stuck in doldrums, for there is a *'fortune at the bottom of the pyramid'.* Furthermore, Čihák *et al.* (2013) opine that exploring only banking sector means leaving out other equally crucial segments of the financial sector such as the bond and the stock markets which are decisive components of the financial sector in several economies.

In this regard, the study analyses the case of both the formal money and capital markets in frontier and emerging markets context. Besides, the ability of vulnerable and excluded people, enterprises and firms to reach and engage in developmental processes and opportunities are also influenced by the imperative role of physical development, in the form of modern technological and financial innovations devices such as mobile, internet

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and telecommunication facilities. Also governance indicators like rule of law, regulatory quality, governance effectiveness, and corruption control. In addition, macroeconomic stability indicators such as interest and inflation control among other economic parameters have been examined.

The scope of this present study is different from prior studies. This study is conducted in a time span of ten (10) from 2005 to 2014. However, for the last empirical chapter, data was available only for the period from 2010 to 2014. The thesis is conducted within the context of twenty (20) frontier markets, comprising Argentina, Bangladesh, Botswana, Cyprus, Ecuador, Ghana, Jamaica, Kenya, Kuwait, Latvia, Lebanon, Mauritius, Namibia, Nigeria, Panama, Pakistan, Qatar, Saudi Arabia, Sri Lanka and Tunisia; and fifteen (15) emerging markets, covering Brazil, Chile, China, Colombia, Egypt, Hungary, India, Indonesia, Malaysia, Morocco, Peru, Poland, South Africa, Thailand and Turkey. But, the last empirical chapter has data available for only seventeen (17) frontier markets (no data was available for Kuwait, Qatar, and Saudi Arabia), and thirteen (13) emerging markets (no data was available for South Africa and Malaysia). This study area is preferred because they are the upcoming or promising markets among the developing markets. Also emerging market nations serve as pacesetters or models of development for other developing regions.

It is important to note that financial inclusion is a relatively new phenomenon, so most countries in the sample did not have exploitable data before the 2000's. Moreover, it important to mention that because of mixing values (figures) the panel is unbalanced for most of the estimations conducted. The study also applies indicators that focus mainly on the "number of people" whose lives have been touched by varieties of financial products and services instead of the "amounts" deposited, loaned or avenues available. The study

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analyses the data by employing the dynamic panel generalized methods of moments (System-GMM) to control for endogeneity and measurement errors, in order to obtain unbiased, consistent and efficient estimates. Also, to ensure the validity of the instruments used, two specification tests i.e. Sargan test and autocorrelation test suggested by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1997) were conducted. Given that the present study is original, innovative and different from prior studies on the issue of exploration, it has, therefore, become clear and important to provide answers to the following questions.

1.4 Research Questions

1. What are the fundamental drivers and key determinants of financial inclusion in the context of frontier markets?

2. How can a well-developed financial sector be achieved in frontier markets, when the level of financial inclusiveness is woefully inadequate?

3. Do the banking sector and the capital market of emerging markets substitute or complement each other in the presence of greater financial inclusion?

4. Is there inextricable relation between financial inclusion and inclusive development of frontier and emerging markets?

In the light of above-stated research questions, the study seeks to achieve the following objectives.

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1.5 Research Objectives

The general objective of the study is to find out whether the level of economic development drives financial inclusion, and how financial inclusion can in turn promote financial sector inclusiveness and development, and inclusive development in the contexts of frontier and emerging markets.

In this regard, the specific objectives are stated as follows.

1. To examine the key fundamental drivers and key determinants of financial inclusion in frontier markets.
2. To determine the role of financial inclusion in financial sector development in frontier markets.
3. To analyze banks and capital markets casalities in the presence of greater financial inclusion within the context of emerging markets.
4. To investigate whether financial inclusion is a precondition for promoting inclusive development in frontier and emerging markets.

Stated explicitly, the first empirical study examined how the level of economic development first drives financial inclusion, and second, how that in turn fosters higher level of economic development. The second empirical study examined whether increased financial inclusion improves the development of the financial sector, and whether that in turn, promotes higher financial inclusion in frontier markets context. The third study analyzed whether greater financial inclusion plays a significant role in the linkage between banking sector development and capital market development in emerging markets. Finally, the fourth study empirically investigated whether financial inclusion plays an inextricable role in promoting inclusive development i.e. development for all.

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1.6 Hypotheses

1. *Ho_{1a}: The key fundamental drivers and key determinants of financial inclusion cannot promote or inhibit the levels of financial inclusion in frontier markets.*

   Ho_{1b}: The level of financial inclusion has no influence in augmenting the level of economic development in the contexts of frontier markets.

2. *Ho_{2a}: Financial inclusion has no independent role in fostering financial sector development in frontier markets.*

   Ho_{2b}: Financial sector development has no independent effect on financial inclusion in frontier markets.

3. *Ho_3: Banking sector and the Capital market have an independent effect on each other in the absence of* greater *financial inclusion in emerging markets.*

4. *Ho_{4a}: Financial inclusion is not a precondition for promoting inclusive development in frontier and emerging markets.*

   Ho_{4b}: Inclusive development plays no role in spreading financial inclusivity in frontier and emerging markets.

1.7 Significance of the Study

The study will enrich our understanding of the literature on the state, analyses, challenges, progress and prospects of financial inclusion, financial sector inclusiveness and development, and inclusive development in developing nations, in particular in the contexts of frontier and emerging markets. Also, it will enable readers to better appreciate the significant role of financial inclusion in financial sector inclusiveness and development, and economic and inclusive development for the developing world in general, and frontier and emerging markets in particular. It will deepen on-going debates

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on economic development and financial inclusion, and their spillover effects on financial sector inclusivity and development especially the banking sector and capital market, and financial inclusion and inclusive development. It will create the awareness of the need for financial practitioners, regulators and policy-makers to promote the inclusiveness of both the banks and the capital markets to enable both markets to provide complementary roles.

This thesis seeks to improve intuitions and understanding of how frontier and emerging markets can make use of a diverse range of policy incentives in order to widen inclusiveness in the process and benefits of development, and financially empower economic agents to work, save, and invest. It will inform policy-makers, which of the drivers of financial inclusion do really foster or impede development that should trickle down to local communities so that appropriate measures could be taken to promote, eradicate or curtail its effect. It is intended to stimulate discussions and advance further research on the area of exploration. Policy implications necessary for realizing a competent and resilient economy in the presence of greater financial inclusion will be provided by the findings of the analysis. It offers policy-makers, regulators and other stakeholders like financial institutions, managers, investors, entrepreneurs, academics and statisticians a clearer sense of ability to exploiting available policy space and best practices based on outlay of the policy recommendations of the study. It will also fill the existing gap in the literature on economic development, financial inclusion, inclusive financial sector and inclusive development in the contexts of frontier and emerging markets. The study will therefore, be very useful to academics, finance practitioners, finance analyst, policy-makers, regulators and the general public as well as serve as a reference point for further studies or research.

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1.8 Plan of Chapter Development

The thesis comprises seven chapters which are organized as follows: Chapter one is the general introduction to the study which includes a thesis statement, background to the study, research problem, research questions, research objectives, hypotheses, the significance of the study, plan of chapter development and a conclusion to the chapter. This is followed by an overview of key research areas/ concepts, review of theoretical and empirical literature, and conceptualization and the general framework of the thesis in chapter two. This is then followed by four stand-alone empirical chapters on each of the specific objectives. Chapter three presents the first empirical study that investigates the level of economic development and promoting financial inclusion in frontier markets. Chapter four is the second empirical study, it examines the role of financial inclusion in financial sector development with evidence from frontier markets. Chapter five presents the third empirical study, it analyses banks and capital market causalities by modeling the role of greater financial inclusion in the linkage with evidence from emerging markets. Chapter six provides the fourth and last empirical study, it examines whether financial inclusion is a precondition for inclusive development in the contexts of frontier and emerging markets. The final chapter is chapter seven and it concludes the entire study. It provides a summary of the key findings, outlines implications of the study, offers policy recommendations, highlights on limitations to the study and a direction for future research.

1.9 Conclusion

The chapter introduces the entire study. It comprises the thesis statement, the background to the study, the research problems, the research questions, the research objectives, the hypotheses, the significance of the study, the chapter organization and a conclusion. The thesis is conducted with a burning passion to apply local initiative such as promoting financial inclusion in addressing the persistent challenges associated with financial sector

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inclusiveness and development, as well as economic and inclusive development. Addressing the persistent challenges in the aforesaid areas requires progressively promoting greater financial inclusion (domestic resource mobilization and allocation). As high levels of domestic resource mobilization and allocation may promote an inclusive financial sector and augment the process of economic prosperity and inclusion, especially frontier and emerging markets of the developing world. Therefore, this thesis focuses largely on how inclusive finance can drive a developed financial sector and inclusive development in frontier and emerging markets' context.

The study gives valuable and interesting insights which indicate that economic development necessitates greater financial inclusion and this in turn, ameliorate the financial sector and also augments inclusive development. It highlights the disappointing levels of financial inclusiveness in the developing world which impede the development of the financial sector. In addition, it gives insights into the significant role of scaling up financial inclusion to promote inclusive development that would reach and engage all including the marginalized, vulnerable and excluded people, businesses and communities. Moreover, it provides actions for policy-makers and governments to increase the levels of financial inclusion especially in the contexts of frontier and emerging markets.

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CHAPTER TWO

REVIEW OF THEORIES, CONCEPTS AND EMPIRICAL LITERATURE

2.1 Introduction

This chapter sets out the theoretical and empirical literature for the subject under study. It evaluates the body of theoretical knowledge on the issue and key related concepts strengthening the study. It also, surveys the existing empirical literature, and as well provides insights on the theoretical underpinning of the methodology applied for the study. It moreover, assesses the limitations of the literature explored, and conceptualizes the entire thesis. Besides, pertinent and closely related empirical literature have been accentuated in each of the ensuing empirical chapters.

2.2 THEORETICAL LITERATURE

2.2.1 Theories of Economic Development

According to Peet and Hartwick (2009) development denotes making a better or enhanced life for everyone. A better life for all entails satisfying basic needs i.e. enough food to keep a good health, a harmless and fit place to live, cheap services obtainable by everyone, and being handled with dignity and respect. They reiterate that development is a desired objective, but not everyone considers development is attainable at the moment. Development, considered as a better life, is an influential perfect reasoning, because it demands make people to work hard to touch and amend lives forever. The authors opine that development is positive and ideal, which connotes it alters the world for the better. They postulate that modern advances in science and technology, social organizations, democracy, rationalize ethics and values come together to produce a far improved world

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for all (Peet and Hartwick, 2009). This suggest that development means start altering the world from the bottom instead of the top.

In addition they put forward that development is fundamentally different from economic growth. According to them economic growth i.e. increases in Gross Domestic Product (GDP) implies improved economic conditions as result of improved living standards (income per capita). It means more individuals, households and firms can afford better and improved goods and services. For instance, economic growth is attained when there is improved economic conditions as result of say a well-functioning financial sector, whereby more individuals, households and firms can afford better and improved financial products and services. Also, achieving a more massive economy i.e. increases in income per capita can occur without touching problems like poverty or inequality when all the increases in GDP go to a few people, which may not "trickle down" (Peet and Hartwick, 2009) to the common person. The authors further ascribe that development comprises human freedom in two parts namely liberation from the variations of nature, thus better appreciation of earth dealings tracked by carefully applied know-how, and self-freedom, control over the circumstances under which human nature is made, rational and democratic exertion control above the cultural creation of the human disposition. Consequently, development signifies enhancement in a complex of mixed natural, cultural, economic, and political conditions (Peet and Hartwick, 2009).

Similarly, Amartya Sen's theory (2000), states that freedom of development is interested in how society endows individuals the capability to participate in providing their own jobs, controlling their own affairs and partaking in self-government. Equally Todaro (2014) defines economic development to mean progression in the well-being of people or economic agents. It is an improvement in living conditions (e.g. income, employment,

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health, education etc), improvement of the citizens' self-esteem, and a free and just society. Therefore, development may be described as an activity, or a series of activities, or a process which either improves the immediate living conditions– social, cultural, economic, financial, political, environmental etc.- or improves the potential for future living or both.

2.2.2 The Phases of Theories of Development

Theories of development have long historical, sequential and sprouting perspectives. Gupta *et al.* (2015) state that development evolves from the 1940s universal human rights; in 1950s investing in nations sluggish in expansion; in the 1960s focusing on human rights to protect social, economic and political rights; and externalized environmental controls (Carson, 1962). Also, in the 1970s the need for a systematized feedback on the externalized environmental effects; in the 1980s merged development and environment via sustainable development (WCED, 1987). Moreover, in the 1970s concentrated on how persistent poverty, inequality and unemployment demand for a stout development dedication, a rural focus, income redistribution, and human development pointers (Thorbecke, 2006). In addition, in the 1990s the focus was on post-development criticism of expansion as a dialogue and 'a must' to study social movements (Escobar, 1995); including the realisms of the poor by partaking in development (Chambers, 1997); attention on freedom, entitlements, and capabilities (Sen, 1999); two corresponding procedures concentrating on social, environmental and third world women's survival (Shiva, 1989); and emancipation (Tinker, 1990). In 2000, these were all echoed in the Agenda 21 of the United Nations (UNCED, 1992) and the Millennium Development Goals (MDGs, 2000) as opportunity to prioritize the bottom billion (Collier, 2007); and currently the Sustainable Development Goals of 2015 with its top-most priority goals focusing on 'inclusive development' (UNDP, 2015).

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2.2.3 Measuring Development: Human Development Index and its Criticisms

The best known measure for upsurge in general wellbeing and freedom (human development) of people in a society is the Human Development Index (HDI). The Human Development Index (HDI) as computed by the United Nations Development Program (UNDP) is applied by the study. This index combines per capita income of a country with two other indicators i.e. health (measured by healthcare/life expectancy) and education (measured by literacy rate) to obtain a single index of "development". The HDI measure is derived from a different conception of development in terms of access to nutrition and health services, knowledge, security, leisure, and political and cultural freedom. An HDI score below 0.5% which represents low development, and can be found in 29 countries in Africa out of 31 countries in the world, while the other 2 are in other developing nations. Countries at the top of the HDI have score above 0.9% and it symbolizes very high development (UNDP, HDR, 2015).

Usually, researchers use gross domestic product (GDP growth per capita) and/ or human development index (HDI) to proxy economic development, but the use of either has its own limitations. For instance, GDP does not take into account the work done by women (house wives) such as preparing food, household chores, and caring for children even though these constitute vital productive activity (Beneria, 2003). In addition, unequal distribution of income (income inequality) implies the per capita GDP is not a good indicator of the quality of life for the majority of people in a country. Similarly, the HDI is regarded as partial measure of general wellbeing and freedom in a country. This is because it is based on few indicators of development such as health, education and income, ignoring developmental indicators like physical infrastructure such as paved roads, energy (electricity) and telecommunication devices.

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Besides, Roger (1980) argues that the consistency and the characteristics of data i.e. the indicators for computing the HDI differ significantly from nation to nation. In that, their characteristics such as education, income or production are in fact national specific but not universal. The author alludes that only data which is estimated using conventional accounting procedures are reported by countrywide and worldwide agencies. Subsequently, much of the unreported economic activity in the developing world are glossed over when measuring the economy's output especially women's work. Therefore, the official measurement of growth and for that matter development may only be a minor presentation of the real economy, whose accurate measurements are unknown. Likewise, enrolment in a public school is used to measure education, thereby, excluding informal learning and educational institutions. Additionally, the measurement of health excludes medical attention given by unorthodox traditional healers, hence it does not account for dissimilarities in quality of life. Even though, both measures have some drawbacks, the HDI is used as the 'economic development index' for the current study, because it is a better proxy for measuring human well-being and freedom.

2.2.4 The Sustainable Development Goals of 2015

The Sustainable Development Goals (SDGs) of 2015 are bold commitments to finish the Millennium Development Goals (MDGs) which was started by the United Nations (UN) in 1990, and end poverty in all dimensions and forms by 2030. According to the UN, the 2030 Agenda for Sustainable Development includes a set of Seventeen (17) Global Goals, and they are intended to end poverty, fight inequality and injustice, and tackle climate change by 2030 (UNDP, SDGs, 2015). The thesis gives brief insights into four (4) of the global goals that motivate the entire study.

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2.2.4.1 Goal 1: No Poverty

No poverty is the goal one (1) of 17 Global Goals, and it is intended to put an end to poverty in all forms everywhere. Wiping out poverty of all forms remains one of the topmost challenges fronting humanity. Although the number of people living in life-threatening or extreme poverty has declined over a half i.e. from 1.9 billion in 1990, to 836 million in 2015, still too many people are struggling to meet basic human needs (UNDP, SDGs, 2015). Worldwide, more than 800 million people still live on less than $1.25 a day, of this (800 million), most lack access to clean drinking water, adequate food, and sanitation. Besides, women are more probable to live in poverty than men, because of unequal access to education, paid work, and property, and moreso as economic growth is unstable. Also, in other regions such as sub-Saharan Africa and South Asia development has been limited, so those regions account for 80% of people living in extreme poverty globally (UNDP, SDGs, 2015). The goal one (1) involves increasing access to basic services and resources, targeting people living in vulnerable situations, and supporting deprived communities (UNDP, SDGs, 2015). Moreover, poverty is more than lack of income, and resources to guarantee a bearable livelihood. Its manifestation includes hunger and malnutrition; social discrimination and exclusion; limited access to education, health, and other basic services; and the lack of access to participate in decision-making. Although much efforts has been made to curb poverty considerably, many more need to be done to entirely eradicate this canker worm. Hence, ending poverty is the first and the most important of 17 Global Goals of 2030 Agenda for Sustainable Development (UNDP, SDGs, 2015).

2.2.4.2 Goal 3: Good Health and Well-Being

Good health is the goal three (3) of 17 Global Goals, and it is aimed at ensuring healthy lives and promoting well-being for all. The MDGs made historic achievements in

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improving maternal health, reducing child mortality, fighting HIV/AIDS, Malaria and other diseases. Also, globally, since 1990, there has been more than 50% drop in preventable child deaths. Maternal mortality also reduced by 45% worldwide. New HIV/AIDS infections dropped by 30% between 2000 and 2013, and in excess of 6.2 million lives were likewise saved from Malaria (UNDP, SDGs, 2015).

In spite of the incredible success, more than 6 million children continue to die before their fifth birthday every year. Besides, 16,000 children die every day from preventable diseases like measles and tuberculosis, while AIDS is currently the leading cause of death among young people in sub-Saharan Africa, and a region still sternly devastated by the HIV epidemic. In addition, each day hundreds of women die during pregnancy or from child-birth connected problems, and, in developing areas, only 56% of births in remote areas are attended to by skilled medical professionals (UNDP, SDGs, 2015). These deaths could be avoided through education, immunization campaigns, prevention and treatment, effective medication, sexual and reproductive healthcare. The goal 3 of the SDGs therefore, make a bold commitment to end the epidemics of malaria, tuberculosis, AIDS, and other communicable diseases by 2030. Thus, it aims to achieve worldwide health coverage, and provide access to effective and safe medicines, and vaccines for all. Accordingly, providing access to affordable medicines as well as supporting research and development (R&D) for vaccines is an integral part of this process (UNDP, SDGs, 2015).

In this regard, although significant strides have been made in increasing life expectancy and reducing some of the common killers associated with child and maternal mortality. Many more efforts are required to fully eradicate a wide range of diseases, and address many different persistent and emerging health issues (UNDP, SDGs, 2015).

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2.2.4.3 Goal 4: Quality Education

Quality education is the goal four (4) of 17 Global Goals and it is aimed at ensuring inclusive and equitable quality education, as well as promoting lifelong learning opportunities for all. Since 2000, there has been massive strides in achieving the target of worldwide primary education. Consequently, in 2015, the total enrolment rate in the developing world reached 91%, and the universal number of children out of school also declined by almost half. Moreover, there has been a sweeping rise in literacy rates, and so, many more girls are in school than ever before. All these are undeniably incredible successes (UNDP, SDGs, 2015). However, these achievements have encountered tough challenges in the developing world due to tall levels of poverty, armed conflicts and other emergencies. For instance, in North Africa and Western Asia, the proportion of children out of school has seen an increase due to ongoing armed conflict. Indeed, this is a worrying trend. Nonetheless, among all developing regions, Sub-Saharan Africa made the greatest evolution in primary school enrolment from 52% in 1990, up to 78% in 2012. But great disparities still remain, for instance children from the deprived or poorest households are four (4) times more likely to be out of school than those of the affluent or richest households. Likewise, disparities between rural and urban regions also remain high. Furthermore, achieving quality and inclusive education for all, buttresses the conviction that education is one of the most powerful basis for improving people's lives, and a proven medium for sustainable development (UNDP, SDGs, 2015).

So, the goal four (4) ensures that all girls and boys complete primary and secondary schooling which should be free by 2030. Also it aims to provide access to affordable vocational training, so as to eliminate gender, and wealth inequalities with the aim of attaining universal access to equal and quality higher education. Additionally, to ensure that all learners acquire the skills and knowledge needed to promote inclusive development

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through equal access to all levels of education, among others (UNDP SDGs, 2015). Furthermore, the world has achieved equality in primary education between girls and boys, but few nations have achieved the target at all levels of their education. Therefore, notwithstanding, the successes, greater strides for achieving the global education objectives are evidently desirable.

2.2.4.4 Goal 10: Reducing Inequalities

Reducing inequalities is the goal ten (10) of 17 Global Goals, and it is aimed at reducing inequality within and among countries. It is well documented that income inequality is on the rise, with the richest 10% earning up to 40% of total global income. The poorest 10% earn only between 2 and 7% of total global income. In developing countries, inequality has increased by 11%, if the growth of population is taken into account (UNDP, SDGs, 2015). These widening disparities are a call for actions that require the adoption of sound policies to empower the bottom percentile of income earners and promote economic inclusion of all regardless of sex, race or ethnicity. Income inequality is a global problem that requires global solutions. The SDGs (2015) aims at strengthening the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all. This involves improving the regulation and monitoring of financial markets and institutions, ensuring services are provided by all segments of the financial system, and promoting financial inclusion to where the need is greatest. Therefore, reducing inequalities between the most vulnerable nations continue to make inroads into poverty reduction.

However, inequality still persists and large disparities remain in access to health and education services, finance and other assets. There is growing consensus that economic development is not sufficient to reduce poverty if it is not inclusive and if it does not

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involve the three dimensions of sustainable development- economic, social and environmental. To reduce inequality, policies should be universal, in principle paying attention to the needs of disadvantaged and marginalized populations and vulnerable sectors. Therefore, an integrated approach is critical for progress across the various goals (UNDP, SDG, 2015), in addressing the socio-economic inequalities that deepen poverty and leave people behind. Also, to enable excluded people, groups and sectors to realize their potential by strengthening their efforts to build a life of dignity and equality for all, inclusive development is critical. The study explores areas such as financial inclusion, inclusive financial sector and inclusive development that are in consistence with the above global goals.

2.2.5 Inclusive Development

Inclusive development refers to a process of ensuring that all marginalized, vulnerable and excluded groups and sectors are included in developmental processes and decision-making. 'Inclusive development means development for all'. That is, all must participate and all must benefit from developmental opportunities, outcomes and progress achieved. It is that development that trickles down to local citizens (Consultative Group to Assist the Poor –CGAP, 2009, 2010; Demirguc-Kunt and Klapper, 2012; and SDGs of UNDP, 2015) and includes local communities. It has the benefit of empowering or aiding vulnerable individuals, groups and sectors to insure themselves against income shocks and equip them for emergencies like illness, death and loss of employment or investment. Empowered economic agents could seek basic education, basic healthcare, decent employment, engage in decent economic activities to earn income, and general wellbeing and freedom. Therefore, development cannot effectively reduce poverty and hence inequality, unless all groups contribute to the creation of opportunities, share the benefits of development, and participate in decision-making.

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The Human Development Report (HDR) titled "Sustaining Human Development (UNDP, 2014) emphases on the numerous causes of susceptibility that operate concurrently from the global to the local level. Piketty's (2014) recent work on development emphasis the process of rising inequality in the world. According to Joseph Stiglitz (2001), there has been no improvement in wellbeing for the typical American family for twenty (20) years. On the other hand, the top (1%) of the population gets 40% more in one (1) week than the bottom 50th receive in a full year. All these evidence support the fact that merely 85 people owned half of the worth, and the income of the top 1%; and this was predicted to outstrip that of the bottom 99% by 2016 (Oxfam 2015). Hence, there is an urgent need to strategize the right policies to promote development inclusiveness especially in the developing world. Inclusive development therefore, depends on three main factors: (i) ordinary opportunities and resources available to all, (ii) how available opportunities and resources are shared among all, and (iii) whether all participate in developmental decision-making. This is because mere development is not sufficient to enable all sections of the population and sectors to benefit from developmental processes and outcomes. Development with continued inequalities and non-involvement of the majority within a country may create political and social unrest such as criminal activities from people who are persistently disadvantaged and excluded. In sum therefore, developmental inclusiveness calls for all people, groups or sectors to contribute to the creation of developmental opportunities, share the benefits of developmental outcomes, and participate in decision-making in the process of development.

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2.2.6 Measuring Inclusive Development: Inequality-Adjusted Human Development Index

The Inequality-adjusted Human Development Index (IHDI) is employed by the study as the most appropriate proxy for inclusive development. The IHDI a measure for inclusive development was first introduced in the 2010 Human Development Report (HDR) by the United Nations Development Program (UNDP, 2010). It is a measure for upsurge in general wellbeing and freedom (human development) of people in a society that accounts for inequality. Thus, the IHDI represents the degree of human development that is experienced by the average person, certain of the inequality in the delivery of education, health, and/or income attainments across people. Stated differently, the IHDI accounts for inequalities in health (life expectancy), education (schooling), and income (living standards), by discounting each dimension's average value consistent with its level of inequality. Thus, the IHDI accounts for HDI less the loss of human development due to inequality. The HDI and the IHDI are equal when there is perfect equality. The higher the variation in the IHDI and the HDI, the higher the inequality and vice versa (UNDP, HDR, 2015).

The use of IHDI has its own shortcomings, due to data limitations, it does not capture all inequalities in the HDI dimensions: some overlapping inequalities- whether the same person experiences only one or multiple deprivations are left unaccounted for. Also it does not capture unorthodox healthcare, informal education and learning, and unreported economic activities enjoyed by people in a country. Besides, it ignores other developmental indicators like physical infrastructure such as road networks, telecommunication and energy (electricity). Despite the drawbacks in the IHDI measure, the IHDI which takes into account inequalities in developmental opportunities and processes is employed as inclusive development index for the analysis in this study. This

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is because financial inclusion is believed to improve equality in human development (SDGs, 2015), which implies access to, and use of financial services will impact positively on people's lives in particular, the unbanked poor, groups and vulnerable sectors, as it empowers them to participate and benefit from developmental processes, outcomes and opportunities.

2.3 Theories of the Financial Sector

The financial sector (financial system) refers to financial institutions and markets where financial instruments, securities or assets are intermediated and traded. The financial system facilitates easy access to raise funds or capital, and an opportunity to invest in different financial instruments and products. The financial system makes it easy to obtain investments in the form of financial instruments and sell them off, and also manage risk through diversification in different financial instruments or markets. According to Kriek et al. (2008), the financial sector consist mainly of the money market (banking sector or banks) and the capital market (bond and stock markets). Financial products, instruments or securities are traded on the money market and capital market. The most common instruments traded on the money market are treasury bills (T-bills), commercial paper (CP), negotiable certificate of deposits (NCDs) and repurchase agreements (repo). The banks are usually referred to as authorized dealers of money market instruments or securities. Thus, banks are where short term debt securities or instruments with a maturity of one year or less are issued and traded.

The functions of banks in any economy include first, banks perfect the information challenges between investors and borrowers by monitoring borrowers, as well as, ensuring proper use of depositors' funds. Second, banks provide intertemporal leveling of risk that cannot be diversified at a given point of time, and as well provide insurance to depositors

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against unforeseen consumption shocks. Third, banks contribute to the progress of an economy through its pivotal role of intermediation. Also, the relative importance of the different roles of banks varies significantly across countries and times, yet banks are always central to the financial system (Allen and Carletti, 2008). The main purpose of the banking sector is to provide or finance the short-term working capital requirements of businesses and as well, provide government with short-term funding. Therefore, its progress is very important to any economy's prosperity. This is because the banking sector is considered the major provider of credit to the private sector for the facilitation of productive activities (Andrianaivo and Yartey, 2010). In many developing economies, banks are the main financial intermediaries. Banking sector development is therefore, significant in promoting access to financial services and also, the growth of the banking sector is an integral component of the financial sector. Although, most developing countries focus largely on the development of the banking sector, the 2007/8 global financial crisis has taught useful lessons with regards to focusing on the banking sector alone. The severe impact of the financial crisis on finance, banks and development sent strong signals to policy-makers, developmental partners, regulators and researchers on the need to show interest in and pay keen attention to the development of an inclusive capital market as well.

The capital market refers to the market where financial instruments or securities with maturity longer than one year are issued and traded. The capital market comprises the stock market (equity market) and bond market (debt market), for companies (firms and businesses) and government to raise long-term funds. The most common capital market instruments are ordinary shares (equity), preference shares and bonds (debt) (Kriek et al., 2008). It is an important source of financing for the corporate sector and for economic prosperity, and development of capital markets. Generally, there has been differences and

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size across the globe, as well as issuer's ability to access this market. But then inclusive stock and bond markets will allow for cost efficient reorganization of capital across business entities, it can boost the economic fortunes of a nation, as they decrease the barrier to invest in long-term projects. For instance a shareholder will be able to transfer large risk related with long-term investments, if an inclusive stock market exists. Typically, banks provide most of the finance that private firms and investors need to establish and mature. Though, a new firm may list for liquidity or raise capital from the capital market, for most firms, it is after they are reasonably established and matured, that they consider a listing on the capital market, to raise long-term finance through equity and/ or debit instruments to boost their capital status, as well as to heighten their image. Consequently, countries with a well-developed banking sector also tend to have a well-developed capital market (Levine 1997 and 2005).

Even though the existing literature have largely dedicated attention to the stock markets, very little has been done on the development of capital market due to the neglect of the bond (debt) market. The least developed segment of the developing world's capital market which appeals only to a small proportion of investors or funds seekers is the market for long-term debt. Yet, Kaserer and Rapp (2014) conclude that in recent times, the growth of the capital markets have been driven primarily by bond markets. The development of inclusive and sustainable bond markets is therefore, required to bridge the financing gap created by inadequate bank credit, and also to offer various options to invest and raise debt finance. So, the presence of inclusive banking sector and capital markets is needed to facilitate the trading and intermediation of finance. As both, play very important roles in promoting inclusive financial sector, and in the process of economic and inclusive development.

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In the light of the above discussions, the importance of the financial sector was shepherded by Schumpeter since the early twentieth (20th) century literature. Schumpeter (1911 and 1912) marshalled the early 20th century theories on the important role of the financial sector. Schumpeter (1911) theorizes that the financial sector performs wide ranging functions including mobilizing savings, managing risk, monitoring managers, evaluating projects, and technological innovations among others. He emphasis that banks and for that matter financial intermediaries are not set-up for transporting only money, but likewise for granting credit. He further ascribes that credit creation by banks is crucial for economic prosperity, and moreso, as credit provides the entrepreneur with purchasing power, lack of which it would be impracticable to produce. This means credit has to be borrowed and it can be done solely through effective financial intermediation i.e. adequate mobilization and allocation of funds from a pool of potential and existing customers. It also implies that financial systems perform the role of bridging the gap between products and the means of production, which is obtained by offering investors or entrepreneurs with purchasing power and empowering them to engage or participate effectively in productive activities, hence augmenting the process of economic prosperity.

In a comparatively recent times, Levine (1997) proposes that financial institutions and markets emerge because of transaction and information costs. According to him, financial systems perform five core functions to reduce such costs. These include mobilization of savings, allocation of resources, facilitation of exchange, amelioration of risk, and exertion of corporate control. He further states that financial systems that are able to perform these functions well, will ensure that transaction and information costs will result in increased savings, efficient investment and eventually faster economic growth rate. Correspondingly, Levine (2005) opines that financial institutions and markets can speed up economic growth through numerous channels by pooling and mobilizing savings from

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a large number of investors, easing the exchange of goods and services through the provision of payment services, diversifying increasing liquidity and reducing inter-temporal risk, acquiring and processing information about enterprises and possible investment projects, and monitoring investment and carrying out corporate governance. This signifies that improving intermediation, transformative role, and information on firms, managers and market conditions through financial systems can accelerate economic growth and development.

More recently, World Bank (2006) avers that financial systems in developing economies face four key challenges, aside low saving rates, which comprise scale, informality, governance, and shocks. *Scale* refers to the dominance of small size economies, more especially of national financial systems, firms and their customers. Sparse population result in isolation and great distances (in terms of travel time) to service points which serve as a major scale problem. This translates into high unit cost and inability to afford certain services provided by the financial sector as these services usually involve fixed costs and increasing returns to scale up to a certain point. *Informality* refers to the status client enterprises, financial intermediaries and markets within which they work. It reduces the extent to which conditions and reliance can be placed on systemic documentation, adherence to predictable schedule and or fixed place of business. In some instances, the financial sectors have to compromise their standards and conditions to suit the local environment. *Governanc*e: governance issues arise at both private and public institutional levels but they are severe in the public sector. This reduces the credibility and stability of government policy and as well increases the danger with which policy goals will be subverted on its implementation. *Shocks:* over the past half century, the developing world has been associated with high incidence of economic, social and political upheavals. But at the idiosyncratic level risk is very high in individuals, households who are usually below

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the poverty line, smallholder farmers, small firms and enterprises. The occurrence of such shocks increases the uncertainties and hence the cost of operation for financial systems that operate in the developing world. Thus, inherent difficulties, cost, and risks impede the development of developing nations' financial systems. Subsequently, finance for the rural economy, micro and small enterprises, poor households, low income groups, and for agriculture and for long-term project financing are largely unavailable or limited.

In conclusion therefore, individuals, firms, enterprises and corporations should have access to various options of sourcing funds; the option to raise and invest funds on the capital market through shares or bonds securities or the option to save and borrow from a bank. Thus, there should be readily provided financial products and services that enable investors to either issue or invest in shares on the stock market; issue or invest in long-term debt instruments on the bond market, and/ or save or borrow short to medium term loans from the bank. Moreover, the development of the banking sector is important to facilitate a healthy capital market, and also a well-developed bond market serves as a missing link between the bank and the stock markets. However, particularly in the developing world, most financial systems are underdeveloped, and therefore, are unable to perform the above significant mentioned roles. This is because most of the financial systems are unable to mobilize and allocate their own funds from especially local sources, thereby, making the financial sector very narrow, inaccessible, unstable, and highly illiquid.

2.3.1 Finance and the Intermediation Role of the Financial Sector

Finance is a critical requirement for economic and productive activities undertaken in any economy. The presence of a financial sector is needed to facilitate the mobilization, payments and allocation of finance for productive activity. Thus, the financial sector is

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responsible for channeling funds from surplus units to deficit units (intermediating) to aid economic transactions, investment and productive activities of every economy. Beck and Torre (2006) maintain that in the absence of transaction costs, uncertainty, and asymmetric information, access to finance is of no problem. Access to external finance will be frictionless, and limited only by the inter-temporal wealth constraint of the borrower. The implication of this is that the choice between borrowing and lending will be determined entirely by inter-temporal preferences and investment opportunities (Jappelli and Padula, 2013). Thus, decisions to accumulate savings, make payments and grant loans will be equally open to all and their application costless. Implying that financial systems will not be needed to mobilize savings, facilitate payments, and allocate loans, if savers (surplus units) could easily identify and assign their savings directly to borrowers (deficit units) based on perfect knowledge of investment possibilities. So, changes in borrowing and lending may only reflect in changes in demand and investment opportunities rather than changes in the possibility of access.

However, Stiglitz and Weiss (1981) contend that in reality, financial systems are characterized by a number of market imperfections, that is, information in the real world is neither perfect nor costless. This gives rise to the familiar principal-agent contracts and incentive problems - adverse selection and moral hazards. Stiglitz (2001) believed that financial system imperfection or information asymmetry plays a central role in financial development by influencing key decisions regarding access to finance. The finance-development nexus hypothesizes that a strong, vibrant and a well-developed financial system is a prerequisite to economic prosperity (Levine et al. 2000; Beck and Levine, 2004). For the financial sector to play an active and significant role in developmental process, attention must be devoted to mobilize funds and/or adequately allocate funds to make the financial institutions deep, liquid, accessible and ultimately efficient.

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Additionally, trading activities on the capital markets need to be enhanced via promotions to attract corporate and business entities to desire to raise long term capital through the bond and stock markets instead of through the money or credit markets (banks). If financial systems are liquid and accessible by means of their own funds mobilization and capital accumulation, these will transpire through widespread and efficient allocation of resources for productive activity and affordable external costs of finance among other factors. This claim is supported by the empirical work of Roja and Zingales (1998). They contend that at the industry level, the state of financial development reduces the cost of external finance to firms. Efficient financial sector can enhance technology innovation, intermediation, capital accumulation and hence economic development. On the contrary, an inefficient financial sector can limit existing firms' financial capacity, thereby, inhibiting their sustainability prospects and ability to take advantage of economies of scale.

Indeed, potential savers or investors' initiative are likely to be hindered by non-existence of an inclusive well-developed financial sector in any economy. It is expected that economies with well-functioning, deep, stable, liquid and accessible financial systems will have positive relation with financing and development. The financial system therefore, plays a very important role in financial intermediation and hence economic development processes. As financial intermediation measures the degree to which society's savings is put to its best use. Subsequently, all things equal, when an economy is growing the incomes and savings of the people also increases, which correspondingly increases the deposits in financial institutions. As the deposits increase in the financial institutions, the advances or loans by the financial institutions also increase resulting in an upsurge of money in circulation of the economy (Paul & Vassili, 2001).

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Unfortunately, the developing world's financial institutions have difficulty transforming collected deposits into loans or credit to the private sector. The scale of financial intermediation is relatively low compared to the rest of the world. For instance, most financial institutions in Sub-Sahara Africa intermediate averagely at 69%, compared to at 108% for financial institutions in Asia and Pacific region, and at 126% in high income countries (Beck *et al.*, 2011). This is because the financial sector in the developing world is characterized by large financial exclusion which results in limited financial resources mobilization and allocation to the private sector. This situation makes the limited available credit very expensive and highly unreliable, thereby making loans or credit less attractive to individuals, firms and corporate entities. Thus, low intermediation resulting from low funds mobilization, limited allocation and access to financial products and services cripple economic and productive activities. This is because, entrepreneurs and investors normally lack adequate capital or finance to proceed with investment projects from their own resources. Likewise, this reiterates Honoham and Beck (2007) assertion that developing countries have low levels of deposits which in turn leads to lower levels of credit to the private sector. Implying the low level of credit is associated with poverty and medium term growth as it captures the degree to which the financial system channels society's savings for productive uses. Besides, low intermediation poses a serious challenge to financial systems in developing regions, as lack of adequate funds for credit points to long-term obstacle in the economic growth process, and hence in the processes of development.

Against this backdrop therefore, increased financial inclusion vis-a-vis local funds mobilization, readily accessible credit and allocation, comparatively low priced credits and high quality customized products and services is more likely to promote economic and productive activities with its spillover effects on inclusive development.

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2.3.2 Financial Sector Challenges

Many developing countries including frontier and emerging market economies are often challenged with the difficulty of mobilizing enough funds for allocative purposes. The problems for developing countries to mobilize and allocate funds are multifold, but key amongst them are first, with a large share of economic activities in the informal sector, countries' characteristically have limited saving capacities. Second, most countries are saddled with allocation challenges due to the lack of collateral requirement, the number one reason for loan refusal, which is the result of inefficient registration system for moveable assets and the lack of adequate documentation for ownership claim. For instance, according to the Africa Competitiveness Report (2009), collateral requirement is the second highest in the world at 137% of the value of loan (World Bank, 2009). Also financial and technological innovations, initiatives and wide-range of particularly private activities and partnerships lack contribute significantly to the un- or under- development in the financial sector of the developing world. Hence, access to finance remains a major challenge for developing economies.

Therefore, given the special nature of developing economies, formal financial systems are adapting their products and services to suit local demands. Also, considerable attention is being devoted to formulating regulations, measures and initiatives best suited for increasing mobilization and allocation of financial resources in more recent times. However, drawbacks to dimensions of the financial sector as expounded below pose difficulties to its development.

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2.3.3 Dimensions of the Financial Sector

2.3.3.1 Financial Sector Depth

Financial depth captures the financial sector relative to the entire economy. It is the measure of the size of banks, other financial institutions, and the financial markets in a country, taken together and compared to a measure of economic output (GDP). Usually, monetary aggregates (money supply) such as M_2 and M_3 as a ratio of GDP are mostly used to capture the overall size or depth of the financial system. But over the past two decades, a bevy of changes such as the introduction of new depository products, the movement of consumer funds from bank deposits to investment accounts and the internationalization of the economy has caused the money supply data to fall out of sync with other economic indicators.

Following this setback, financial depth, approximated by private credit to GDP, has received much focus. Also, it is closely linked to poverty reduction and it has a strong statistical link to long-term economic growth. Private credit to GDP differs widely across countries, and it correlates strongly with income level. For example, private credit to GDP in high-income countries is 103% in high-income countries, which is more than 4 times the average ratio in low-income countries. Based on this measure, economies with deep financial systems including many of those in developed world such as Europe, Canada, and Australia; with South Africa, also among those in the highest quartile in terms of private credit to GDP. Averaging from 1980 to 2010, private credit of financial institutions was less than 10% of GDP in Angola, Cambodia, and Yemen, while it exceeds 85% of GDP in Austria, China, and the United Kingdom. Unfortunately, all the eight (8) countries (Switzerland, Luxembourg, United Kingdom, Portugal, Netherlands, Spain, Ireland, and Cyprus, ranking from the lowest to the highest) with the highest ratios of private sector credit to GDP as of 2010 had a major crisis episode since the year 2008. Moreover, in

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Asia, the private credit ratio is about 30% in countries such as India, Philippines, and Sri Lanka; and higher than 80% in Malaysia and Thailand (Sacardoti, 2005). On the average bank credit is low of about 15% of GDP in a developing region like Africa, while in that of a developed region is more than 100% (Andrianaivo and Yartey, 2009).

In spite of the over focus on the latter, both M_2 to GDP and private credit to GDP are commonly used to measure financial depth in the financial development literature (e.g., King and Levine, 1993; Levine, Loayza, and Beck 2000). In Sub-Sahara Africa, financial depth averages 29%, compared to 61% in Asia and Pacific, and 97% in high income economies over the period 1990 to 2011(IMF, 2012). Also, African banking sector which is the most under-developed comparatively, has total assets size of US$ 220 million only, compared to an average of almost US$ 1billion of total balance sheet size for a non-Africa bank (World Development Indicators, 2012). Besides, the empirical literature has focused more on banks (due to data availability), but measuring financial system depth should go beyond just banks, and cover financial markets as well. For instance, stock value traded averaged over 75% in China (both Mainland and Hong Kong SAR), Saudi Arabia, Switzerland, and the United States (90th percentile). In support of this reasoning, earlier work by Levine and Zervos (1998) indicates that to proxy the size of stock markets, a common choice in the literature is stock market capitalization to GDP, while for bond markets, a commonly used proxy for size is the outstanding volume of private debt securities to GDP. The sum of these two provides a rough indication of the relative size of the financial markets in various countries. There is a substantial variation in this indicator among countries, by size and by income level. For example, from 2008 to 2010, the world-wide average value of this ratio was 131%, but individual country observations ranged from less than 1% to 533%. The average for the developed regions was 151%, while the average for the developing regions was about a half at 76%. Also, in developed countries,

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financial markets tend to play a relatively larger role relative to the size of the economy. Countries in the highest quartile of the world-wide distribution of financial depth include not only Canada, Japan, and the United States, but also other major recent developed countries like China and Malaysia (World Bank, 2012). However, in many developing countries, the financial systems are generally, small in absolute and relative size, hence having low financial depth.

2.3.3.2 Financial Sector Efficiency

The efficiency of the financial system is usually attributed to its ability and capacity to allocate financial resources more effectively at an affordable cost and improve the liquidity of financial products or services. An efficient financial sector is expected to function in a low-cost manner so as not to transfer high cost of operating unto its customers. The standard measures for financial efficiency comprise; interest rate spread, cost to income ratio, and net interest margin, aside a few others. Although efficiency can mean high profitability, it is also plausible that an inefficient financial sector could also enjoy high profitability. For instance, between 1999 to 2011interest margin was 655 basis point for financial systems in Africa, compared to 380 basis point for East Asia and Pacific, and 448 basis point for the other regions of the world (Global Financial Development statistics, 2012).

High interest margin implies cost of funds or credit is also high which signifies that depositors are not well compensated for their deposited funds. Also, in Western Africa, financial sector inefficiency (cost-income) is highest, yet, most of the banks make high profits, in spite of operating in an environment with weak supporting institutions. This explains why they lack the ability to allocate resources efficiently and the high non-interest and net interest income associated with banks in the region. The efficiency of the financial

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sector is very critical to any economy's prosperity due to the fact that it is the leading provider of loans or credit to the private sector for the facilitation of productive activities, and to foster the process of economic growth and development.

2.3.3.3 Financial Sector Stability

Financial sector stability denotes the soundness of a financial system. The standard measure for financial systems' stability is the Z-score, where high values show high stability and vice versa. Instability in the financial sector affects its effective operation, while unstable financial system affects effective financial resource mobilization and allocation, which turn to hinder economic activities. Beck et al. (2008) note that banks in developing nations earn high margins due to high risk of intermediation which is transferred in high priced credit. Consequently, though financial systems in Africa operate at high cost, generally, they are more profitable compared to the rest of the world. This is because financial system instability affects macroeconomic performance and leads to under-developed financial sector. For instance, the African financial system suffered financial crisis between 1980 to 1990, 1991 to 2000, and 2007 to 2008. Although the latter did not adversely affect financial and economic system directly, Nigeria was the only African country that experienced a major banking sector crisis in 2009. This ailment was resolved when the central Bank of Nigeria provided significant liquidity and guarantees in bank liabilities (Laeven and Valencia, 2012). This also shows that financial systems in Africa are more stable than that of Asia and Latin America (GFD, World Bank, 2012).

According to Honohan and Beck (2007) from the literature of the 20th century, banking system crisis in developing nations was mainly caused by financial governance problems such as bad banking practices, weak regulatory and supervisory framework. Similarly, loose standards give rise to bad bank lending practices which affects bank stability

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whenever the loans turn bad. Correspondingly, financial theory suggests that securities markets are particularly good at augmenting liquidity and allowing agents to custom design risk management tools. Theory further suggest that intermediaries have a comparative advantage in reducing informational asymmetries. In sum, instability in the financial sector cannot lead to an expansion of the local financial systems which are prerequisite for investment to thrive and thereby foster growth and development. Unfortunately, there were no stability variables for all the market segments or dimensions and so it could not form part of the analyses conducted.

2.3.3.4 Financial Sector Inclusiveness

Financial sector inclusiveness symbolizes access to and/or use of a mainstream financial systems' products and services. Financial sector inclusiveness in developing regions compared to the rest of the world is very low. Worldwide, nearly 2.5 billion of adult's population are excluded from the formal financial system. This comprises in developing regions about 40 to 41% of adults are unbanked, in low income countries 19% of adults are unbanked, in lower middle income countries 28% of adults are unbanked, and in upper middle income countries 58% of adults are unbanked, compared to high-income countries where only 11% of adults are unbanked. Also, 40 % of adults who saved at a formal financial institution in the past year in developing economies consist of Europe and Central Asia (ECA)-15% of account holders saved formally, Sub-Sahara Africa (SSA) -58% of account holders saved formally, and Latin America and Caribbean (LAC)- 23% of account holders saved formally. Moreover, the vast majority are in developing countries, particularly Africa, where Southern Africa has 58%, Western Africa has 77%, Eastern Africa has 77%, Northern Africa has 80% and Central Africa Republic has 93% of adults not having and using bank accounts (Demirgüc-Kunt and Klapper, 2012).

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In addition, the likelihood of holding a bank account is higher where the costs of opening and using a bank account are lower, and the level of branch or ATM penetration is higher. For instance, India has almost 30 bank branch per 1000 square kilometer, while the United States has slightly more than 9 branches per 1000 square kilometer. Also, in Sub-Saharan Africa, 32% are unbanked because financial facilities are too far away, in Europe and Central Asia (ECA) 31% are unbanked because they do not trust banks or the financial institutions, and in Latin America and the Caribbean (LAC), 40% are unbanked because financial services are too expensive. Hence, the authors opine that the low level of accessibility to financial system is as a result of financial systems' proximity, low level of income, lack of trust in banks, lack of required documentation, cost of documentation, and religious and gender issues (Demirgüc-Kunt and Klapper, 2012).

Similarly, Finscope Access Strand's report by FinMark Trust (2014) documents financial inclusion levels across different African countries as follows: South Africa has the highest financial inclusion, with adults who are banked at 62.5%, adults who use other formal financial system at 5%, and that of informal financial system is at 9%. It has the lowest financially excluded adults at 23%, while Kenya has adults who are banked at 23%, adults who use other formal financial system at 18% and informal financial system at 26%, but financially excluded at 33%. Also, Botswana has adults who are banked at 41%, and those who use other formal financial system is at 18% and informal financial system is at 8%, and with 33% adults financially excluded. In addition, Nigeria has 30% adults who are banked, adults who use other formal financial system is at 6% and informal financial system users at 17%. Nigeria has comparatively high level of financial exclusion of 46%. Finally, Ghana has 34% of adults who are banked, 7% who use other formal financial system, 15% of adults who use informal financial system, and 44% of adults are financially

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excluded. These figures look disturbing as they put all the developing regions in bad taste for investors' attraction and impede the financial system functioning.

Furthermore, in Africa, only 6% of people who live in North Africa and Middle East have and use account with a formal financial system, compared to about 27% of households in Asia and Pacific who have accounts with a formal financial sector. Financial accessibility is very low in developing nations and, therefore, replicates in high cost for financial services and products. For instance, the financial system in Africa indicates variations in the levels of financial accessibility across African regions; in Central Africa, bank account holders are less than 1% of the total population (IMF, 2009). This implies that very few individuals and enterprises have and use bank products and services in Central Africa. The limited access to financial system services in these regions can be attributed to limited mobilized and allocative funds i.e. financial inclusion. Besides, an African country like Benin has less than one (1) bank branch per 100,000 adults compared to an Asian country like Malaysia which has 11 branches per 100,000 adults. Likewise, a quite advanced country like Morocco has 9 ATMs per 100,000 adults, while Malaysia has 47.5 ATMs per 100,000 adults. The possible reasons ascribed to the low level of mobilized and allocative funds include but not limited to low level of income, proximity of financial system, low level of education and general knowledge on financial products and services. Also, lack of necessary documentation, strong religious beliefs and gender issues, lack of trust in the financial system, and weak legal and judicial system, were noted to account for the low level of financial inclusion in developing regions (Demirguc-Kunt and Klapper, 2012). This records show financial systems in developing regions lack not only depth, stability and efficiency but more perilously accessibility (breadth). These standard indicators account for why developing nations' financial systems lack behind the rest of the world (Čihák *et al.*, 2013). Indeed, the developing world's degree of financial inclusiveness over

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time can best be described as disappointing and a worrying trend. Therefore, for the financial sector in the developing world to become strong, vibrant and healthy in terms of its size (depth), access (breadth), soundness (stability) and efficiency (liquidity), and be able to perform its imperative roles, and to augment development, there is a need for the entire financial sector to embark on massive financial inclusion initiatives.

It is against this backdrop, that financial inclusion, and for that matter inclusive financial sector exploration has raised much interest among researchers. The literature in this area is shifting focus towards seeking and providing answers to the questions of why low financial inclusion, why low inclusive financial systems, why most financial systems are underdeveloped, and how financial sector development and inclusive development could be promoted. Consequently, in the light of the identified gaps, the financial system in the developing world, in particular, frontier and emerging nations, merits a critical investigation and attention with regards to its outreach and progress. In order to also, intensify the on-going debates, rekindle and redirect policy interests of developmental partners, financial regulators and governments.

2.3.4 Measures of Banking Sector Development

Various indicators have been utilized to measure financial development in the literature. Yet, the most widely applied have first been that of banking sector development measures such as broad money (money supply), credit to the private sector by bank to GDP, bank deposits to GDP, bank intermedation and interest rate spread. Money supply or money stock (M2 % of GDP) is the total amount of money available in an economy at a particular point in time. Its standard measures usually include currency in circulation and demand deposits of a country. But some economists believe that M2's relevance has waned over the past 20 years. On this note, credit to the private sector by bank to GDP (private credit

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% of GDP) is another indicator that has attracted much attention in recent times. It measures the degree to which the private sector relies on the financial system for loans to support consumption, working capital and undertake investments. Even though, it has been considered as a more suitable measure by many researchers, a very high ratio is not good for private investors. Also bank deposits to GDP ratio is another key indicator, as it shows the the resources available to commercial banks for extending loans to the private sector. This ratio looks at how successful the financial institutions are able to mobilize funds for financing projects by investors. In addition, the ratio of private credit by bank % of GDP to bank deposits % of GDP, represents bank intermediation. It is a measure of the degree to which society's savings is put to its best use. More specifically, it is defined as domestic private credit to the real sector divided by total deposits in financial institutions as a percentage of the local currency GDP. Besides, a proxy variable that has equally, received much attention in the empirical literature in this respect is interest rate spread. It is the difference between lending interest rate and deposits interest rate (World Development Indicators, 2015 and Global Financial Development, 2015).

2.3.5 Measures of Capital Market Development

Next is the financial market development indicators such as stock market capitalization to GDP, value of shares traded on the stock market and stock turnover ratio for the stock market development. The stock market capitalization to GDP is a common proxy in the empirical literature for measuring the size of stock market, while the stock market tradability, and liquidity are measured by the value of shares traded on the stock market and stock turnover ratio respectively. The least applied is the financial market indicators for the bond market such as bond market capitalization, private debit ratio and public debt to GDP. For bond markets, a commonly used proxy for size is bond market capitalization, while the outstanding volume of private debt securities to GDP and public debt to GDP

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measures its accessibility, and efficiency. The sum of these two provides a rough indication of the relative size of the financial markets in various countries (WDI and GFD, 2015). This study seeks to apply the three measures for each segment of the financial system. Thus, this study considers three segments of the financial system- banking, debt and equity markets, to provide different perspectives of financial development. Within each of the three segments, a number of alternative measures of financial market development in terms of depth (size), breadth (access) and efficiency (liquidity) have been examined.

2.3.6 Financial Sector Development Indicators Employed by the Study

For the banking sector development measures, the present study examines broad money; M2 as % of GDP (depth), bank intermediation ratio i.e. private credit provided by the banking sector divided by bank deposits both as a percentage of GDP (breadth/access), and interest rate spread i.e. interest rate on loans minus interest rate on deposits (efficiency). For the bond (debt) market development, it examines bond market capitalization % of GDP i.e. outstanding domestic private and public debt securities % of GDP (depth); private debt % of GDP (Private credit by deposit money banks and other financial institutions % of GDP) divided by debt market capitalization (breadth/access); and public debt % of GDP i.e. Credit to government and state owned enterprises % of GDP (liquidity/efficiency). Finally, for the stock (equity) market development, it examines market capitalization as a percentage of GDP (depth), the amount of stock traded (breadth/ access) and stock turnover ratio (liquidity/efficiency). These are the standard measures for the financial system (WDI and GFD, 2015).

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2.4 What is Financial Exclusion?

Financial exclusion is defined as a situation in which people do not have access to mainstream financial services such as banking accounts, credit cards and insurance policies (Goodwin *et al.*, 1999). Connolly and Hajaj (2001) define financial exclusion as having lack of access to financial services by individuals or communities due to their geographic location, economic situation or other social conditions that prevent people from fully participating in the structures or institutions of mainstream society including mainstream financial systems. Chant and Link (2004) describe financial exclusion as improvements that prevent the poor and the disadvantaged social groups from gaining access to mainstream financial system. They put financial exclusion into two broad dimensions: *Access Exclusion* and *Utility Exclusion*. According to the authors, *Access Exclusion;* includes physical and social barriers that generally prevent some individuals from accessing financial services, or makes their access significantly more difficult. The uniqueness here is that they highlight physical factors such as disability, education and information (i.e. lack of financial literacy) as well as Communication (e.g. lack of access to internet facilities, language barriers) as important factors explaining financial exclusion. *Utility Exclusion;* some financial services and products may be physically accessible to a given consumer, yet the consumer's particular circumstances may make such products much less valuable to him or her. They outline the following examples; low income consumers without a bank account often have limited choices, cash budget gives low income earners more financial control, and psychological barriers and mistrust of banks represent a form of utility exclusion.

According to Beck and Torre (2006), the reasons for people's exclusion have been attributed to socio-cultural, religious and ethnic tenacities, as well as some historical experiences. Kempson (2000; 2006) observe different underlying reasons or causes of

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financial exclusion, although he believes the precise causes vary slightly from country to country. These critical impediments include access barriers such as identity requirements, the terms and conditions of bank accounts, exorbitant bank charges; and physical access problems brought about by bank branch closures, psychological and cultural barriers. In a nutshell, financial exclusion can best be described as limited financial opportunities for economic agents of a country. Accordingly, financial inclusion has been proposed as the best developmental policy for addressing this worrying current challenge.

2.4.1 What is Financial Inclusion?

Financial inclusion refers to access to, and use of financial products and services at a formal financial sector (Demirgüç-Kunt and Klapper, 2012). That is, the use of account / product at a formal financial institution and/ or market; access to borrow at affordable rates, lend at attractive rates or raise debt or equity finance; and easy access to and use of financial products/ services via modern technological devices. Also, financial inclusion refers to the process of ensuring the accessibility, availability, and usage of the formal financial system for all members of an economy (Sarma, 2008). To satisfactorily analyze the factors of financial inclusion, Beck and Torre (2006) also point out that it is important to distinguish between two different concepts: (a). Access- the possibility to use financial products/ services, and (b). Use- actual use of financial products / services. Access is non-identical to use because economic agents- unserved and under-served individuals, households, groups, firms or sectors- might have access to financial services, but they might decide not to use them.

Beck *et al.* (2007) define financial inclusion as a broad concept that relates to bringing into mainstream society all those who do not have access to finance or receive the benefits most people enjoy from using mainstream financial services. Chakrabarty (2006) defines

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financial inclusion as delivering banking facilities/financial services to all people in a transparent and equitable manner at affordable cost. Financial inclusion relates to an absence of price or non-price barriers in the use of financial services (Claessens 2005; World Bank 2008). This implies that the financial inclusion concept should not only be limited to the poor and micro enterprises or improving access of financial services to the existing customers, but, more significantly, to broaden access to include the underserved. These are often the non-poor middle income group who are more often excluded from many developmental policies in developing nations (World Bank, 2008; Čihák *et al.*, 2013). Moreover, financial inclusion is '*Finance for All'* (World Bank Research, 2014 & 2015). In this regard, the financial inclusion concept should not only be limited to the informal financial enterprises and micro finance institutions but also to the formalized financial system. Besides, financial inclusion- access- has been viewed in a much wider perspective to cover formalized financial sector such as *banks, bond and stock markets* in a study advanced by Čihák et al. (2013). This study, therefore, verifies the claims and the dataset constructed by that study.

Similarly, according to the Consultative Group to Assist the Poor- CGAP (2009, 2010), financial inclusion is a mechanism to bring on board all households, individuals, businesses, organizations and institutions to have access and effectively use appropriate financial services and products at the easiest convenience to mobilize all idle funds. In a nutshell, financial inclusion is a means of offering a wide range of financial products and services to the vast under-served or unserved population, the informal and formal sectors to adequately access and utilize affordable financial services and thereby expanding the inclusiveness of the financial system. Amazingly, owning an account in a developing world is considered a luxury compared to the developed economy where it is a necessity. Modern development economists have emphasized that broader access to and use of

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financial services- financial inclusion- should be a central development agenda of financial sector reforms (Demirguc-Kunt et al, 2008). Financial inclusion is therefore, a mechanism to bring on board the mass population, smallholder farmers and firms in rural, local, informal and formal sectors that are unserved or under-served to have access and effectively use mainstream financial products and services at the easiest convenience. It is also, an effort to bring the large unserved population particularly in the informal sector, to the mainstream financial system in order to mobilise and allocate idle funds; and also to make financial products and services accessible to a large section of the deprived population and firms particularly in the informal sector.

The FinScope Survey report (2013) produced by FinMark Trust, indicates that South Africa had shown remarkable improvement in financial inclusion in terms of borrowing, banking deposits and insurance (from 28.9 million people in 2012 to 30.7 million people in 2013) but are still limited in the use of other financial inclusive mechanisms especially mobile banking. In contrast, financial inclusion in Namibia decreased from 51% in 2007 to 31% in 2011; where 62% of the population are banked, 65% are formally served, 46% use other formal products, and 13% are informally served (FinScope Survey, 2012). Likewise, high levels of unemployed youth and lack of basic amenities, especially in the rural areas, have significant impacts on the financial inclusive behavior of Ghanaians and Africans in general (FinScope Survey, 2010). The few Africans who save, borrow or use payment products informally, do so to meet daily household demands or needs. Moreover, over a third of adults in Africa have only primary or basic education as their highest level of education attained. The less educated and small firms in Africa use informal means to save and borrow money. Furthermore, the reports indicate that, generally, about 60% and above of African adults live in rural areas. Most of these adults are about 30 years or younger, and this age, most are usually not economically settled. Most of these adults rely

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on money from others, about 30% receive money from household members and about 20% rely on remittances from relations. Also, about 30% or below obtain income from salaries and wages with about 60 to 75% relying on farming activities to generate income. The vast majority fall within the lowest income bracket, while a sizable number of the adult population have no fixed or regular income and they receive income periodically.

Promoting financial inclusion is therefore, expected to play an important role in financial sector inclusiveness and development by providing an avenue for the financial systems to mobilise and allocate all idle funds in an economy. Thus, for the financial system to play an active and significant role in funds mobilization and allocation- effective intermediation-, attention must be devoted to mobilise and allocate funds through financial inclusion initiatives to facilitate the well-functioning of the financial sector in terms of its depth, soundness, breadth and efficiency. Furthermore, trading activities on particularly the capital market need to be enhanced via financial inclusion to attract corporate and business entities to desire to raise long term capital through the bond and stock markets instead of through the credit and money markets (banks).

2.4.2 Financial Inclusion Successes Achieved in Developing Countries

In the developing world, some countries have pursued some measures and strategies aimed at promoting financial inclusion. Access to and use of finance have been made easy and affordable through the use of mobile phones, ATMs, on-line banking, doorstep banking and on-line trading as well as offering affordable financial products and services to the unserved or underserved.

1. **M-PESA of Kenya:** Launched in 2007, M-Pesa (‘M’ stands for mobile and ‘Pesa’ is a Swahili word for money; the coinage literally denotes mobile money) is the

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most developed mobile phone payment system in the world. There are no registration charges, there are no hidden charges or monthly fees and SMS is free for M-Pesa account holders. To withdraw via a mobile phone the charge is lower than the cost of travelling to get the money from a bank's branch. Also, no minimum balance is required to be maintained. Records show that the amount transacted through the mobile networks in 2013, totaled about KShs 1.9 trillion, equivalent to 50% of Kenya's Gross Domestic Product (GDP). According to Alliance for Financial Inclusion (AFI, 2010), M-Pesa did not succeed in a vacuum but rather due to the concerted efforts of the Kenyan government, legislators and stakeholders to cooperate in implementing appropriate regulations and accountability mechanisms. Additionally, in Kenya, the Equity Bank has specialized in providing small loans at very low interest rates along with free savings accounts to rural populations and farmers who represent 75% of the working population. The Equity Bank has over three (3) million customers and is the third largest bank in that country currently (World Bank, 2009 and 2014).

2. **Msanzi of South Africa:** in South Africa, the country's largest banks have agreed, under the financial Sector Charter, to create a special bank account for poor households called the Msanzi account. Customers can also use any of the participating banks' ATM at no additional charge. This initiatives has had tremendous success with over 3.3million account holders in the first eighteen (18) months. Moreover, in South Africa, the 'Wizzit' of South Africa has specialized in providing affordable financial services to its customers. 'Wizzit' has no physical branches but makes secure financial transactions from any operator and established banks' network. It provides its customers with a debit card which they can use at any ATM to withdraw money. Wizzit, as well offers its customers access to use their mobile phones to make payments, transfers and buy prepaid airtime. Wizzit

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does not have a minimum balance requirement and does not charge fixed monthly fee. It uses a pay-as-you-go pricing model, with charges ranging from USD 0.13 to USD 0.66 per transaction depending upon the type. Customers are charged USD 5.26 to sign up. Evidence suggest that total expenditure on banking charges by Wizzit's customers is lower than the conventional banks' customers. The average expenditure in fees was typically about 20% less for Wizzit's customers than for traditional banking customers. A solution based on mobile phones and internet usage can therefore substantially reduce the cost of spreading financial services especially in areas with relatively high internet and mobile phone penetration (World Bank, 2009).

3. **Obopay services of India:** in India, the State Bank of India, ICICI Bank Ltd, HDFC Bank Ltd and Corporation Bank have launched a series of mobile commerce initiatives such as Obopay services for buying air, rail and movie tickets, recharging mobile phone subscriptions, and making other utility payments in association with mobile commerce providers. Also, in association with Rural Technology and Business Incubator (RTBI), a registered society of Indian Institute of Technology (IIT) Madras have also joined hands to set up a Mobile Payments Forum. According to the forum, those banks who opt for the Obopay services should settle fund transfers among themselves and at a later stage. If too many banks sign up for this service, The Reserve Bank of Indian (RBI) can designate one bank for a centralized payment system. Moreover, in India, while the government incurs a transaction cost of Rs.12-13 for every Rs.100 of loan disbursement, mobile banking has helped reduce the cost to a mere Rs.2.6. The State (SKS) has developed a mobile banking initiative in partnership with Andhra Bank, in which customers use designated SKS banking agents to deposit money into Andhra Bank accounts and use a mobile phone to repay SKS loans. As part of

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offering this channel for customers, SKS sells low-cost mobile phones to its customers and provides them a loan to finance the purchase (Ivatury 2008).

Besides, in 2006, the government constituted a committee on financial inclusion to pursue a strategy to achieve higher financial inclusion in the country. According to the Inclusive Finance India Report 2014, the financial inclusion promotion by the government of India led to over 150 million new accounts which was expected to be opened. The report further show that within two months when the scheme was launched nearly 70 million accounts were opened, overdraft facility of Rs 5,000 and an accident insurance cover of Rs 100,000 was provided to every account. Also, the Reserve Bank of India fostered the introduction of "no-frills account", and relaxed the 'know your customer' requirement to ease bank account opening and general cards for low deposits and credit. Thus, the more financial services are extended to more savers, enterprises, farmers, traders etc, the more deposits will increase and all other things being equal the supply of loanable funds will increase significantly.

4. **Pakistan:** in Pakistan financial inclusion success has widely been acknowledged by the international community. Pakistan's microfinance regulatory framework was ranked globally at the top in 2010 and 2011 by "the Economic Intelligence Unit" an arm of UK's "The Economist" magazine. Expansion of retail network of microfinance through agents and mobile phone channels has brought in almost 18,000 branchless banking outlets surpassing the 10,000 conventional bank branches. This was due to the combined daily transaction volume of the two prominent branchless banking models 'Easy paisa' and 'Omni' that now averages over 175,000, with an average size of Rs 3,700. As per independent World Bank-CGAP study in 2011, the size of the transaction indicates enhanced access to

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finance by the unbanked people via Easy paisa, an important milestone for financial inclusion in Pakistan. Moreover, according to the Global Findex 2014, access to finance has improved to 23% from low figure of 10% in 2008. Mobile banking services like Easy Paisa of Pakistan provide good examples of the adoption of mobile banking as a tool of financial inclusion (World Bank, 2012).

5. **Sri Lanka:** according to Global Findex, 2014, Sri Lanka has 83% of access to finance which is a high level of financial inclusion compared to other South Asian countries. Its financial sector comprises of different components of financial institutions that provide financial varieties of products and services such as loans, savings, pawning, leasing and finance, and remittance and money transfer facilities among a host of others to their clients. Subsequently, a larger share of households in Sri Lanka access multiple financial institutions and markets for their credit and savings needs.

6. **Ghana:** in Ghana, in 2002, the United Bank for Africa introduced the cashless account when they gained entry to the Ghanaian banking industry. Also, the UT Bank, Ghana introduced "bank on wheels" in 2013 to enable banking to extend financial services to the majority. Likewise, the Fidelity Bank, Ghana in 2014, introduced the SMART account to help people meet the requirements to open and own an account. Also, the Royal Bank of introduced the TRB Intelligent ATM which offers customers easy access to make deposits. Further, in Ghana, in October, 2016, Access Bank launched public-offer of shares as efforts to promote financial inclusion i.e. greater use of equity instruments and products. It also raised equity capital to expand its operations and intermediation activities, and augments the local stock market. Likewise, promoting financial inclusion i.e. greater use of debt instruments and products, the government of Ghana issued 10 year GH¢ 200

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million domestic bond at a face value of one Ghana cedi (GH¢ 1) only. It is also part of efforts to raise long-term debt finance and enrich the bond market (Bank and Financial Times, October 2016).

The Global Findex (2011) notes that mobile money achieved the broadest access of 140% of adults reported to have used mobile money in Africa. Indeed, there are no doubts the challenges posed in bringing financial services to the rural dwellers in developing nations include great distance travelled to the nearest bank, poor infrastructure, and poor telecommunication (CGAP, 2009). Therefore, to ensure idle financial resources are adequately mobilized and allocated, financial institutions need to adapt products to suit and attract the patronage of local customers who are usually poor and illiterate. For most developing economies, policies are being implemented to eliminate financial exclusion.

Even though, some successes have been realized, it is mostly at the micro level. There is therefore, the need to promote more financial inclusion at the macro level as well. These special cases explored, provide good examples of the banking sector adopting the internet and mobile telephony as a tool for scaling-up financial inclusion, and this should be replicated by the entire formal financial system. This implies that the major formal financial systems such banks, bond and stock markets can also promote more financial inclusion. Besides, delving into literature advanced markets has achieved comparatively large financial inclusion levels in their formal financial sector, whilst emerging and frontier markets have had less success. Yet, reach in this area has received limited scholarly attention in both context.

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2.4.3 Is Promoting Financial Inclusion a Preserve of Informal Financial Institutions?

There is an erroneous perception that promoting financial inclusion is the preserve of the micro finance institutions (MFIs). But, several studies have identified a number of challenges and shortcomings of financial inclusion promotion by MFIs. First, most MFIs lack self-sustainability-one of the reasons for this might be lack of scale. Thus, most of them seem to be too small to reap the necessary scale of economies to become financially sustainable. Second, Cull et all (2007) find that those that become mature and financially sustainable tend to pay less attention to the poor. Third, MFIs more often than not have limited resources to meet the demands of larger micro-enterprises. Fourth, most MFIs are still non-deposit takers (only engage in microcredit), and are therefore constrained by savings mobilization as well as over-reliance on dwindling donor funds. Lastly, they also charge higher lending rates, which microenterprises and firms are unwilling to pay as they mature. In order to overcome these challenges, Helms (2006) proposes a drastic improvement in three outreach indicators - scale, depth and cost. The author maintains that MFIs must scale up quality of financial services to serve large numbers of people (scale), while reaching increasingly poorer and more remote people. Also, they should be efficient in order to lower their delivery cost that will in turn lower costs to clients.

Besides, the World Bank (2008) argues that the wider efforts for inclusive finance cannot be left in the hands of informal and micro financial institutions, because it is not only the poor that need financial services, but equally the not-too poor households, the middle income groups, and medium scale enterprises, most of whom are also not financially included. Moreover, as noted earlier, financial inclusion has been viewed in a much broader perspective to cover formalized financial sector such as banks, bond and stock markets in a study advanced by Čihák *et al.* (2013). Further, the authors maintain that

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focusing on only the banking sector implies missing important components of the overall financial system. As the banking sector is only one component of financial systems, but then stock and bond markets are important components of the financial sector in many economies (Čihák *et al.*, 2013). Hence, developmental policy makers are shifting their attention to building inclusive financial system not focusing on only micro finance and bank services, but on an array of other formalized financial products, most importantly from capital markets to foster both inclusive financial sector and inclusive development. For instance, recently in Ghana, in October, 2016, Access Bank promoted financial inclusion by public-offer of shares at GH¢4 per share to economic agents with idle funds to become part owners of the bank (shareholders). Also, it has raised equity capital to expand its operations and intermediation activities and hence augmenting the local stock market. Likewise, in promoting financial inclusion, the government of Ghana issued 10 year GH¢ 200 million domestic bond at a face value of one Ghana cedi (GH¢ 1) only. This is part of the efforts to raise long-term debt finance from economic agents with idle funds desiring to become long-term lenders. Also it is to meet government financing requirements while it enhances the bond market (Bank and Financial Times, October, 2016). In a nutshell, it is this formal financial sector -bank and capital market- gap in the inclusivity of finance literature that the present study seeks to fill.

2.4.4 Measures of Financial Inclusion

Global databases such as World Bank's Global Financial Development and World Development Indicators, and UNDP's Human Development databases, measure bank financial inclusion on three critical parameters of basic banking services- branch penetration (branch per 100,000 Adults), deposit penetration (number of bank accounts per 1,000 adults), and credit penetration (borrowers from commercial banks per 1,000 adult). The study adopts these parameters but utilizes ATM penetration (ATMs per

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100,000 Adults) instead of branch penetration for the banking sector. Likewise, they measure capital market financial inclusion on three critical parameters of capital market services per each segment as follows; for bond market- credit to private firms penetration (loans from entire financial system to private sector % of GDP), and financial intermediation penetration (entire financial system credit divided by entire financial system deposits); and for stock market accessibility- listed firms (number of companies listed on the local stock market), and stock market penetration (listed companies per million people). The study utilizes parameters that focus mainly on the "number of people" whose lives have been "touched" by varieties of financial products and services instead of the "amounts" deposited, loaned or available avenues (GFD and WDI, 2015).

Aside the above financial inclusion measures, due to the important role of modern technological and financial innovation devices as major drivers of financial inclusion, the study estimated internet usage, that is, individuals who have used the Internet (from any location) in the last 12 months, per 100 people. Mobile usage is mobile telephone services that provide access to voice communication using cellular technology, per 100 people. Also telephone usage is fixed telephone plus Mobile phone subscriptions per 100 people and telecommunication usage- telephone (fixed and mobile) plus Internet subscriptions per 100 people, jointly and independently to observe their individual and combined significant outcomes.. These are standard financial inclusion measures and are sourced from the World Bank's World Development Indicators database, and positive relations are expected (WDI, 2015).

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2.5 Theoretical Underpinning of the Methodology Applied for the Study

2.5.1 Dynamic Panel Generalized Methods of Moments (System_GMM)

Generally, estimating linear regression models under certain conditions such as endogeneity, cross-sectional, heteroskedastic errors of unknown functional form is one of the perilous issues encountered in the econometric literature. Though the form of the heteroskedasticity is unknown empirically, Roy (2002) states that it can lead to erroneous inferences. To deal with any associated econometric challenges, the present study used the dynamic panel generalized methods of moments (System-GMM) technique developed by Holtz-Eakin, Newey, and Rosen (1990), Arellano and Bond (1991), Arellano and Bover (1995), and Blundel and Bond (1998). The dynamic generalized-methods-of-moments technique is also referred to as the dynamic panel instrumental variables approach.

Theoretically presented below is the dynamic panel data model as proposed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundel and Bond (1998).

$$y_{i,t} - y_{i,t-1} = (\alpha - 1) y_{i,t-1} + \beta' X_{i,t} + \varepsilon_{i,t} \qquad (1)$$

$$\varepsilon_{i,t} = \mu_i + \nu_t + e_{it}$$

$$E[\mu_i] = E[\nu_t] = E[e_{i,t}] = E[\mu_i \nu_t e_{i,t}] = 0$$

where $y_{i,t} - y_{i,t-1}$ is dependent variable i.e. the financial inclusion, financial sector development or level of inclusive development in a country i at a time t; α is a parameter reflecting the speed of convergence to the steady state values of the dependent variables (y) for (α-1<0); $X_{i,t}$ is a set of explanatory variables, for e.g. including economic

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development, financial inclusion, financial sector or an interaction term, with associated parameter β; μ_i captures unobserved country-specific effects; ν_t is a period-specific effect common to all countries; and $\varepsilon_{i,t}$ is the white noise or disturbance term.

Eq. (1) can be simplified as follows:

$$y_{i,t} = \alpha y_{i,t-1} + \beta' X_{i,t} + \varepsilon_{i,t} \quad (2)$$

First differences are mandatory in order to remove the country-specific effects. From Eq. (2), the lagged difference in the level of inclusive development is correlated with the disturbance term and this may produce an endogeneity of the explanatory variables, X. Caselli et al. (1996) opine that a number of studies have ignored the consistency problems that arise from the simultaneous presence of the country-specific effect and the lagged dependent variable or any regressor that correlated with the country-specific effect. This will be the case if Eq. (1) was estimated using fixed or random effect models. In addition, Blundell and Bond (1998) argue that persistence in the explanatory variables may adversely affect the small sample and asymptotic properties of the difference estimator. To overcome this difficult, the difference estimator further combined with an estimator in levels to produce a system estimator.

Subsequently, to deal with the econometric limitations, the use of instrumental variables is required. Arellano and Bond (1991) proposed a few steps to overcome the problem, which later became the standard for estimating Eq. (1). The first step is to eliminate the time effect, t by subtracting from each variable its cross average in period t.

Next, the variables are transformed into first differences to eliminate the individual effect as stated in Eq. (3):

$$y_{i,t} - y_{i,t-1} = \alpha(y_{i,t-1} - y_{i,t-2}) + \beta'(X_{i,t} - X_{i,t-1}) + (\nu_{i,t} - \nu_{i,t-1}) \quad (3)$$

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Arellano and Bond (1991) essentially proposed estimating Eq. (3) with GMM using lagged levels of the endogenous variables as instruments. But, the selection of instruments is important. The GMM difference estimator uses the lagged levels of the explanatory variables as instruments under the condition that the disturbance term is not serially correlated and that the levels of the explanatory variables are weakly exogenous – that is, they are uncorrelated with future error terms. If the condition that the explanatory variables are weakly exogenous fail to hold, which is more likely to occur in the present context as higher inclusive development may promote more inclusive finance, both $X_{i,t}$ and $X_{i.t-1}$ are correlated with the disturbance term in Eq. (3).

So, only levels of variables lagged 2 years or more may be used as instruments. Then, the following moment conditions are used to calculate the difference estimator:

$$E\left[y_{i,t-s}(\varepsilon_{i,t} - \varepsilon_{i,t-1}) \right] = 0 \text{ for } s \geq 2;\ t = 3,\ldots\ldots T \qquad (3.1)$$

$$E\left[X_{i,t-s}(\varepsilon_{i,t} - \varepsilon_{i,t-1}) \right] = 0 \text{ for } s \geq 2;\ t = 3,\ldots\ldots..T \qquad (3.2)$$

This is necessary for the estimation as the equation in levels uses the lagged differences of the explanatory variables as instruments under two conditions. First, the error term is not serially correlated. Second, although there may be correlations between the levels of the explanatory variables and the country specific error term, there is no correlation between the difference in the explanatory variables and the error term.

This yields the following stationarity properties:

$$E\left[X_{i,t-s}(\varepsilon_{i,t} - \varepsilon_{i,t-1}) \right] = 0 \text{ for } s \geq 1;\ t = 2,\ldots.T \qquad (3.3)$$

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The additional moment conditions for the regression in levels are:

$$E\left[y_{i,t-s} - y_{i,t-s-1})\varepsilon_{i,t} \right] = 0 \text{ for s = 1} \quad (3.4)$$

$$E\left[X_{i,t-s} - X_{i,t-s-1})\varepsilon_{i,t} \right] = 0 \text{ for s = 1} \quad (3.5)$$

In conclusion, the GMM system estimator is obtained using the moment conditions in Eqs. (3.1), (3.2), (3.3), (3.4) and (3.5).

Accordingly, the dynamic panel estimator is viewed as a better or superior technique for examining the models in this study. Most particularly, as the validity of the instruments applied in these regressions are examined by two different diagnostic tests (Blundell and Bond, 1998). The first, the Sargan test it examines the null hypothesis that the instruments used are uncorrelated with the error terms, as it tests the overall validity of the instruments used in the estimation process. The second test is proposed by Arellano and Bond (1991), it examines the hypothesis that the error terms from the estimated regressions may be first-order serially correlated but not second-order serially correlated.

2.5.2 Principal Component Analysis (PCA)

The Principal Component Analysis (PCA) is a statistical technique used to analyze interrelationships among a number of parameters or variables to explain them in terms of common underlying dimension (s). It is a reducing technique that is applied where there are several variables or parameters which are highly correlated (Jolliffe, 2002). The main purpose of the PCA is to condense the information contained in the number of original variables into a smaller set of variable (s), with a surety of minimal loss of information. Given the complexity associated with using different indicators, where necessary the study

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employed PCA technique to aid ascertain a principal component factor (PCF) or an index for further analysis.

2.5.3 Diagnostic Tests (Sensitivity Analysis)

The relevant diagnostic tests are performed to address the assumed (suspected) sensitivity issues associated with employing panel data. The sensitivity tests are also necessary to check the fitness of the model and the validity of the estimation technique employed by the study. These tests include the Hausman test, endogenity test, and test of cross section dependency etc.

2.5.4 Hausman Test

The Hausman (1978) test is used to test the presence of endogeneity among variables in a model, and to verify or confirm whether the empirical regression model favors fixed effects rather than random effects. Thus, the fixed effects models examine the relationship between the dependent and the independent variables within a model. Fixed effect is used when it is assumed that the cross-sectional units possess certain individual characteristics that are unique to the individual selected countries and are time-invariant. These characteristics may influence or bias the dependent and the independent variables, so they need to be controlled. Subsequently, country fixed effects can be employed to control for unobserved country-specific heterogeneity peculiar to the individual selected countries. This is the reasoning behind the assumption of the correlation between the model's error term and the explanatory variables. In sum, fixed effect models remove the effect of the time-invariant characteristics from the explanatory variables to enable one to assess the regressors' net effect. In this light, the model cannot be estimated using Ordinary Least Squares (OLS) techniques due to the possible existence of endogenous variables.

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2.5.5 Endogeneity Test

The **e**ndogeneity test is performed to verify or confirm whether the variables used are endogenous. Endogeneity challenges arise whenever some of the right-hand side variables are correlated with the random error term of the model. This, if not rectified can affect the empirical estimations giving rise to dynamic panel bias. Financial variables such as bank accounts per 1,000 adults, bank borrowers per 1,000 adults, bank deposits and bank credit can be identified as possible endogenous variables. This is because higher levels of accounts per 1,000 is expected to result in higher levels of bank deposits. Also, higher levels of bank deposits will definitely lead to higher levels of bank credit which implies high levels of bank borrowers per 1,000 adults. Thus inclusive banking sector will in turn promote effective banking intermediation and vice versa, thereby resulting in a well-functioning banking sector. Accordingly, the model cannot be estimated using fixed effects technique.

2.5.6 Test for Cross-Sections Dependency

Due to globalization, increasing financial and economic integration of financial entities and countries across the world, there could be strong interdependencies between cross-sectional units. This may arise due to the presence of common shocks and unobserved components that ultimately become part of the error terms. According to Driscoll and Kraay (1998), the fixed or random effects estimators are consistent if these unobserved common factors are uncorrelated with the included regressors, even though inefficient and the estimated standard errors are biased. Conversely, the fixed or random effects will be biased and inconsistent if the unobserved components that created the interdependencies across the cross-sectional units are correlated with the included regressors. This challenge merits testing for the presence of cross-sectional dependencies among the cross-sectional units. The problem could be addressed using the Pesaran's CD test command which is

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more suitable where T (the time dimension of the panel) is less than N (the cross-sectional dimension). The test results however identify no such dependency among the cross-sections and hence suggest that the GMM can used in the regression analysis.

2.6 EMPIRICAL LITERATURE

2.6.1 Finance, Growth and Development

The extant literature on finance-development nexus hypothesizes that a strong, vibrant and well-organized financial sector is the pivot to economic progression in both the developing and developed world. Bencivenga and Smith (1991) argue that the financial system can affect real growth by improving allocation efficiency of finance for investment. Thus, a well-functioning financial sector can help channel local and foreign resources more efficiently into the productive sectors of an economy, and thereby create more value for investors to thus spur the development process. Similarly, the financial sector improves the liquidity and tradability of financial assets, provides opportunities for risk diversification, reduces information asymmetry, promotes funds mobilization and allocation, attracts foreign capital and improves corporate governance practices of firms in any economy ((Demirgüç-Kunt and Klapper, 1996). The authors further argue that market size is positively correlated with the ability to mobilize capital and diversify risk.

Furthermore, Levine (1997) opines that the five basic functions of the financial system, namely; (i) savings mobilization, (ii) facilitating goods and services, (iii) risks management, (iv) allocating resources and (v) exerting corporate control affects economic development through capital accumulation and technological innovation. Also, economic development is a necessary condition for improved financial services. This implies that economic development is facilitated by well-functioning financial system and the reverse applies. Meanwhile, Luchetti et al (2001) identified two broad channels by which financial

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system influence the process of economic growth. First, capital accumulation which is attributed to Schumpeter (1912) emphasize the allocation of credit and states that "development is driven by innovations, the different employment of existing services of labour and land". The second channel which is attributed to Hicks (1969) states that "by reducing transaction costs and by diversifying risks, banks enable the mobilization of savings to finance the investments necessary to stimulate and sustain economic growth. Yet, the level of financial system inclusiveness has been ignored, instead financial systems tend to operate only in small segments of the formal sector and have virtually ignored the large local population and informal sector in most developing nations.

According to Rajan and Zingales (2003), financial development includes but not limited to the process that marks the expansion in the quantity, quality, affordability, accessibility and liquidity (efficiency) of financial systems' products and services. Financial sector development signifies the process that characterizes expansion and improvement in the size, accessibility, stability and efficiency in the financial system to play its intermediary role effectively. This view is supported by the works of Čihák *et a*l. (2012; 2013). A developed financial sector can gauge, subdivide and spread difficult risks at the least associated cost. In other words, general improvement in the financial sector will enable it provide attractive and high quality services and products to a wide range of customers at easily accessible service points or outlets at reasonable and predictable costs. Thus, financial systems play intermediation, informative and transformative roles in the process of economic development of nations. They mobilize financial resources from both internal and external sources, price the funds and allocate the funds to their most productive uses. Whenever this significant role is not performed effectively, it has serious implications on the financial sector and hence economic activities of such nations.

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The banking sector is the main provider of credit to the private sector for the facilitation of productive investment. Since the 1990s, credit by banks has increased tremendously in most economies (Andrianaivo and Yartey, 2009). Demirguc-Kunt, Feyen and Levine (2013) find that the effect of capital market depth on economic development becomes stronger for countries with more developed capital markets. Furthermore, a study asserts that the stock market has two different effects: first, the stock market has a positive effect on economic growth because it transfers surplus funds to long-term capital markets by encouraging investments and influx of capital; second, the stock market can interrupt savings activities because it focuses on providing higher returns, additional liquidity and real capital (Tai-Yoo Kim *et al.,* 2014). Bond market development is expected to make an important contribution to economic growth through improving access for firms to either invest surplus funds or for deficit units to issue bonds or borrow on long term (Adelegan, 2008).

The extant body of literature suggests that both banks and securities markets provide important, although different roles, services and products to facilitate economic growth and development. Though, a few found no or weak relationship between financial development and economic growth (Atindehou *et al.,* 2005). The balance of theoretical reasoning and empirical evidence suggests that finance has a central positive role in economic development process. The majority of earlier studies analyzing the causalities used either time-series modelling or cross-sectional approach to test the hypothesis, hence the findings remain inconclusive. Modern researchers are fanatical to empirically determine causal relationship utilizing dynamic panel instrumental variable approach to equip the devising of pragmatic policies. Besides, these studies overlook the potential positive effects of unrestricted access of financial services and products i.e. financial inclusion on financial system and its spillover effect on economic growth and

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development. Therefore, in spite of the macroeconomic and financial reforms in the 1980's mobilized and allocative funds, financial deepening, tradability and liquidity still remain a dominant problem for most financial systems in the developing world. Consequently, for adequate financial resource mobilization and allocation by the financial sector to accelerate development and promote inclusive development, a well-developed and inclusive financial sector through financial inclusion is required.

In sum, financial sector development is an important component of every economic system. Economic transactions and investment activities are virtually impossible without available well-developed financial systems. The financial system, consisting mainly of the banking sector and the capital market, plays a very important role in the economic system of every economy. The banking sector is the most advanced of the financial systems particularly in the developing world. This claim is supported by the empirical work of Andrianaivo and Yartey (2009). Bank, among the many roles it plays in an economy, mobilize financial resources and allocate them for productive uses. Thus, the banking sector plays a critical role of channeling resources into productive investment to foster growth and development. Banks provide most of the funds that local firms need to finance their businesses, grow and get well established. After most local firms are reasonably established, they then consider a listing on the capital market by issuing either debt or equity instruments. Likewise, foreign investors borrow funds from the local banking system and capital market to supplement their own financial resources to facilitate the employment of modern and advanced technologies.

So, a well-functioning and inclusive financial sector can help channel local and foreign resources more efficiently into the productive sectors of an economy, and create more value for investors, and thereby spur growth and inclusive development. However, formal

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financial systems tend to operate only in small segments of the formal sector and have virtually ignored a large population, the informal sector, and sections of the formal sector in most developing economies, including frontier and emerging market economies.

2.6.2 Finance, Inequality and Poverty Alleviation

Studies that link financial systems to economic prosperity have long and growing historical views. A vast majority of researchers provide support for positive linkage between finance and growth, though a few others challenge this claim. Based on theoretical and empirical intuitions, finance impacts on GDP growth (living standards) in two main ways; first, indirectly through its significantly positive impact on growth, and second, more directly if it causes restructuring of the financial sector in a manner that expands access to financial services. Although growth is necessary, it is not a sufficient condition for sustained poverty alleviation. According to Dollar and Kraay (2000), developing countries that have experienced sustained high growth over the last few decades have abridged their absolute 1evels of poverty. Other Empirical evidence show that while there are significant differences in the relationship between growth and poverty alleviation across countries, the incomes of the poor tend to rise proportionately with average upsurge in incomes (Dollar and Kraay, 2001; Jalilian and Kirkpatrick, 2002) building on the latter authors' earlier work, advances the case for pro-poor growth focus. They disentangled the effect of growth on poverty reduction by identifying three potential sources of pro-poor growth i.e. growth that leads to a fall in a given poverty measure. These comprise a high growth rate, a high sensitivity of poverty to growth, and a poverty-reducing pattern of growth. Their results conclude that, roughly, seventy percent (70%) of the variation in short-run changes in poverty can be explained by growth in average incomes. In the medium to long-term, growth will account for an impressive ninety-seven percent (97%) of the changes in poverty per headcount.

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Otsubo et al. (2015), on the mutual relationships among Growth-Inequality-Poverty-Triangle, claim that poverty alleviation can be realized from two different effects: (i) economic growth, and (ii) distribution of income and assets. In their opinion, whether growth effect and distribution effect can be treated independently depends mainly on growth inequality trade-off. Additionally, they observe that in a short to mid-term, development strategies that affect economic growth and income distribution can be undertaken independently. However, they caution that when taking the effect on poverty reduction into account, economic growth strategy that causes additional inequality in income distribution must be avoided - "if not it should be accompanied with adequate polices that transfer income and consumption to the poor". The outcome is that growth often leads to reduction in poverty, therefore redistributions of wealth could self-augment growth. For that reason, finance which influences positively on growth should aid reduce poverty, albeit indirectly. Besides, the poor can derive many potential benefits from having a direct access to finance, but the important question is how finance can be provided directly to the poor. The best answer to this question so far has amazingly gone in favor of promoting financial inclusion incentives. Since its introduction, financial inclusion has realized astounding successes **(**Morduch and Haley, 2002; Mor and Ananth, 2007; and Beck *et al.*, 2009**),** as it has reduce income inequality and poverty.

Similarly, Asian Development Bank (2015) documents that financial inclusion is a key strategy in reaching the SDGs (2015) and in building global inclusive financial systems that meet the needs of the poorest people and that the poor are viable customers. Supporting this view, the World Bank (2015) also reiterates that financial inclusion is an important initiative with robust influence on the realization of the SDGs and distinctive among all development interventions. According to the World Bank (2015), financial inclusion has the potential to deliver social benefits on a permanent and large scale basis.

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Some of these existent studies show positive effect of financial inclusion as contributing to improving health, education as well as empowering the poor and excluded groups to engage in meaningful economic activities to earn a decent income. One of the most effective pathways to bridge the problem of deeply entrenched inequalities is to promote increased financial inclusion. Therefore, financial inclusion meets the financing needs of the poor, excluded groups and sector; thus, it has the ability to reduce poverty and inequality hence, it plays a significant role in inclusive development.

2.6.3 Development and Inclusive Development

Development may be defined as an activity, or a series of activities, or a process which either improves the immediate living conditions- social, economic, financial, political, cultural, environmental etc. or increases the potential for future living or both. Evidence suggests that access to credit markets increase parental investment in the education of their children and reduce the substitution of children out of schooling and into labor markets when adverse shocks reduce family income (Belley and Lochner 2007). Moreover, development results either in the immediate betterment of life of the inhabitants or help in the provision of a better life in future (Mohanty, 2013). The United Nations Development Program (UNDP, 2010) emphasizes that inclusive development is more than income, instead, it is about putting other indicators of improved wellbeing (human development) foremost. According to Ravallion and Chen (2003), development is possible by mass participation, which can be possible through the process of inclusion. The process of inclusion engages each individual, households, firms, and all stakeholders and makes them feel valued. More recently, the UNDP Human Development Reports document that there are growing gaps between the incomes of the affluent-elite minorities and the toiling-illiterate majorities (2015). Also, according to Asongu *et al*. (2014), various Human Development Reports (HDRs) indicate that SSACs have the highest IHDI in health, South

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Asia and the Arab States have the highest IHDI in education, while Latin American and the Caribbean have the highest IHDI in income. According to SDGs (2015), international debates on inclusive development do emphasize on the importance of political, governance, social, economic and finance as the relevant factors among others.

Accordingly, the debate on inclusive development is usually understood in the framework of participatory and civil society centered approaches. But, this is often done without directly channeling the distribution of power and resources between state elite, rich and dominant economic actors on one hand, and illiterates, asset-poor and marginalized economic actors on the other (Bass, 2007). Besides, the concept of participatory development submits that the protection of interest of disadvantaged individuals, groups and sectors, within an economic system can be measured by the extent of their involvement in relevant financial empowerment processes, rather than their outcomes which are decisive for achieving inclusive development (Di John and Putzel, 2009). Ali (2007) documents that rising inequalities pose danger to social stability and sustainability of the development process itself. Besides, Asongu *et.al.* (2015) observe that when external debt is endogenous to globalization, the effect on inclusive human development is negative, but when it is interacted with globalization, the effect is positive. Their finding suggests that loans which integrate a grant element have a better chance of affecting inclusive development. However, the goal of reducing inequality is not to sacrifice the rich at the expense of the poor.

Inclusive development is, therefore, a capacity building and emancipation concept that aims at empowering the majority poor, marginalized people and vulnerable sectors caught in nested circles of exclusion of all forms to participate in developmental processes in particular, at the local community level. Inclusive development is all about creating

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opportunities for individuals and households to build better lives for themselves and their families; and for firms and enterprises to invest, expand and grow their businesses. It leads to improvement in the quality of life at the community level and poverty reduction at the national level and overall it fosters development at the national and global levels. To this end, inclusive development entails inclusion and development; "development" brings into play dimensions of wellbeing beyond simply income, while "inclusion" focuses attention on the distribution of wellbeing in society- access to social, political and economic resources, outcomes and opportunities. Inclusive development aims at a "*society for all*" in which everyone is able to develop his or her potential and can both contribute to public well-being, and play a part in the life of society.

2.6.4 Financial Exclusion

Barr (2004) and Connoly and Hajaj (2001) conclude that the exclusion from the financial system takes place for persons who belong to low-income groups. Likewise, Kempson and Whyley (2001) find that persons who are financially excluded resided in rural areas and or locations that are isolated from the urban financial setups. Similarly, Kempson and Whyley (1999) establish that in the UK, wage payments by automated cash transfer (ACT) is one of the important effects on financial inclusion. Therefore, employment relative to the number of individuals that are active in the formal sector is a key indicator for the extent of the financial inclusion. In a related study, Buckland *et al* (2005), and Kempson and Whyley (1998) find areas with high unemployment rates or areas where informal sector employment is high are more likely to be financially excluded.

Chant and link (2004) allude that having no basic banking facilities make certain routine transactions such as bills-paying are becoming increasingly inconvenient and costly for those without more innovative forms of access such as direct debit, mobile money, online

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banking and on-line trading. They also find that bank branch closures in some Australian communities have resulted in reduced savings, increased size of cash withdrawals, increased cost of finance; reduced investment income, increased unemployment/ poverty, reduced access to financial planning, increased travel requirements; increased security risks and increased need for credit from local businesses. Amaeshi (2006), studying the causes of financial exclusion in Nigeria, finds that illiteracy is one of the foremost drivers of financial exclusion in Africa. Therefore, the author concludes that banks in Nigeria should take pragmatic steps to eliminate the prevalence of illiteracy-driven financial exclusion to enhance their brands by alleviating financial exclusion through corporate social responsibility; and in so doing, mitigate the probable risk of 'harsh' social regulations on the part of policy-makers to address the existence of financial exclusion in Nigeria.

Besides, Osei-Assibey (2011) investigated the relation between financial inclusion and poverty reduction in Ghana by exploring the socioeconomic factors underlying financial exclusion. The study used primary data from a field survey from Ashanti region of Ghana, and secondary data from Ghana Statistical Service between September 2005 and September 2006. The factors examined were perception of access to finance difficulties, cultural and religious beliefs on credit, interest rate sensitivity and information gap on the probability to voluntary self-exclusion and controlled for demographic and enterprise specific level characteristics. The study finds that the most prominent factors underlying voluntary self-exclusion are strong perception of access to finance difficulties, financial literacy, negative cultural and religious beliefs on credit use. Also, it was found that stringent collateral requirement, high transaction costs and other constraints like lack of financial records discouraged people, microenterprises and firms from borrowing and generally accessing financial services.

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Though, there is a contrasting view about whether individual personal characteristics such as gender, age, race or ethnic background are independently associated with financial exclusion. It is argued that these are commonly related in themselves to income, employment and other variables, and thus could explain their apparent association with financial exclusion (Chant and link, 2004). For instance, in South Africa, Makgetla (2006) points out that to a large extent, exclusion or discrepancy reflects not subjective discrimination against Africans and women, hence they are more likely to be poor. The study maintains that if only households with similar incomes are selected, the differences by race and gender almost disappear. However, the study asserts that this does not mean that the banks do not discriminate on the basis of race and gender.

2.6.5 Financial Inclusion and Inclusive Financial Sector

Sarma (2008) defines financial inclusion as the process that ensures the ease of access, availability, and usage of formal financial system for every members of an economy. Thus, access to use a range of financial services which include owning an account at a formal financial sector, saving at a formal financial sector and borrowing from a formal financial sector. It is also an effort to bring the large unserved population particularly in the informal sector, to the mainstream financial system in order to mobilise and allocate idle funds; and make financial products and services accessible to a large section of the deprived population and firms particularly in the informal sector. Similarly, Claassen (2005) and Beck et al. (2006) opine that access to finance is enclosed on a range of issues such as physical availability, cost and a range and quality of products being offered. Access implies that credit report and information should not be limited to only borrowers with connections and collateral as well as products with high expected returns that translate into profit for the provider, but also all type of credits that serve the needs of the poor and microenterprises (Beck et al.2006). Moreover, it is not only the prices of the services that

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have to be affordable, but also all non-price transaction costs such as information processing costs or physical distance (World Bank, 2008). This implies that wide array of affordable financial services need to be available when desired.

Prior to the 2000s, records show that large chunks of funds were lying idle under pillows, under mattresses, and in bamboos in the rural areas of developing nations and, as a result large sums of funds which could be allocated were left out of the main financial stream (Rutherford, 2000). For instance, in Ghana, a significant proportion of Ghanaians, especially in the rural areas, still keep their monies in their rooms, hidden in pillows, mattresses, trunk boxes, suitcases or even buried in farm lands to rot. Consequently, most firms do not get the opportunity to acquire loans from the formal financial systems. This condition was very worrying due to its repercussion on financial sector development and economic prosperity of developing economies in general. Hence, for most economies in the developing world, the financial sector experience low financial depth (size), limited financial breadth (accessibility) and meager financial efficiency (liquidity), making them less effective, and generally underdeveloped. Similarly, in Central Africa, bank account holders are less than 1% of the total population (IMF, 2009). This implies that very few individuals and enterprises have and use bank products and services in Central Africa. According to the study, the limited access to financial services in the region, is attributed to weak legal and judicial systems that will enforce contractual obligations, and weak macroeconomic environment following decades of political instability.

Getnet (2014) documents that, in Ethiopia, financial inclusion is in progress amidst expanding bank branches and areas of coverage (financial development). But the author maintains that a lot needs to be done on financial accessibility (financial inclusion). Less than 8% of Ethiopians have bank accounts with the proportion of borrowers being smaller.

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The percentage of households in Ethiopia who can have access to Microfinance institution (MFI) service is about 14.5%. He observed that lack of financial capacity is not positioning MFIs to ensure financial access to MSMEs and the poorer segment of the society. Therefore, financial development might not necessarily lead to financial inclusion. A related study observes that in Ghana, the majority of individuals and firms in the informal sector save and borrow from the semi-formal and informal microfinance enterprises, known as "*susu operators"* (Osei Assibey *et al.*, 2012). Besides, although urban dwellers in Ghana use the banking sector services such as transactional and savings products, the patronage of insurance and credit products is very limited.

Indeed, a spectrum of reasons point to lack of interest and patronage in the formal financial sector services and products. For most urban dwellers in developing countries, like Ghana, insufficient documentation is a major obstacle for adults to open and use account with a formal financial system while for most rural dwellers distance from a financial facility is a major hindrance for adults to open and use account with a mainstream financial sector (Osei-Assibey, 2011). According to the World Bank (2006), the number one reason why persons in the informal sector do not apply for or are refused loans is insufficient collateral. Meanwhile, the difficulties in accessing credit hinder investment participation, engagement in economic activities and inclusion in development process.

Moreover, Beck et al. (2008) find that about 54% of total population in Cameroon, 94% in Malawi, 93% in Uganda and 81% in Kenya cannot afford the fees charged by banks for maintaining a checking account given their low and irregular level of income. In India, high interest rate has surge household debt burdens and in some cases has led to suicides (Kumar & Mohanty, 2011). Besides, the high demand for documents from prospective clients or customers such as passport, driver's license, national identification cards, house

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address, utility bills, pay slips and letters of recommendations hinder access to opening account and accessing credit by potential investors, savers and borrowers. Their study show that in Uganda and Cameroon not less than three of the documents are required for a prospective customer to open an account. Thus, access to effective financial services is seriously impeded. Meanwhile, prospective and account holders cannot apply for loan via mobile phone or internet but must only do so through physical presence at a bank's headquarters and or branch office (Beck et al., 2008).

The challenge of financial inclusion is to employ strategies to overcome the obstacles or barriers which also emanate from the demand and supply factors. From the demand side, the barrier factors include lack of awareness about financial products and services, and limited financial literacy- understanding and knowledge on financial products and their importance. Social exclusion (based on religious belief, gender, self-confidence, unfriendly attitudes of bank staff and unemployment). From the supply side, there are factors such as transaction cost that are perceived as exorbitant fees, burdensome terms and conditions attached to financial products, sophiscated documentation required, lack of communication, language barriers and low literacy levels (Subbaro, 2009). Financial education can help consumers to manage their financial risks by ensuring that they can better judge their capacity to spend, save and borrow (Zeti (2005), as well as choose suitable financial services. Indeed, a financial literate person is aware of how money works, has knowledge of financial products, savings, investment and financial management.

According to DFID (2008), financial inclusion study conducted on seven developing countries of Africa (South Africa and Kenya), Asia (Philippines, India and Pakistan), Europe (Russia), and Latin America (Brazil), documents that policy makers and regulators in developing and transition countries are embracing "Transformational branchless

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banking". That is, the use of Information and Communication Technologies (ICTs) and non-bank retail channels to reduce costs of delivering financial services to clients beyond the reach of traditional banking. However, a common challenge found by the study was how to formulate proportionate regulatory policy that gives space for innovation and permit branchless banking to scale up safely. In a related study, it was established that developing countries around the world concentrate more on implementing the mobile banking access to the people who are unbanked mobile users, known as 'Transformational Banking'. Hence, transformational mobile banking is the provision of banking services using a mobile phone in such a way that currently unbanked people are targeted. The term was first coined to differentiate this type of offering from additive mobile banking options, where the mobile phone is simply another channel. If mobile banking extends financial access at sufficient scale to unbanked people then the retail financial sector of a country is likely to be transformed (Porteous 2007). Equally, Ignacio (2008) reviews the bigger failures and the more promising experiences in the use of smartcards and mobile phones as payment platforms in developed countries. The aim of the study was to extract some lessons behind the failures and the successes, although these developed countries experiences may not directly translate into lessons that can be used in developing countries. The study served a guide on what may or may not be possible and should or not be different in the developing world context.

Morawczynski, Olga and Pickens' (2009) exploration offers insight into how poor people of Kenya use M-Pesa, its impact on their lives, and some unexpected consequences. Rapid adoption and frequent use of M-Pesa engendered a variety of positive outcomes, as well as unintended consequences. According to AFI (2010), M-Pesa did not succeed in a vacuum but rather due to the concerted efforts of the Kenyan government, legislators and stakeholders to cooperate in implementing appropriate regulations and accountability

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mechanisms. By partnering with financial service providers and mobile operators, banks can play a significant role in mobilizing savings using mobiles as a tool of financial inclusion. The Global Findex (2011) notes that mobile money achieved the broadest access of 140% of adults reported to have used mobile money in Africa. Indeed, there are no doubts the challenges posed in bringing financial services to the rural dwellers in developing nations include great distance travelled to the nearest bank, poor infrastructure, and poor telecommunication (CGAP, 2009). Therefore, to ensure idle financial resources are adequately mobilized and allocated, financial institutions need to adapt products to suit and attract the patronage of local customers who are usually poor and illiterate. For most developed economies, policies have been implemented to eliminate financial exclusion. Midgley (2005) note that the advanced economies have promoted financial inclusion phenomenon as a policy priority over many years. In a nutshell, financial inclusion is about individuals, households and firms that do not have access to the full benefits and use of mainstream financial products and services. But much has not been done in the case of most developing economies, as there still persist limited financial inclusion.

In summary, largely poor funds mobilization through domestic savings is a major constraint confronting the financial system in developing countries. Amazingly, owning an account in a developing world is considered a luxury compared to the developed economy where it is a necessity. However, for the financial system to play an active and significant roles much efforts must be devoted to mobilise and allocate funds through financial inclusion initiatives. Furthermore, trading activities on particularly the capital market need to be enhanced through financial inclusion initiatives to attract corporate and business entities desiring to raise long term capital through the bond and stock markets instead of through the credit and money markets (banks) do so at the least cost and easy convenience.

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2.7 Limitations of the Literature Reviewed

The main flaws of prior studies have been identified, scrutinized and their implications are highlighted. Literature on finance- growth-development hypothesis has received in-depth attention from both developed and developing countries since the 1960s. Yet, very little effort has been made to empirically investigate financial factors such as financial inclusion and non-financial factors like inclusive development that account for inadequacies, variations and challenges in particular finance and development within the contexts of frontier and emerging markets which have long been ignored by most prior studies.

Also, theoretical and empirical findings of previous studies are sometimes disquieted with model specification errors, least-squares biases, and substantial multicollinearity in the variables utilized. Notwithstanding, these limitations do not take credit from the previous studies because most of these studies lacked the necessary econometric tools which detected and dealt with the above problems at the time the studies were conducted. With regards to previous model specifications, the use of ordinary least squares (OLS) requires that the explanatory variables be independent of the error term, which is the same as saying that the direction of causation be one way.

The inclusion of lagged dependent variable like GDP growth per capita and gross savings as explanatory variables, in many of such studies may give rise to endogeneity problems. In this case, the traditional OLS models may suffer from least-squares bias. One of the assumptions upon which the traditional models in the earlier studies were built was that greater financial inclusion affects financial sector development, but that a well-developed financial sector does not affect financial inclusion. There is good reason to question the validity of such an assumption, since high levels of financial inclusion can be brought about by a well-developed financial sector and also, the reverse applies. Such endogeneity issues were ignored by most of the studies that assumed one-way causality. Consequently,

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biased and inconsistent estimates of the parameters are inevitable with OLS methods. Besides, the results of some of the earlier studies have been affected to an unknown extent by the presence of collinearity in the variables utilized. The effect on the variability of parameter estimates is unknown in some cases because results that will indicate the degree of these inter-relationships have not been tested. Hence, in the presence of strong inter-correlations, it is impossible to disentangle accurately the separate effects of the explanatory variables.

The present study has addressed these issues in-depth by considering the relevant control variables and employed a dynamic-panel model econometric methodology. Moreover, because financial inclusion is a relatively new developmental concept, prior to 2004 the data available was somewhat porous. The present study therefore utilizes fresh data set that have measured access to and use of bond market, stock market and banking services and are indicative of their level of outreach across fifteen (15) emerging markets (Brazil, Chile, China, Colombia, Egypt, Hungary, India, Indonesia, Malaysia, Morocco, Peru, Poland, South Africa, Thailand and Turkey), and twenty (20) frontier markets (Argentina, Bangladesh, Botswana, Cyprus, Ecuador, Ghana, Jamaica, Kenya, Kuwait, Latvia, Lebanon, Mauritius, Namibia, Nigeria, Panama, Pakistan, Qatar, Saudi Arabia, Sri Lanka and Tunisia) across a time span from 2005 to 2014. With the exception of the last study, which has data available for thirteen (13) emerging markets (no data was available for South Africa and Malaysia), and seventeen (17) frontier markets (no data was available for Kuwait, Qatar, and Saudi Arabia) that spans from 2010 to 2014. The present study therefore, seeks to add uniquely to the existing body of literature by providing empirical evidence on the dominant role of financial inclusion in the formal financial sector growth, and development that trickles down to excluded people and local communities using update or fresh data available and the most suitable modern econometrics techniques.

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2.8 Financial Inclusion, Financial Sector Development and Inclusive Development Conceptualized

Finance plays a key role in the economic growth and development process in any economy. The presence of a financial system in an economy is crucial to the performance of the significant role of channeling funds from surplus units to deficit units. Generally, the financial sector mobilizes funds from diverse sources and allocates the funds to the most productive activities which bring good returns that benefit the entire economy. The financial system therefore, plays a very important role in the process of economic growth and development. Therefore, a well-developed financial sector with associated provision of effective financial products and services provide a growth stimulating environment and well-being. Although the financial system in the developing world has experienced some level of progress as a result of regulatory and supervisory reforms to achieve an appreciable level of development, there still remains a lot more to be done as most of the financial systems are underdeveloped with limited outreach.

The majority of people, businesses and firms especially in the informal sector are denied access to mainstream financial products and services such as opening an account, provision of reliable and affordable credit, insurance and making payments via the formal financial system. But, financial inclusion, which is a local-based initiative or mechanism whereby individuals, households and firms who are either un- or under- serve can have access to affordable finance and responsibly use financial products and services such as savings, credit, insurance, and payment products, is not being promoted to facilitate the development of the financial system, and thereby foster the process of growth and subsequently inclusive development.

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According to the literature evaluated, financial inclusion depends, to a large extent on degree of economic development, which indicates wellbeing improvements of citizens in an economy. Implying, some of the evident-based factors that inhibit financial inclusion include but not limited to large financial exclusion resulting from poor economic developmental conditions such as low and unstable income levels, high illiteracy rates (lack of knowledge and understanding), poor infrastructure, limited access to social amenities, high cost of financial services, governance policy challenges, and macroeconomic instability, aside a few. Therefore, the best mechanism to remedy the variations and challenges of development has to do with promoting financial inclusion vis-à-vis inclusive financial sector but few if any, have investigated this per the existing literature. Besides, financial inclusion means finance for all (World Bank Research, 2014 & 2015; and Sustainable Development Goals – SDGs of UNDP, 2015). Yet, there has been some erroneous perceptions that promoting financial inclusion is the preserve of the informal financial enterprises and micro finance institutions. But then, financial inclusion has been viewed in a much wider perspective to cover the formal financial sector such as banks, bond and stock markets in a study advanced by Čihák et al. (2013). This thesis, therefore, verifies the claims and dataset of their study which remains a gap in empirical literature.

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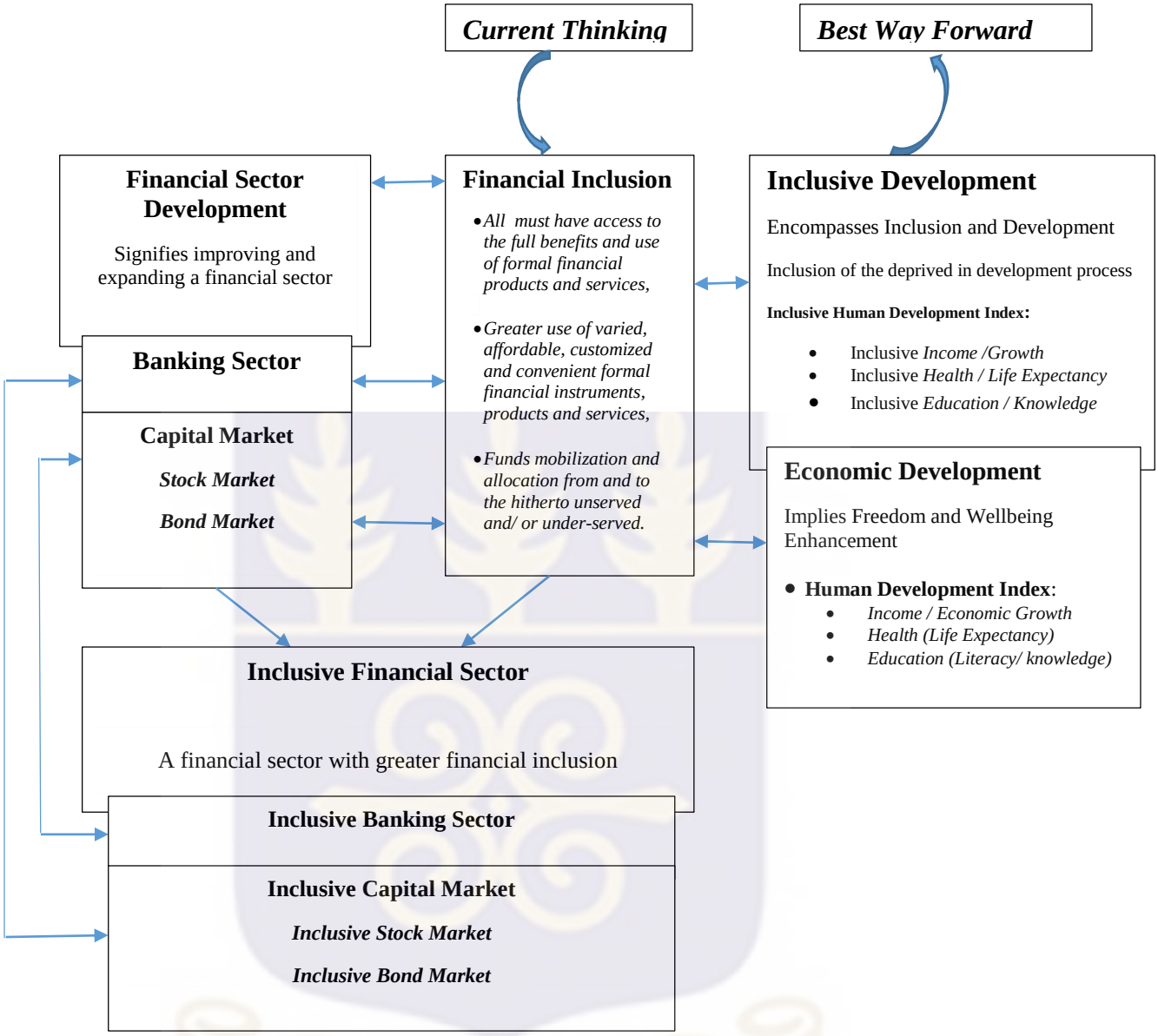
2.8.1 Conceptual Framework



Source: Author's Own Design

Figure 2.1: Financial Inclusion, Financial Sector Development and Inclusive Development Conceptualized

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Another lacuna identified during the literature survey is that financial inclusion is the best policy initiative for advancing inclusive development. In addressing the question of what is meant by inclusive development, two issues arise: first, the distinction between growth and development; and second, the import of the term inclusive. Development brings into play dimensions of well-being beyond simply income, while inclusive focuses attention on the distribution of well-being in society. Gathering from the literature reviewed, development cannot effectively reduce poverty and hence inequality unless all groups contribute to the creation of opportunities, share the benefits of development, and participate in decision-making. But this thinking has received limited exploration in the existing literature. The study therefore has investigated this lacuna in prior literature. These gaps imply that homegrown solutions are worth investigating as they will be more effective than externally imposed policies, although factors that are common across countries provide a useful way forward to curtail the widespread financial and development exclusion in the developing world. Consequently, the following this thinking, a conceptual framework is prompted as constructed in figure 1, and financial inclusion, a relatively new phenomenon targeted at ensuring all individuals, households and firms have access to the full benefits and use of formal financial products and services is modelled as the critical principal intervening factor in this study.

2.9 Conclusion

In conclusion, gaps in prior literature show that financial inclusion is unlikely to expand in the near future, if it is not initially supported by economic development in the form of reducing poor groups and improving living standards, increasing literacy and knowledge acquisition, improving healthcare and increasing life-expectancy, and overall enhancing of wellbeing and freedom, among others. Also the present study aligns with the thinking of the recent SDGs (2015) and other related works on the issues explored, and it verifies

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their claims with variation in analyzing financial inclusion, inclusive financial sector-access to and utilization of the major financial system i.e. banks, bond and stock markets products and services; and inclusive development. Against this backdrop, this thesis investigates whether the level of economic development drives financial inclusion. The thesis also conducts an investigation into how increased financial inclusion impacts on the development of banks, bond and stock markets. In addition, it examines the role of greater financial inclusion in promoting the banking sector and the capital market causalities. Furthermore, it examines financial inclusion as a must-have topmost priority objective for inclusive development in the contexts of frontier and emerging markets.

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CHAPTER THREE

FIRST EMPIRICAL STUDY

ECONOMIC DEVELOPMENT AND FINANCIAL INCLUSION NEXUS: FRONTIER MARKETS' EVIDENCE

ABSTRACT

This empirical study investigates the first objective of the thesis. This study empirically verifies whether the level of economic development drives financial inclusion and vice versa. It examines economic development and other key determinants on financial inclusion in frontier markets' context. The dynamic panel generalized methods of moments (System-GMM) methodology is employed to analyze data spanning from 2005 to 2014 for twenty (20) frontier markets by Standard and Poor's Indices. The study finds that economic development is a catalyst for financial inclusion, which in turn augments the development process. It also establishes evidence that income level, financial literacy and healthy lives are decisive factors of financial inclusion for the banking sector, bond and stock markets. Moreover, countries with medium and low HDI had negative and statistically significant values when compared to very high HDI countries, suggesting their levels of development underlie their levels of financial inclusiveness. Besides, it finds that modern technological devices in the form of mobile telephony and internet are influential predictors. It concludes that financial inclusion via the banking sector, bond and stock markets are very instrumental to stimulating development. The study originally contributes to the limited body of knowledge on finance and development, as it positions capital market financial inclusion in the finance-development debate. The findings provide a different direction to the current debates on financial inclusion-development, and contribute significantly to the attainment of the sustainable development goals.

Keywords: *Development, Income, Financial Literacy, Modern Technology, Financial Inclusion, Frontier Markets*

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3.1 Introduction

In recent times, the importance of financial inclusion has become a vital developmental policy priority worldwide. Financial inclusion is usually described as access to and the use of formal financial products and services by low income earners, poor households, smallholder farmers, small enterprises, and firms who, hitherto were either under-served (under-banked) or unserved (unbanked). Thus, it is about encouraging individuals, households and firms to have access to the full benefits and use of mainstream financial products and services. Research show that the levels of financial inclusion varies widely across the globe. According to United Nations, approximately three (3) billion people out of six (6) billion around the globe lack access to formal financial products or services such as a bank account, credit, insurance, payments, and pensions products (Chibba, 2007 and 2008).

Also, according to Demirguc-Kunt and Klapper (2012), in several developing countries, the number of adults who own no bank account could be very high at about 90%, compared to most developed countries where one (1) in five (5) adults has bank account and/or access to other alternative products or services provided by other formal financial systems. Moreover, they documented that worldwide 2.5 billion people lack a safe place to save their idle funds, borrow funds, make payments, insure and a secure or efficient means to receive social benefit payments through a formalized financial sector. Besides, Zwedu (2014) observes that, in Ethiopia, less than 8% of Ethiopians have bank accounts with the proportion of borrowers being smaller. Yet, the focus of financial inclusion is to ensure that all or a greater proportion of the population and sectors are actively engaged in the processes and opportunities of economic development through the mainstream financial sector.

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The important question is can the entire population and firms be engaged, via the mainstream financial sector when the fundamental driver of financial inclusion is either lacking or woefully inadequate? For instance, when a significant proportion of the population has low, irregular or no income, high unemployment rate, high financial illiteracy, high unhealthy life, small economy size - limited market-, or poor infrastructure. A country that lags behind in economic development cannot promote financial inclusion, this claim is supported by Sarma and Pais (2011). Financial inclusion therefore, is unlikely to scale up in the near future, if it is not supported by appreciable level of economic development. Moreover, Economic intuitions suggest that economic development is sine quo non to the achievement of financial inclusion (Beck *et al.*, 2009; World Bank, 2008).

Also, this is reinforced in a statement made by the former UN Secretary General Kofi Annan;

> "*The stark reality is that most people still lack access to sustainable financial services, whether it is savings, credit or insurance. The great challenge before us is to address the constraints that exclude people from full participation in the financial sector…Together, we can and must build inclusive financial sectors that help improve their lives"(Annan, 2002).*

This statement is a clear indication that to address the problem of low financial inclusion call for a multifaceted approach. Financial inclusion cannot scale up safely when there is no or low economic development which lead to poor living standards, low income levels, low or no financial literacy, poor infrastructure, lack of innovations and modern technology among a host of others. Similarly, limited financial inclusion will lead to narrow, unstable, illiquid and inaccessible financial system and which will in turn lead to underdevelopment of the overall economy.

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According to some researchers, practitioners, policy makers and development agencies, financial inclusion means "finance for all" (Marshall, 2004; World Bank, 2008; Chibba, 2009), but this cannot be achieved without higher levels of economic development. Some of the evident-based poor economic developmental components that inhibit financial inclusion include low, unstable or no income, high illiteracy rates (lack of knowledge and understanding), poor infrastructure or limited access to social amenities, high cost of financial services, and regulatory challenges. Globally, low income was the most cited reason for not having bank accounts (World Bank, 2015). Individuals or households with low, irregular or no income may not be able to meet their basic needs- food, clothing, shelter- let alone have surplus money to save.

Barr (2004), Connoly and Hajaj (2001), and Kempson and Whyley (1998), find that individuals, or households with low or no income are usually excluded from formal financial services and products. Additionally, individuals and households with little or no education are more likely to be financial illiterates and therefore lack knowledge, understanding and information on financial products, services and basic financial management. Besides, poor infrastructure like poor transportation system, paved roads, telecommunication, and electricity supply deter potential customers from accessing the services of the formal financial sector. The level of economic activity signifies market size i.e. the level of business activities, market activeness or a commercialized community, and it shows how resourceful individuals, households and firms are, and can actively be financially included. According to the United Nations Secretary General's special campaign on financial inclusion for development, 'a country's financial sector can contribute to equitable and faster economic growth and social development when it engages the whole population and effectively serves enterprise activity' (United Nations Secretary General, 2013).

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Employment status is of critical importance to financial inclusion, as no job- high unemployment, irregular or unstable and informal employment results in lack of creditworthiness and poverty- inability to save. Financial charges such as bank charges for opening and maintenance of accounts are usually very expensive. High fees charged serve as a deterrent to potential customers to have and use financial products and services in the form of savings, credit, payments, insurance and pensions. According to Beck et al. (2008), about 54% of total population in Cameroon, 94% in Malawi, 93% in Uganda and 81% in Kenya cannot afford the fees charged by banks for maintaining a checking account given their low and irregular level of income. Also, in Latin America and the Caribbean, about 40% of the population are unbanked because financial services are too expensive to afford (Allen *et al.,* 2010). In addition, proximity i.e. physical access to bank, branch location, ATMs, post offices and mobile agents pose problems to particularly rural dwellers. Physical access- remote bank, branch, or ATMs location serve as a constraint to finance being available to potential customers. For instance, in Sub-Saharan Africa close to 32 percent of adults are unbanked because location of financial facility or branch is too far away (Allen et al, 2010). Besides, when potential customers have access to varieties of products and services, that are customized based on their taste (need), preferences or ability to afford, then a growing financial inclusion should be accomplished.

Global Findex (2011) indicates that mobile money achieved the broadest access of 140% of adults reported having used mobile money in Africa. Required documents, collateral, terms and conditions such as insufficient documentation, collateral and stringent conditionality, rigid identification requirement and other requirements serve as constraints to finance being available to potential customers. For instance, in Cameroon, to own a checking account the smallest amount required is more than $700, compared to Swaziland and South Africa where no minimum deposit is required, and also, it is more than the

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average GDP per capita of a country. Against this background, the study identifies several developmental factors that constrain the less privileged, vulnerable groups, rural residents, small holder farmers, small enterprises, and firms in the informal sector to have and use mainstream financial services and products.

Therefore, contrary to the generally held belief that financial inclusion initiates or triggers the development process, this study proposes and contends that nations that lag behind in terms of economic development cannot promote financial inclusion and thereby stimulate the development process. The proposition that the level of economic development drives or impede financial inclusion in frontier markets context seem to rest largely on theory than on empirical evidence. This assertion supports the World Bank (2008) empirical evidence which links finance directly and broadly to individuals, households, rural communities and small holder firm's wellbeing. It obvious that studies in these areas are woefully inadequate hence they provide limited guidance for public policy initiatives on inclusive finance. But then without proven empirical evidence, frontier markets cannot design realistic developmental and financial policies intended to foster greater financial inclusion and thereby augment economic development.

Most studies on financial inclusion have focused on the state of financial inclusion in developing countries (Demirgüç-Kunt and Klapper, 2012; World Economic Forum, 2009; United Nations 2007); financial inclusion and poverty (World Bank, 2015; Osei-Assibey, 2011; Chibba, 2009); determinants, challenges and opportunities of financial inclusion (Kumar, 2013; Dev, 2006); financial inclusion on banking sector development and/ or economic growth (Allen & Carletti, 2008; Beck *et al.*, 2008). There are limited studies on financial inclusion and economic development (Bihari, 2011; Sarma and Pais, 2011). The current study differs from Sarma and Pais (2011) and Bihari (2011) in many ways.

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Although the work of Sarma and Pais (2011) is on development and financial inclusion, and explored 49 countries, the study employed the OLS methodology which does not eliminate potential biases associated with simultaneity, omitted variables and reverse causality hence it ignored the possibility of bi-causal impacts. It also considered only the banking segment of the financial system and moreover due to limited data applied the index of financial inclusion developed by Sarma (2008). However, this study utilized the data from highly recognized international sources which is more comprehensive, standardized and reliable for analyzing the three market types- bank, bond and stock markets. On the other hand, Bihari (2011) probed financial inclusion impact on economic development and did neglect the possibility of economic development influencing financial inclusion, and moreover, the study focused only on one country: India.

All the prior studies either ignored or did not adequately scrutinize the role of economic development in promoting financial inclusion from the perspective of frontier markets. The current study is conducted on twenty (20) frontier markets and it considers bi-directional relations by using dynamic panel methodology for the empirical analysis. It therefore, captures both time-series and cross-sectional dimensions of the estimations, and controls for potential biases associated with omitted variables, measurement error, simultaneity and reverse causality. Additionally, the study analyses how modern technology and other key factors influence financial inclusion in frontier markets' context. Besides, there has been some erroneous perceptions that promoting financial inclusion is a preserve of the informal financial enterprises and micro finance institutions. Yet, financial inclusion has been considered in a much broader view to cover formalized financial sector such as banks, bond and stock markets in a theoretical study advanced by Čihák et al (2013). Besides, it has emerged as a commercial profitable business. Therefore, formalized financial systems, especially capital markets practitioners and regulators need

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to think outside the box to unleash capital markets still stuck in doldrums, for there is a 'fortune at the bottom of the pyramid'. In this regard, the current study is new, innovative and different from prior studies and will contribute to the limited literature and ongoing debates in diverse ways, and redirect policy actions on financial inclusion and economic development.

The remainder of the study is set out in four more sections. The second section evaluates literature. The third section describes the methodology applied. The fourth section presents and analysis the results, while the fifth highlights conclusions and offers policy implications.

3.2 Literature Review

The World Bank, and Global Financial Inclusion Databases (2014) indicate that globally, in 2011, only about 50% of adults own accounts at a formal financial sector. The percentage of adults who have and use accounts on average range from about 20% in low-income countries, to nearly 90% in high income countries. Also, from 2004 to 2012, commercial bank branches increased from three (3) to five (5) in Africa and from eleven (11) to twenty-three (23) in Latin America, while ATM also surged in Eastern Europe around the same time span (Global Findex 2011). Kempson (2006) documents as follows "people with low incomes, no secure jobs, living on social security payments, and living in rural communities are financially excluded". According to Dollar and Kraay (2000), developing countries that have experienced sustained high growth over the last few decades have abridged their absolute 1evels of poverty. Other Empirical evidence shows that while there are significant differences in the relationship between development and poverty alleviation across countries, the incomes of the poor tend to rise proportionately with average upsurge in incomes (Dollar and Kraay, 2001; Jalilian and Kirkpatrick, 2002).

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Buckland et al (2005) aver that high financial inclusion is found in nations with low income disparity. Subsequently, they conclude that high income inequality causes low financial inclusion in an economy. Also, being financially excluded could also mean no investment in human and physical capital which will eventually dampen productivity and loss in welfare (Osei Assibey, 2009). Beck et al. (2006) observe that financial inclusion depends on several factors such as cost, physical availability, and quality or range of products being offered. This implies that financial products and services must be affordable, accessible, attractive, and available when desired.

Ardic et al. (2011) find that 56% of adults worldwide do not use formal financial services but the numbers differed across high-income and low-income countries. High-income countries had 17% of unbanked adults, while low-income countries had as high as 64% unbanked adults. They establish that informal financial services were more expensive and less dependable than formal financial services. For that reason, attractive and affordable formal financial services provided for the unbanked should be the core of policymaker's agenda as it will lead to improved lifestyles. Also, account penetration among adults belonging to the poorest 20% in high income countries is 23% higher than that of adults belonging to the richest 20% in the developing world (Allen *et al.*, 2011). Additionally, approximately 20% cited cost, distance and documentation as the reason for not owning and using an account. For instance, in West Africa, 36% of adults cited documentation as the second reason for not owning and using an account, while in East Africa, 46% cited cost as the second reason and distance as the third reason for not owning and using an account. In South Africa fixed fees and high cost of opening and maintaining an account were cited as the hindering factors for having and using an account (Demirguc-Kunt and Klapper, 2012). Moreover, in Sub-Saharan Africa, close to 32 percent of adults are unbanked because the location of a financial facility or branch is too far away. In Europe

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and Central Asia, about 31 percent are unbanked because they do not trust banks. In Latin America and the Caribbean, about 40 percent are unbanked because financial services are too expensive to afford (Allen *et al.*, 2008).

Besides, the FinScope Survey report (2013) produced by FinMark Trust, indicates that South Africa had shown remarkable improvement in financial inclusion in terms of borrowing, banking deposits and insurance (from 28.9 million people in 2012 to 30.7 million people in 2013) but are still limited in the use of other financial inclusive mechanisms especially mobile banking. In contrast, financial inclusion in Namibia decreased from 51% in 2007 to 31% in 2011; where 62% of the population are banked, 65% are formally served, 46% use other formal products, and 13% are informally served (FinScope Survey, 2012). Likewise, high levels of unemployed youth and lack of basic amenities, especially in the rural areas, have significant impacts on the financial inclusive behavior of Ghanaians and Africans in general (FinScope Survey, 2010). The few Africans who save, borrow or use payment products informally, do so to meet daily household demands or needs. Moreover, over a third of adults in Africa have only primary or basic education as their highest level of education attained. The less educated and small firms in Africa use mainly informal means to save and borrow money. Furthermore, the reports indicate that, generally, about 60% and above of African adults live in rural areas. Most of these adults are about 30 years or younger, and this age, most are usually not economically settled. Most of these adults rely on money from others, about 30% receive money from household members and about 20% rely on remittances from relations. Also, about 30% or below obtain income from salaries and wages with about 60 to 75% relying on farming activities to generate income. The vast majority fall within the lowest income bracket, while a sizable number of the adult population have no fixed or regular income and they

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receive income periodically. In addition, over a third (3rd) of adults in Africa have only primary or basic education as their highest level of education attained.

Moreover, according to Demirgüç-Kunt and Klapper (2012), the low level of accessibility to banks are due to bank's proximity, lack of trust in banks, lack of required documentation, cost of documentation, religious and gender issues, and low levels of income. They observe that approximately 80% of people in Africa cited lack of adequate income as the main reason for either not owning or using a formal account. Also approximately 20% cited cost, distance and documentation as the reason for not owning and using an account. For instance, in West Africa, 36% of adults cited documentation as the second reason for not owning account, while in East Africa 46% cited cost as the second reason and distance as the third reason for not owning an account, whereas in South Africa fixed fees, and high cost of opening and maintaining an account were cited as the hindering factors for owning and using account. Allen *et al.* (2010) find that reasons accounting for low financial inclusion include income level- not enough money to use let alone save some; temporal or no employment; proximity- financial facility or branch location too far away; no necessary documentation to be eligible to open an account; high cost- exorbitant financial charges on account opening and maintenance; women, youth, the poor, and rural residents are the least likely to have a formal bank account; religious and cultural reasons; and no trust for the financial sector.

Amaeshi (2006), studying the causes of financial exclusion in Nigeria, finds that illiteracy is one of the foremost drivers of financial exclusion in Africa. Therefore, the author concludes that banks in Nigeria should take pragmatic steps to eliminate the prevalence of illiteracy-driven financial exclusion to enhance their brands by alleviating financial exclusion through corporate social responsibility; and in so doing, mitigate the probable risk of 'harsh' social regulations on the part of policy-makers to address the existence of

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financial exclusion in Nigeria. Besides, Osei-Assibey (2011) investigated the relation between financial inclusion and poverty reduction in Ghana by exploring the socioeconomic factors underlying financial exclusion. The study finds that the most prominent factors underlying voluntary self-exclusion are strong perception of access to finance difficulties, financial literacy, and negative cultural and religious beliefs on credit use. Also, it finds that high transaction costs, stringent collateral requirement, and other constraints like lack of financial records discouraged people, microenterprises and firms from borrowing and generally accessing financial services.

Bihari (2011) opines that financial inclusion is an essential requirement for building a uniform economic development both spatially and temporary, and as well as ushering in higher economic and social equity. He emphasizes that access to financial services has a number of benefits to the individual, the community and the nation as a whole. Some of which include providing individuals the opportunity to accumulate savings, access credit facilities, undertake investments and protect themselves against income shocks, and hence equipping them to withstand emergences such as illness, loss of jobs or death in the family. In addition, financial inclusion protects people from exorbitant fees charged by money lenders and other informal service providers. Also, it enables government to undertake payments like social security transfers into the bank accounts of beneficiaries, and it offers opportunity for the poor or excluded to bring their savings into the formal financial system, and consequently channels more funds into productive activities.

Dev (2006) observes that financial inclusion is very critical for enhancing poor farmers' living conditions, rural non-farm small enterprises, and other deprived groups. He further, establishes that the vulnerable having a basic account greatly increases the likelihood of saving. Subsequently, the author indorsed that banks should see financial inclusion as a

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social responsibility and a business opportunity. Also, when formulating policies on say credit, advisory services must be added to mitigate the risk of under privilege and vulnerable people. Likewise, Sarma (2008) asserts that households are more likely to be college educated, enjoy higher degrees of consumptions, and have more access where they have and use bank accounts.

Moreover, Beck and Brown (2010) avow that in most transition economies, at household level the possibility of owning a bank card or account increases with education, income and wealth. They also find religion, minority and urban-rural divide play imperative roles. Similarly, studies at national level, indicate that access to financial services can have positive outcomes for inequality and poverty reduction (Beck et al., 2009; World Bank, 2008), while Burgess and Pande (2005) examining state-led rural banks in India, between 1977 and 1990, observe that expanding rural branches significantly reduced poverty at national level. Also, according to Morduch and Haley (2002) well-managed community centered financial services and products can curb poverty. As access to finance could allow poor households to save, and in the future invest in human and physical capital, as well as insure against health and income shocks. In the light of the evaluated literature, the study proposes and hypotheses as follows.

Ho_1: The level of economic (human) development plays no role in promoting financial inclusion.

Ho_2: The level of financial inclusion plays no role in fostering economic (human) development.

In summary, the extant body of literature on financial inclusion affirm that the level of human and physical development play important roles in scaling up financial inclusion.

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3.3 Methodology

3.3.1 Data

Data for the study are sourced from Global Financial Development (GFD), World Development Indicators (WDI) and Worldwide Governance Indicators (WGI) all of the World Bank (2015); International Financial Statistics (IFS) and Financial Access Survey of the International Monetary Fund (2015), and Human Development Databases of the UNDP (2015). Secondary data spanning from 2005 to 2014, for twenty (20) Frontier Markets_consisting of Argentina, Bangladesh, Botswana, Cyprus, Ecuador, Ghana, Jamaica, Kenya, Kuwait, Latvia, Lebanon, Mauritius, Namibia, Nigeria, Panama, Pakistan, Qatar, Saudi Arabia, Sri Lanka and Tunisia by Standards and Poor's (S&P) July, 2014 indices was extracted and utilized (Appendix A). Because financial inclusion is a relatively new phenomenon, most countries in the sample did not have exploitable data before the 2000's. Moreover, because of mixing values (figures) the panel is unbalanced for most of the estimations conducted.

3.3.2 Model Specification

The general financial inclusion model is specified as follows:

$$FinInc\ln_{it}^{\eta} = \alpha_i + \beta_j FinInc\ln_{it-1}^{\eta} + A_{it}\gamma' + \mu_{it} \quad \text{.....(1)}$$

Equation (1) estimates all the key determinants of financial inclusion, including economic (human) development indicators.

where

$FinInc\ln_{it}^{\eta}$ is financial inclusion for country i at time t;

η is financial inclusion for bank, bond and stock markets, (η = {1=bank, 2=bond, 3=stock});

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α_i is country unobserved effects;

A_{it} is a vector of financial inclusion determinants including human development index for country i at time t;

μ_{it} is error term, decomposed as follows: $\mu_{i,t} = \varepsilon_i + \nu_t + e_{it}$.

NB: The determinants of financial inclusion comprise of but not exclusively limited to human development index, very high, high, medium, and low HDI indices, income level, financial literacy, healthy lives, employment status, telecommunication (mobile/ fixed lines telephony and internet), financial charges (cost), proximity, market size (economic activity) and rule of law.

Equation (2) is another estimation carried out to test financial inclusion in the absence of human development indicators, and it is specified as follows:

$$FinInc \ln_{it}^{\eta} = \varphi_i + \rho_j FinInc \ln_{it-1}^{\eta} + K_{it}\lambda' + \mu_{it}^{"} \quad .....(2)$$

where

φ_i is country unobserved effects;

K_{it} is a vector of financial inclusion determinants excluding human development indices for country i at time t;

NB: K_{it} consist of telecommunication infrastructure (mobile/ fixed lines telephony and internet) employment status, financial charges (cost), proximity, market size (economic activity), and rule of law.

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To specifically investigate the effects of economic (human) development on financial inclusion, Equation (1) is reduced to a separate model as specified below:

$$FinInc\ln_{it}^{\tau} = \phi_i + \varpi_j FinInc\ln_{it-1}^{\tau} + \delta_j EconDevt_{it} + Z_{it}\lambda' + \mu_{it}^{'} \quad .....(3)$$

where

ϕ_i is country unobserved effects;

$EconDevt_{it}$ is economic development proxied by human development index for country i at time t;

Z_{it} is a matrix of telecommunication infrastructure (mobile/ fixed lines telephony and internet) proxy for physical development for country i at time t.

Conversely, a general model for the impact of financial inclusion on economic (human) development is stated below:

$$EconDevt_{it} = \sigma_i + \varphi_j EconDevt_{it-1} + \rho_j FinInc\ln_{it}^{\tau} + X_{it}\gamma' + \mu_{it}^{'''} \quad .....(4)$$

where

σ_i is country unobserved effects;

X_{it} is a matrix of economic (human) development determinants for country i at time t;.

X_{it} consist of income, infrastructure, natural resources, investment (FDI) and corruption control for country i at time t.

3.3.3.1 Measures of the Dependent Indicators Used

In accordance with Demirgüç-Kunt et al (2008; 2013) and Čihák et al. (2013), three major segments of the financial sector- bank, bond (debt) and stock (equity) markets have been

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explored, and the inquiry variable; financial inclusion employed for each of the three segments of the financial sector explored include; for Banks- ATMs per 100,000 Adults, for the Bond market- credit to private firms (Loans from entire financial system to private sector % of GDP), and financial intermediation ratio (the entire financial system credit divided by the entire financial system deposits) index; and for the Stock Market- Listed companies per one million (1m) people. Positive relations are expected and they are sourced from IFS and GFD (2015). This study utilizes factors that focus only on the 'number of people whose lives have been affected' by varieties of financial products and services instead of the 'amounts' deposited, loaned or available avenues. Besides, due to the important role of modern technological and financial innovation devices, indicators such as mobile subscribers per 100 people, internet subscribers per 100 people, telephone (mobile and fixed phone subscribers per 100 people) and telecommunication subscribers per 100 people (telephone and internet) are analyzed as major drivers of inclusive finance. The study estimated these variables independently and jointly to observe their individual impacts.

Also, in line with Sarma and Pais (2011) and Ardic *et al.* (2011), the study applies the human development index *as* "economic development index" to examine the relation between economic development and financial inclusion. Usually, researchers use gross domestic product (GDP) per capita and/ or human development indicators (HDI) to proxy economic development but the use of either one of them has its own limitations. For instance, GDP per capita does not take into account the work done by women such as caring for children, preparing food and household chores, although it constitutes productive activity (Beneria, 2003). Also, it does not take into account any environmental harms occurring as a result of producing and distributing goods and services. Moreover, the unequal distribution of income (income inequality) implies that the per capita GDP is

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not a good indicator of the quality of life for the majority of people in a country. Similarly, the HDI is regarded as a partial measure of development (freedom) in a country as it is based on few indicators of development such as health (life expectancy), education (literacy) and income level (per capita income) which ignores developmental indicators like physical infrastructure such as road networks, telecommunication and energy (electricity).

Despite the drawbacks in both measures, HDI is used as the development index for the analysis in this study. This is because financial inclusion is believed to enhance human development, which implies that having and using financial services impact positively on people's lives particularly the poor and vulnerable. Moreover, it reduces income inequality and improves living standards. Furthermore, the study utilizes indicators such as income level, financial literacy, employment status, infrastructure, economic activity, proximity, financial charges and suitable product design to examine other determinants of financial inclusion in a different model. These indicators are the study's focus but few unmeasurable factors can be a source of reference.

3.3.3.2 Description of standard independent / control variables utilized

1. *Internet penetration*: Internet users (per 100 people) — It presents individuals who have used the internet (from any site) in the last 12 months, per 100 people (WDI, 2015).
2. *Mobile penetration*: Mobile cellular subscriptions (per 100 people) — It refers to mobile telephone services which provide access to voice communication by means of cellular technology, per 100 people (WDI, 2015).
3. *Telephone Penetration* — It is fixed telephone plus mobile phone subscriptions per 100 people (WDI, 2015).
4. *Telecommunication:* — It is telephone (fixed and mobile) plus internet subscriptions per 100 people (WDI, 2015).

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5. *Energy Use:*Electric power consumption (kWh per capita)	It measures the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants.
6. *Infrastructure*	It is telephone (fixed and mobile) subscriptions per 100 people plus energy use (WDI, 2015).
7. *Income level*: Gross national income (GNI) per capita growth	It is the sum of value added by every resident producer in the economy, plus any product taxes minus any subsidies not counted in the valuation of output plus net primary income receipts divided by midyear population (WDI, 2015).
8. *Financial literacy/ Education*: Primary completion rate	It is the total new entrants in the last grade of primary education, divided by the population at the entrance age for the last grade of primary education (WDI, 2015).
9. *Life expectancy* at birth, total (years)	It shows the years a newborn infant may live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life (WDI, 2015).
10. *Market Size / Local Economy (Urban Population)*	It refers to people living in urban areas as a percentage of the total population (WDI, 2015).
11. *Market size /Rural Economy (Rural Population)*	It refers to people living in rural areas as defined by the nationwide statistical offices. It is estimated as the difference between total population and urban population (WDI, 2015).
12. *Employment status:* Unemployment, total (% of total labor force)	It refers to the portion of the labor force that is without work but available for and seeking employment (WDI, 2015).
13. *Financial services costs*: Lending interest rate (%)	It is the bank rate that generally meets the short-term and medium- term financing needs of the private sector (WDI, 2015).
14. *Market/ Economy Size:* Population, total	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship (WDI, 2015).
15. *Rule of Law*	It captures perceptions of the degree to which agents have confidence in and abide by the rules of society (WGI, 2015).

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16. *Proximity (Branch Location)*	These are physical locations of commercial bank branches per 1000 Km^2. A positive relation is expected and is sourced from (FAS, IMF, 2015).
17. *Natural Resources* Exports of goods and services (% of GDP)	It represents the value of all goods and other market services provided to the rest of the world (WDI, 2015).
18. *FDI- Foreign direct investment*: net inflows (% of GDP)	These are the net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor (WDI, 2015).
19. *Corruption Control*	It captures ability to curb the extent to which public power is exercised for private gain (WGI, 2015).

NB: From the literature survey these are the standard independent or control parameters. Also, apart from 10 and 11 for which negative relations are anticipated, positive relations are expected for all the indicators. Also, all the indicators are sourced from International Financial Statistics (IFS, 2015) and World Development Indicators (WDI, 2015), aside the 14 from Financial Access Survey (FAS) of IMF (2015), and 13 and 17 from Worldwide Governance Indicators (WGI, 2015).

3.3.4 Choice and Justification of Methodology

3.3.4.1 Dynamic Generalized-Methods-of-Moments (System-GMM) Technique

The study used the dynamic panel generalized-methods-of-moments (System GMM) technique proposed by Holtz-Eakin, Newey, and Rosen (1990), Arellano and Bond (1991), and Arellano and Bover (1995) for panel model estimations. It is also known as the dynamic panel instrumental variables approach. Researchers noted that OLS techniques have major limitations that can be addressed using the system GMM technique.

These are first, cross sectional, or time series regressions alone cannot fully remove unobserved country-specific effects. Second, it does not control for the potential endogeneity of other explanatory variables employed, and this may produce bias results or estimations. Third, OLS model specification (s) consists of a lagged dependent variables,

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that are not separated and tested, and which therefore bias the coefficient estimates. Also, pure cross-sectional regressions do not exploit time-series dimension of data. Against this backdrop, modern researchers use the system GMM technique developed by Arellano and Bond (1991), and Arellano and Bover (1995) for estimating their panel data (both cross-sectional and time-series data), as it offers several advantages (Edison et al, 2002). Thus, first, dynamic panel instrumental variables allows one to exploit the time-series nature of the relationship between the variables with pooled cross-section and time-series data. It is most appropriate method to apply when the cross-sectional data (N) is more than the time dimension (T) of the data. Second, by using this technique one is able to remove any bias created by unobserved country-specific effects. Third, it controls for potential endogeneity bias, as the direction of causality between dependent and independent variables may run in both directions.

For instance, while the level of development promotes increased financial inclusion, it is possible for greater financial inclusion to also spur a greater level of development. For such possibility, the evidence of reverse-direction presents an important issue of endogeneity that has been taken into account by this estimation technique: system GMM. Subsequently, applying this methodology bi-directional relations are predictable. Thus, it difference the dependent variables and uses the lagged values as regressors or instruments. The inclusion of the lagged dependent variable (e.g. lagged financial inclusion) as an independent variable transforms the model into a dynamic panel instrumental variables model. This is necessary because, recent financial inclusion performance often depends on the previous year's performance. Also, it difference the regressors and uses the lagged values in levels of all the explanatory variables as instruments. It then combines difference and level regressors in a system.

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Moreover, two important diagnostic tests are performed. These include the Sargan test which examines the overall validity of the instruments and a second order autocorrelation tests, which also examines the hypothesis that the error terms are not serially correlated (Baltagi, 2008; Arrelano and Bond, 1991). Consequently, the system GMM gives unbiased results with the assumption that there is no second-order autocorrelation and that the instruments are not correlated with the error terms. In this light, the dynamic panel instrumental variables approach is considered a superior technique for examining the relationships mentioned above.

3.4 Results and Analysis

This section presents and analyzes the results of the first empirical study.

3.4.1 Sensitivity Analysis

There exist arbitrarily distributed fixed individual effects as shown in the results below;

3.4.1.1 Hausman test for fixed or random effects

Table 3.1: Hausman test for fixed or random effects

Null Hypothesis (Ho)	Output
Difference in coefficients not systematic	Chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 18.17
(There is random effect)	Prob>chi2 = 0.0012
	(V_b-V_B is not positive definite)

b = consistent under Ho and Ha,
B = inconsistent under Ha, efficient under Ho.

Source: Author's computation using Stata 13.1

Fixed effects is confirmed by the Hausman test. The null hypothesis is rejected at 1 per cent in favour of fixed effects as shown in Table 3.1 above. But the model cannot be

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estimated using Ordinary Least Squares (OLS) techniques due to the existence of endogenous variables.

3.4.1.2 Endogeneity Test

Stata 13.1 is employed to test for endogeneity among the suspected endogenous variables in each of the model. The null hypotheses confirm that OLS will be consistent because the variables are exogenous, as they are uncorrelated with the error term. First, residuals of the variables are obtained after regressing the variables on their instruments including the exogenous variables, and the residuals are then tested for significance. The rejections of the null hypotheses prove that the variables are in indeed endogenous. The significance test results are as shown in Table 3.2 below.

Table 3.2: Endogeneity Test Results

Null Hypothesis (Ho)	F-Statistics	Prob>F
Human Development Index (HDI) is uncorrelated with the error term	F(1, 46) = 3.54	0.0663
Per capita GNI (Income) is uncorrelated with the error term	F(1, 46) = 9.08	0.0042
Education is uncorrelated with the error term	F(1, 46) = 7.71	0.0079
Health is uncorrelated with the error term	F(1, 46) = 3.45	0.0699

Source: Author's computation using Stata 13.1

From the Table 3.2 above, the test results show that per capita GNI, education are correlated with the error term, and are significant at 1 per cent, while HDI and health are significant at 10 per cent. The result confirms that OLS or fixed effects estimator will be inconsistent and also the results will be bias and unreliable if it is employed in the estimation analysis.

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3.4.1.3 Test for Cross-Sectional Dependence

The test for cross-sectional dependence or contemporaneous correlation is carried out using the Pesaran CD test which is suitable for a panel with the time dimension less than the cross-sectional dimension (micro panel). Table 3.3 presents the test result for cross-sectional dependence.

Table 3.3: Test Result for Cross-sectional Dependence

Null Hypothesis (Ho)	Output
Cross-sectional independence	Pesaran's test of cross sectional independence = 0.683, Pr = 0.5017 Average absolute value of the off-diagonal elements = 0.352

Source: Authors' computation using Stata 13.1

The test result shown in table 3.3, fails to reject the null hypothesis, meaning there is no cross-sectional dependence among the micro panels. The probability value of "0.5017" suggests that there is not enough evidence for cross-sectional dependence among the cross-sectional units in the model. Also, the absolute value of the off-diagonal elements suggests a weak correlation between the error terms. In summary, the test result detects no dependency among the cross-sections.

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3.4.1.4 Wald Test for Heteroskedasticity

Table 3.4: Wald Test for Heteroskedasticity Results

Null Hypothesis (Ho)	Chi2-Statistics	Prob>chi2
Sigma(i)^2 for all i	Chi2(15) =	0.0000
(Homoskedasticity)	5610.56	

Source: Author's computation using Stata 13.1

From Table 3.3 above, we reject the null hypothesis at 1 percent and conclude that heteroscedasticity is present in the model. All the sensitivity analyses are necessary for the consistency and they support the use of the system GMM estimator. Accordingly, the next section applies the System GMM, and presents estimation results and discussions.

3.4.2 The System GMM Results.

This section presents and discusses the System GMM results.

3.4.2.1 Economic Development (HDI) on Banking Sector Financial Inclusion

The second-order autocorrelation- AR (2) test results indicate that the instruments used and error terms are not correlated. Besides, the results of the Sargan test for the validity of the over-identifying restrictions in the estimations are insignificant showing that the results obtained are consistent.

The findings show that the levels of economic development and financial inclusion scale-up as economies develop. The study establishes that a more developed economy promotes greater financial inclusion, and likewise greater financial inclusion turn to cause higher levels of development. The study confirms the findings of Beck et al. (2007 and 2010), which maintain that access to financial services accelerate economic growth and development as it ensure equality of income distribution to the poor, low income groups and firms in the informal sector.

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Table 3.5: Banking Sector: Effects of Economic Development (HDI) on Financial Inclusion

VARIABLES	(1) Bank Fin. Incln. (All Determinants)	(2) Bank Fin. Incln (Excludes Hum. Devt.)	(3) Bank Fin. Incln (Only Devt.)
Economic Development (HDI)	**322.4*** **		**153.4*** **
(Freedom and wellbeing)	**(104.7)**		**(28.46)**
Very high HDI (Standard of measure)	0		
High HDI countries	5.994		
	(3.996)		
Medium HDI countries	-42.73***		
	(15.14)		
Low HDI countries	-60.66***		
	(22.01)		
Telecommunication	*60.14***		*27.04****
	(24.82)		*(5.560)*
Mobile Penetration	*70.49****	*2.346****	*25.11****
	(26.11)	*(0.602)*	*(5.567)*
Internet Penetration	*39.59***	*1.362****	*21.73****
	(18.44)	*(0.521)*	*(4.052)*
Income Level (Living Standards)	*-3.976*		*6.072****
	(4.300)		*(1.286)*
Financial Literacy	*25.08***		*0.966****
(*knowledge acquisition*)	*(12.67)*		*(0.266)*
Healthy lives (healthcare/ long life)	*54.91**		*48.43****
	(29.81)		*(9.605)*
Employment Status (Unemploy't level)	-42.31**	-12.70***	
	(20.54)	(2.314)	
Cost of Financial Services	-44.26**	-2.388	
	(18.06)	(7.094)	
Proximity (Branch Location)		2.293***	
		(0.505)	
Market Size/Local Economy		-11.53***	
		(1.766)	
Rule of Law	-0.360	15.04***	
	(8.448)	(2.441)	
Lag Bank Fin. Incln	0.211	0.578***	0.655***
(Previous performance)	(0.168)	(0.0636)	(0.0552)
Observations	70	121	98
Number of Countries	15	16	18
Number of Instruments	20	11	15
AR-1 (Prob.)	0.020	0.123	0.211
AR-2 (Prob.)	0.625	0.927	0.823
Sargan Test (P-Value)	0.142	0.129	0.135

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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***NB**: Economic development is human development index (HDI), income level is gross national income (GNI) per capita, healthy lives is (life expectancy index), and financial literacy is education - primary completion rate. Bank financial inclusion is ATMs per 100,000 adults; access to make payment with ease and/ or conveniently access funds via a formal banking sector, mobile penetration is mobile subscribers per 100 people, internet penetration is internet subscribers per 100 people, telephone penetration is telephone (mobile and fixed phone subscribers per 100 people), and telecommunication penetration is telecommunication subscribers per 100 people (telephone plus internet).*

The Human Development Index (HDI), a measure for 'economic development is positive and statistically significant with the banking sector financial inclusion in columns I and 3. Also, nations with medium and low HDI have negative and statistically significant values when compared to very high HDI nations, meaning the levels of human development underlie the levels of financial inclusiveness. The findings validate the empirical evidence that human development is a prerequisite to financial inclusion (Sarma and Pais, 2011). Besides, it finds positive and statistically significant values at different significance levels for telecommunication which is an index of fixed phone, mobile phone and internet usage in columns 1 and 3; and mobile penetration, and internet penetration independently in all the three columns. These findings signify that the modern technological devices and financial innovations do matter for banks' financial inclusion, in particular mobile telephony and internet development are very essential. The findings agree with the empirical works which document that modern technology such as ATMs (Amidzic, 2014; Kempson and Whyley, 1999), mobile telephony, internet and branchless services (Global Findex, 2011; DFID, 2008; Ignacio, 2008; Porteous 2007; Chant and link, 2004) are important for promoting financial inclusion.

Likewise, it finds positive and statistically significant values at different significance levels for income level in column 3, financial literacy and heathy lives in columns 1 and 3. The findings indicate that the core developmental dynamics are fundamental to the furthering of increased banking sector financial inclusion in frontier markets context. Furthermore, it finds positive and statistically significant values at different significance levels for branch

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location in column 2, rule of law in column 2, and previous bank performance in columns 2 and 3. It find negative and statistically significant values at different significance levels for unemployment in columns 1 and 2; cost of financial services in column 1; and strangely, rural population a proxy for the size of the economy at local level. The findings endorse empirical works that document that developmental factors such as income or living standards (Demirguc-Kunt and Klapper, 2012; World Bank, 2005; Barr, 2004; Connoly and Hajaj, 2001), literacy (Osei-Assibey, 2011; Amaeshi, 2006; Zeti, 2005) are underlying factors to promoting financial inclusion. The findings of this study indeed signifies that banks promote more financial inclusion in the presence of a high level of economic development. Overall, this findings are supported by the works of Marshall (2004), World Bank (2008), Chibba (2009) and Sarma and Pais (2011) that a nation that lags behind in economic development cannot promote financial inclusion.

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3.4.2.2 Economic Development (HDI) on Bond (Debt) Market Financial Inclusion

Table 3.6: Bond Market: Effects of Economic Development (HDI) on Financial Inclusion

VARIABLES	(1) Bond Mkt. Fin. Incln (All Determinants)	(2) Bond Mkt. Fin. Incln (Excludes Human Devt.)	(3) Bond Mkt. Fin. Incln (Only Devt.)
Economic Development (HDI)	**7.211***		**12.38*****
(Freedom and wellbeing)	**(3.825)**		**(3.701)**
Very high HDI (Standard of measure)	0		
High HDI countries	-0.449**		
	(0.204)		
Medium HDI countries	-1.002***		
	(0.243)		
Low HDI countries	-1.178***		
	(0.377)		
Telephone Penetration	*0.304****		
	(0.0859)		
Internet Penetration	*0.0929*	*0.0356***	*0.468**
	(0.0631)	*(0.0141)*	*(0.275)*
Mobile Penetration		*0.0298*	*0.757***
		(0.0329)	*(0.359)*
Telecommunication			*1.304***
			(0.622)
Income Level (Living Standards)	*0.101*		*0.216***
	(0.143)		*(0.105)*
Financial Literacy	*0.999**		*1.472****
(*knowledge acquisition*)	*(0.557)*		*(0.483)*
Healthy lives (healthcare/ long life)	*2.204****		*1.046*
	(0.487)		*(0.663)*
Cost of Financial Services	-0.342	0.294	
	(0.705)	(0.297)	
Market/ Economy Size (Population size)	0.132*	0.00437	
	(0.0682)	(0.00456)	
Rule of Law	0.982**	-0.130	
	(0.392)	(0.0860)	
Lag Bond Fin. Incln	1.160***	1.180***	1.160***
(Previous performance)	(0.0822)	(0.0387)	(0.0268)
Observations	66	121	95
Number of Countries	15	16	19
Number of Instruments	20	11	16
AR-1 (Prob.)	0.971	0.279	0.804
AR-2 (Prob.)	0.505	0.172	0.863
Sargan Test (P-Value)	0.361	0.852	0.159

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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***NB**: Economic development is human development index (HDI), income level is gross national income (GNI) per capita, health is life expectancy index, and financial literacy is education - primary completion rate. Bond market financial inclusion is an index of credit to private firms; loans or credit facilities to private sector by the entire financial system (% of GDP), and financial intermediation; the ratio of private credit to deposits by entire financial sector. Mobile penetration is mobile subscribers per 100 people, internet penetration is internet subscribers per 100 people, telephone penetration is telephone (mobile and fixed phone subscribers per 100 people), and telecommunication penetration is telecommunication subscribers per 100 people (telephone plus internet).*

The results of the second-order autocorrelation- AR (2) test show that the instruments used are not correlated with error terms. Also, the Sargan test results suggest that the instruments used are valid, and that the results are reliable.

Economic development has statistically positive and significant values with bond (debt) market financial inclusion in columns I and 3. Besides, nations with high, medium and low HDI have negative and statistically significant values when compared to very high HDI nations, implying the levels of human development underlie the levels of financial inclusion. The findings confirm intuitions that human development is a necessity for financial inclusion (Chibba, 2008; World Bank 2015). Moreover, it finds positive and statistically significant values at different significance levels for telephone (fixed and mobile phone) penetration in column 1, internet penetration in columns 2 and 3, and mobile penetration in column 1. The findings further validate that modern technological devices and financial innovations are undeniably decisive factors for debt market financial inclusion. Hence, it establishes that telecommunication development is a prerequisite to promoting greater financial inclusion by the debt markets in frontier markets. The findings supprt the empirical works which observe that modern technology such as ATMs (Amidzic, 2014), mobile telephony, internet and branchless services (Global Findex, 2011; Ignacio, 2008) are important for promoting financial inclusion.

Besides, it finds positive and statistically significant values at different significance levels for income level in column 3, financial literacy in columns 1 and 3, and healthy lives in

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column 1. Additionally, the findings suggest that the key developmental factors are very critical to the scaling up of bond market financial inclusion in frontier market context. The findings reinforce empirical works that establish that developmental factors such as income or living standards (Demirguc-Kunt and Klapper, 2012; World Bank, 2005; Barr, 2004; Connoly and Hajaj, 2001), literacy (Osei-Assibey, 2011; Amaeshi, 2006; Zeti, 2005) are underlying factors to promoting financial inclusion. Equally, it finds positive and statistically significant values at different significance levels for rule of law in column 1, population proxy for economy size at national level, and previous bond market financial inclusion performance in all the columns. The findings in column 2 attest that the bond market may find it difficult to promote increased financial inclusion in the absence of economic development. The findings confirm that development is indisputably a necessity to the furthering of more financial inclusion by the debt markets in frontier markets. Moreover, the findings endorse the works of the World Bank (2008) and Demirgüç-Kunt and Klapper (2012) which maintain that developmental factors are important for ensuring access and use of the financial system's services.

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3.4.2.3 Economic Development (HDI) on Stock (Equity) Market Financial Inclusion

Table 3.7: Stock Market: Effects of Economic Development (HDI) on Financial Inclusion

VARIABLES	(1) Stock Mkt. Fin. Incln_Index (All Determinants)	(2) Stock Mkt.Fin. Incln_Index (Excludes Hum. Devt.)	(3) Stock Mkt. Fin. Incln_Index (Only Devt.)
Economic Development (HDI)	**-154.5*** **		**1,355*** **
(Freedom and wellbeing)	**(22.71)**		**(108.7)**
Very high HDI (Standard of measure)	0		
High HDI countries	-8.301		
	(6.514)		
Medium HDI countries	-9.482		
	(11.69)		
Low HDI countries	-12.25		
	(9.142)		
Internet Penetration	*5.997****	*0.457*	*203.0****
	(1.329)	*(0.471)*	*(13.58)*
Mobile Penetration			*280.3****
			(19.25)
Telecommunication	*-2.754****		*286.8****
	(0.900)		*(19.48)*
Income Level (Living Standards)	*7.332****		*115.7****
	(1.602)		*(4.582)*
Financial Literacy	*26.75****		*3.727***
(*knowledge acquisition*)	*(6.021)*		*(1.451)*
Healthy lives (healthcare/ long life)			*411.8****
			(33.98)
Market Size (Urban Population)	13.87***	-0.0710	
	(4.405)	(2.069)	
Employment Status (Unemploy't)	0.691	-9.401***	
	(5.414)	(2.932)	
Cost of Financial Services		-2.640***	
		(0.495)	
Rule of Law	-0.611	-19.96***	
	(2.855)	(4.160)	
Lag Stock Mkt. Fin. Incln	0.923***	0.728***	
(Previous performance)	(0.0104)	(0.0621)	
Observations	100	117	114
Number of Countries	19	16	19
Number of Instruments	15	12	14
AR-1 (Prob.)	0.165	0.038	0.273
AR-2 (Prob.)	0.974	0.627	0.764
Sargan Test (P-Value)	0.131	0.158	0.213

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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***NB**: Economic development is human development index (HDI), income level is gross national income (GNI) per capita, health is life expectancy index, and financial literacy is education - primary completion rate. Stock market financial inclusion is listed companies per 1,000,000 people; the number of companies listed on a local market per 1,000,000 people. Mobile penetration is mobile subscribers per 100 people, internet penetration is internet subscribers per 100 people, telephone penetration is telephone (mobile and fixed phone subscribers per 100 people), and telecommunication penetration is telecommunication subscribers per 100 people (telephone plus internet).*

The second-order autocorrelation- AR (2) test results show that the instruments used are not correlated with error terms. Also, the Sargan test results suggest that the instruments used are valid, and that the results are consistent.

Economic development has a negative and significant impact on stock market financial inclusion in column I, but it is significantly positive in column 3. Also, nations with high, medium and low HDI show statistically insignificant values when compared to very high HDI nations, suggesting the levels of human development underlie the levels of financial inclusiveness. Similarly, it finds positive and statistically significant values at different significance levels for telecommunication in column 3, internet penetration in columns 1 and 3, and mobile penetration in column 3; but rather surprisingly telecommunication is negative and statistically significant in column 1. Here again the findings suggest that, in particular, internet is very instrumental to promoting more stock market financial inclusion. The findings endorse the empirical works which maintain that modern technology such as ATMs (Amidzic, 2014), mobile telephony, internet and branchless services (Global Findex, 2011; Porteous 2007; Chant and link, 2004) are important for swiftly scaling up financial inclusion. Besides, it finds positive and statistically significant values at different significance levels for income level in columns 1 and 3, financial literacy in columns 1 and 3, and healthy lives in column 3. The findings suggest that the leading components of development are very imperative to the fostering of greater stock market financial inclusion in frontier market context.

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Moreover, it finds a statistically positive and substantial values at different significance levels for urban population a proxy for the size of the urban economy in column 1, and previous bank performance in all three columns. However, it finds negative and statistically significant values at different significance levels for employment status proxy for the level of unemployment in column 2, cost of financial services in column 2, and surprisingly rule of law in column 2. The findings confirm empirical works that maintain that factors such as high financial charges (Kumar & Mohanty, 2011; Osei-Assibey, 2011; Allen *et al.*, 2008), high unemployment (Kempson and Whyley,1999), and physical distance (Demirguc-Kunt and Klapper, 2012; World Bank, 2008) are detrimental in promoting financial inclusion. Indeed, these findings confirm that also for the stock market, the level of economic development is very important to facilitate greater stock markets' financial inclusion in frontier markets. Besides, the findings validate the works of the World Bank (2008) and Demirgüç-Kunt and Klapper (2012) which maintain that developmental factors are important for ensuring safe, swift and efficient use of financial system's services.

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3.4.2.4 Financial Inclusion on Economic Development (HDI)

Table 3.8: All Markets: Effects of Financial Inclusion on Economic Development (HDI)

VARIABLES	(1) Economic Development (HDI)	(2) Economic Development (HDI)	(3) Economic Development (HDI)
Bank Financial Inclusion	**0.00642*** (0.000927)**		
Bond Mkt. Financial Inclusion		**0.0138*** (0.000982)**	
Stock Mkt. Financial Inclusion			**0.00614*** (0.000325)**
Income Level	0.0109***	0.0935***	0.00504***
	(0.00311)	(0.00569)	(0.00132)
Infrastructure	0.00225**	0.0117***	0.00137***
	(0.00105)	(0.000791)	(0.000299)
Natural Resources	0.0151***	0.0131***	0.00224***
	(0.00230)	(0.000942)	(0.000529)
Investment (FDI % of GDP)	0.0472***	0.0193***	0.00920***
	(0.0132)	(0.00419)	(0.00212)
Corruption Control	0.00364*	0.00193	0.0143***
	(0.00204)	(0.00270)	(0.00289)
Lag economic development (Previous performance)	0.954***	1.040***	1.062***
	(0.0384)	(0.0261)	(0.0241)
Observations	167	167	158
Number of Countries	20	20	20
Number of Instruments	11	11	11
AR-1 (Prob.)	0.061	0.031	0.112
AR-2 (Prob.)	0.283	0.316	0.188
Sargan Test (P-Value)	0.181	0.157	0.215

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

NB: *Economic development- HDI comprises health (life expectancy), education (literacy) and income (per capita GNI). Bank financial inclusion is ATMs per 100,000 adults. Bond market financial inclusion is an index of credit to private firms and financial intermediation. Stock market financial inclusion is listed companies per 1,000,000 people.*

The results of the second-order autocorrelation- AR (2) test show that the instruments used are not correlated with error terms. Also, the Sargan test results suggest that the instruments used are valid, and that the results are reliable.

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Financial inclusion by the banking sector, bond and stock markets all have positive and statistically significant values at 1% significance level with economic development for all the trials conducted. The study documents that banking sector, bond and stock markets with increased financial inclusion foster human development in the case of frontier markets. The findings substantiate Bihari (2011) that contends that financial inclusion is an essential necessity to constructing a uniform economic development and for ushering in higher economic and social equity. Besides, all the control variables for development are positive and statistically significant for most of the trials conducted. The analyses show how the relations between economic development and financial inclusion change in the course of intensifying economic development. This signifies that besides financial inclusion, income level, infrastructure, natural resources, and investment do spur development and the reverse applies in frontier markets. The study confirms the findings of Beck et al. (2007 and 2010) that access to financial services facilitate economic growth and development as it ensures equality of income distribution to the poor, low income groups and firms in the informal sector. Overall, the study establishes strong support for this study's hypothesis.

3.5 Conclusion and Policy Implications

3.5.1 Conclusion

This study examines whether the links between economic development and the different parts of the financial system's inclusiveness change as countries develop economically. The study establishes that a more developed economy promotes greater financial inclusion, and likewise more financial inclusion tend to cause greater levels of development in the form of improved living standards, literacy and healthy lives. The findings of the study submit that to achieve higher financial inclusion, it is important to promote all the components of the HDI. The study therefore establishes that economic development is

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indeed sine quo non to the achievement of greater financial inclusion. The findings support the works of Levine (1997 and 2005) which maintain that economic development is a necessary condition for an improved financial services. Besides, the findings indicate that financial innovations, especially in the form of advanced telecommunication, used to conduct and or provide financial services have become a must for financial inclusion to scale up swiftly.

Also, increased financial inclusion will in turn alleviate poverty, reduce income inequality and improve living standards of people, and thereby foster human development. The cost of financial services results imply that borrowers are most likely to be worried about high bank charges and interest rates on loans. This is consistent with the works of CGAP (2009) and Klapper and Singer, (2013) that cost is a deterient to using formal financial services. In sum, the findings suggest that both human development indicators (particularly income, health and education) and modern technology (principally mobile telephony and internet) may certainly promote financial inclusion in the different segments of the financial system. The findings imply that modern technologies especially in form of mobile and internet utilized to conduct and or provide financial services, has become a crucial requirement to provide convenient, easily accessible and fast financial services. Although, financial innovations like mobile banking, ATMs, internet services have aided to expand access to financial services such as payment products, and online banking, other products such as deposits or savings services via mobile or internet seem neglected and also, online trading is woefully limited. Overall, the study finds strong support for the models' predictions.

3.5.2 Policy Recommendations

Financial inclusion is the responsibility of all stakeholders; the state, development agencies, financial regulators, supervisors and service providers, clients and potential

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customers. The World Bank (2014) observes that improving access in the formal financial sector is a unique challenge that cannot be tackled only by the financial systems. Governments, policy makers and developmental agencies should aim at a holistic approach to economic development in place of targeting sections of the developmental challenges. There should be reforms such as improved and modernized technological devices and financial innovations, branchless outlets, and innovative products; relaxed conditions, terms and rigidities of opening and maintaining accounts; rural communities' development by providing improved basic physical infrastructure like telecommunication (mobile/fixed telephony, internet), and facilities like paved roads, reliable electricity, schools, and hospitals. Also, strong linkage and collaboration among governments, regulators, financial service providers and users; relaxed rules and regulations on foreign funds inflows; and strong and modernized regulatory, supervisory and law enforcement institutions. These measures will empower economic agents to participate in the developmental processes and financial inclusion which will foster complementarities between both. Besides, it is time to refer to "*corruption*"- a relatively lenient and decent word- as *"public stealing, public theft, or public robbery",* and stiffer punishment should be meted out to offenders to make it unattractive.

Similarly, aggressive financial inclusion should be embarked upon by all the segments of the financial system to promote greater financial inclusion and thereby augment further development. Also, new deposits or savings methods through technological devices and branchless avenues need to be encouraged and implemented to aid customers deposit and access monies 24/7. There should be financial education on available products and services using local languages and training on how to use modern technologies to make services provided user-friendly. On-line trading facilities should be enhanced to attract more firms to list and use the services of the local stock exchange and also monitor their investments

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with ease. Additionally, host governments can include in their regulatory requirements a compulsory listing on the local stock exchange, raising of funds from the local debts markets and banking systems as packages offered to foreign investors. The findings and policy inferences in this study should intensify the on-going debates, rekindle and redirect policy goals of regulators, developmental partners and governments.

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CHAPTER FOUR

SECOND EMPIRICAL STUDY

FINANCIAL INCLUSION AND FINANCIAL SECTOR DEVELOPMENT: A FRONTIER MARKET PERSPECTIVE

ABSTRACT

This empirical study investigates the second objective of the thesis. The study examines how financial inclusion fosters financial sector development, and whether that in turn promotes more financial inclusion in frontier markets' context. It argues that financial inclusion ameliorate bank, bond and stock markets development. Also it contends that a well-functioning banking sector, and developed debt and equity markets promote increased financial inclusion. Dynamic panel generalized method of moments (System-GMM) approach is employed to analyze data from a time span of 2005 to 2014 for twenty (20) frontier markets by Standard and Poor's Indices. The study originally finds that bank account penetration is important for expanding depth, but it plays no crucial role in improving breadth and efficiency of the banking sector. Moreover, it finds evidence that borrowers' penetration is critical for scaling up breadth, but it impedes the efficiency of the banking sector. Further, it establishes evidence that ATM penetration is a driver of the depth and breadth of banking sector. Similarly, it provides new and inspiring evidence that credit to private firms is indispensable for expanding the depth and breadth of the bond market, but it obstructs the efficiency of that market. Additionally, it shows evidence that financial intermediation penetration is central for the depth and access expansion, but it inhibits efficiency of the bond market. Also, it documents new and exciting evidence that stock market penetration is a decisive ingredient for improving the depth dimension of stock market. Furthermore, local stock market accessibility is equally essential for improving the depth and breadth of the stock market. Overall it finds strong original evidence that financial inclusion fosters the depth, breadth, efficiency, and the general expansion of financial sector in frontier markets. Similarly, it concludes that well-developed financial sector enhances more financial inclusiveness in frontier markets' context. Further, it establishes a uni-directional mere linkage between banks and stock market development, and confirms a bi-directional mere linkage between banks and bond market development. The original contributions of this study to finance literature and practice are that greater financial inclusion expands and improves the financial sector from size, access, and efficiency dimensions, and also its overall development. It also, uniquely positions inclusive capital market in the financial inclusion debate. The policy implications are that financial sector should not operate only in segments of the formal sector and virtually ignore the large local population, smallholder farmers and enterprises in the informal sector.

Keywords: *Financial Inclusion, Banking Sector Development, Capital Market Development, System GMM, Frontier Markets*

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4.1 Introduction

Low financial inclusion due in particular to limited domestic savings and resources mobilisation, and lack of readily available allocative funds may obstruct the progress of the financial sector in the developing world. Poor domestic resources mobilisation and allocation have been attributed to large financial exclusion from the formal financial sector in the developing world. According to Demirgüç-Kunt and Klapper (2012) approximately 2.5 billion of world adult population are excluded from the mainstream financial sector with the vast majority in the developing economies. Their survey data show that in many emerging and developing economies as high as 90% adults have no bank account or alternative form of access to the mainstream financial sector, compared to only 11% in the developed economies. Addressing this challenge calls for massive promotion of financial inclusion by banks and capital markets in developing economies. Pooling and mobilising savings and other financial resources from many people and investors, and allocating them to their most productive purposes, is therefore key to the growth of the financial sector. This assertion is supported by Romer (1986) who maintains that financial systems are efficient if they are able to mobilize more funds on their own through higher savings and resources mobilization for productive purposes. Yet, financial inclusion still remain a dominant problem, hence making banks and capital markets in the developing world very narrow, inaccessible, unstable and highly inefficient.

According to the Consultative Group to Assist the Poor - CGAP- (2009, 2010), financial inclusion is a mechanism to bring on board all individuals, households, businesses, organizations and institutions to have access and effectively use appropriate financial services and products at the easiest convenience, and to mobilize all idle funds. This means financial inclusion is any effort to bring the large un- or under- served economic agents particularly in the local economy to the mainstream financial system in order to mobilize

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and allocate all unused funds. This also means that financial inclusion is a powerfull weapon for addressing the ill-developed financial sector in developing economies. Moreover, World Bank (2013b) describes financial inclusion as a "world where everyone has access and can use the financial services one needs to capture opportunities and reduce vulnerability". Also, financial inclusion is "universal access" to a "wide range of financial services" at a "reasonable cost" (Bhaskar, 2013). Implying financial inclusion is a means of offering all economic agents access to have and effectively use varieties of mainstream financial services and products that are affordable, available everywhere and every time (24/7). Financial inclusion therefore, marks the commencement of a 'finest opportunity for expanding and improving' the financial sector in the developing world.

A well-developed financial sector depends on greater financial inclusion that makes more funds available to the financial sector to effectively undertake their intermediation or trading activities. Considerable attention is therefore being devoted to formulate regulations, strategies and initiatives best suited for increasing mobilisation and allocation of financial resources in more recent times. For instance, in South Africa, the country's largest banks have agreed, under the Financial Sector Charter, to create a special bank account for poor households called the Msanzi account. This initiative has had tremendous success with over 3.3 million account holders in the first 18 months. Customers can also use any of the participating banks' ATM at no additional charge (World Bank, 2009). Moreover, in Kenya, the Equity Bank has specialized in providing small loans at very low interest rates along with free savings accounts to rural populations and smallholder farmers who represent 75% of the working population. By this initiative, the Equity Bank as of 2009, has more than three (3) million customers and they were the third (3rd) largest bank in Kenya (World Bank, 2009 and 2014). Also, recently in Ghana, Access Bank was promoting financial inclusion through public-offer of shares at GH¢4 per share to

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economic agents with idle funds to become part owners of the bank (shareholders), whilst it raises equity capital to expand its operations and intermediation activities, and augment the local stock market. Likewise, in a bid to promote financial inclusion, the Government of Ghana has just issued a 10 year GH¢ 200 million domestic bond at a face value of GH¢ 1 only as part of efforts to raise debt finance from economic agents with idle funds desiring to become long-term lenders, also to meet government financing requirements while it enhances the bond market (Bank and Financial Times, 2016).

Financial inclusion is therefore very important because as more and more economic agents open accounts and use bank services this will make more funds available to the banks to intermediate effectively. This is supported by empirical evidence that establishes that having a basic bank account greatly increases the possibility of savings (Dev, 2006). Moreover, as more enterprises and firms seek long term debt facility and/ or enlist and trade on the local capital market they expand and improve the trading activities of the capital market. Increased financial inclusion will expand banks and capital markets outreach and capacity to meet the demands of a greater proportion of the population, enterprises and firms for finance, thereby fostering financial sector development. These views reinforce empirical works that establish financial inclusion expands bank coverage (Getnet, 2014), and offers people access to savings instruments, more savings and credit facilities (Aportela, 1999; Ashraf *et al.*, 2010a) which are important for financial sector inclusiveness and development.

Indeed, financial inclusion is emerging as the '*most promising saviour'* to the dysfunctional banking sector and underdeveloped capital market in particular, frontier markets, yet, research in this area is limited. The important problem of inquiry is can there be well-functioning banking sector and well-developed capital market if the catalytic ingredient: ***financial inclusion*** is either lacking or woefully inadequate? In this regard, the

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study argues that financial inclusion is a catalytic ingredient for ameliorating the depth, breadth, efficiency, and overall development of banks and capital markets in frontier markets. Accordingly, it proposes the first hypothesis to be tested as follows:

Ho_1: Increased financial inclusion plays no role in financial sector development.

Similarly, it is plausible that well-functioning banks and well-developed capital markets that are highly inclusive will promote more financial inclusion. The presence of such inclusive financial sector in an economy is critical to the performance of the important role of channeling funds from surplus economic agents to deficit economic agents. Modern development economists have emphasized that broader access to financial services (financial inclusion) should be a central development agenda to accelerate financial sector progress (Demirguc-Kunt et al, 2008).

Besides, the more financial services are extended to new savers, the more deposits will increase and all other things being equal, the higher the supply of loanable funds by the financial sector for productive purposes. Largely, well-developed financial systems are able to mobilize funds from diverse sources and allocate the funds to the most productive activities which bring good returns that benefit the entire economy. Levine (2005) argues that financial development helps to allocate scarce financial resources to the most profitable and productive investment projects. For instance, the presence of a more inclusive advanced banking system may encourage more customers, enterprises or firms to open and use bank accounts, use fast payment products, and seek credit facilities to finance their working capital and operations. Also, a more inclusive developed capital market may make more information and attractive products available to investors with the consequence of faster transactions providing more opportunities to diversify risks as markets expand through greater financial inclusion.

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Moreover, trading activities particularly on the capital market could be enhanced via financial inclusion to attract corporate and business entities to desire to raise long-term finance through the capital market instead of through the credit and money markets such as banks. As long-term finance in the form of equity, debt or hybrid financing with maturity exceeding one year establishes its importance for economic progress. Subsequently, encouraging more and more economic agents to own an account, save, borrow, make payment with ease, and also invest, trade, diversify and manage their risks via the formal financial sector, will cause it futher expansion and improvement. Well-functioning banks and well-developed capital markets resulting from increased financial inclusion are therefore very important in furthering greater financial inclusion. In this light, the study likewise, contends that well-functioning banks and well-developed capital markets will in turn promote greater financial inclusion in the context of frontier markets. Hence, it proposes a second hypothesis to be tested is as follows:

Ho_2: A developed financial sector plays no role in furthering financial inclusion.

Furthering greater financial inclusion, therefore, signals as the most promising initiative for fostering banks and capital markets inclusiveness in frontier markets. Nevertheless, there have been some erroneous perceptions that promoting financial inclusion is the preserve of the informal financial enterprises and micro finance institutions. Yet, financial inclusion has been evaluated in a much wider view to cover formalized financial sector such as banks, bond and stock markets in a study advanced by Čihák et al (2013), and the databases of Global Findex (2011) and Global Financial Development (2015). Moreover, it has emerged as a commercial profitable avenue therefore, formal financial systems, especially capital market practitioners and regulators, need to think outside the box to unleash capital markets still stuck in doldrums, for there is a 'fortune at the bottom of the pyramid'. Also, it would provide easier access to and use of wide-range of affordable

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financial instruments not limited to bank products and services but offer opportunity for excluded groups desiring to beome proud part owners of firms and/ or long-term lenders.

In addition, greater financial inclusion has seldom been explored in the framework of cross-sectional and time series data analysis. Some focused on only Africa (Klapper and Singer, 2013; Demirgüç-Kunt and Klapper, 2013), while others were on only the banking system (Allen & Carletti, 2008; Beck *et al.*, 2008). Besides, limited empirical studies have explored whether financial inclusion ameliorates financial sector development (Demirgüç-Kunt *et.al*, 2008; World Bank, 2009), but they ignored the possibility of bi-directional effects. There is good reason to question the validity of such an assumption, since there can be bi-causal effects. Yet, such endogeneity issues were ignored by most of the prior studies that assumed one-way causality. This study, therefore seeks to address this lacuna in the existent body of knowledge.

Moreover, the study analyzed the important role of modern technology and financial innovation devices such as mobile telephony and internet facilities, in promoting financial inclusion independently. It also, controls for human development indicators such as income and financial literacy, governance indicators like rule of law and regulatory quality, and macroeconomic stability indicators such as interest and inflation rates among other economic parameters. To establish the analysis, the study applied the dynamic panel generalized methods of moments (System GMM) technique. So, the present study is original, innovative and different from prior studies on the issue of exploration.

The rest of the study is planned in four more sections. The second section provides a review of closely related literature. The third section describes the data and methodology employed. The fourth section presents and discusses the results, while the fifth concludes with policy inferences.

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4.2 Literature Review

4.2.1 Financial Sector: Banking Sector and Capital Market

Schumpeter's theory (1911), is among the first to postulate the role of a developed financial sector. He ascribes that the functioning of the banking sector comprise mobilizing savings, managing risks, facilitating transaction and technological innovations among others. He also, maintains that the banking sector and all other financial intermediaries were formed not just for transmitting money but for multi-functions including granting credit. Another theoretical study avers that the financial sector enhances a wide range of factors including promoting funds mobilization and allocation, improving the liquidity and tradability of financial assets, providing opportunities for risk diversification, reducing information asymmetry, attracting foreign capital and improving corporate governance practices of firms in any economy. They further contend that ability to mobilize funds or capital as well as diversify risk is positively correlated with market size (Demirgüç-Kunt and Klapper, 1996), hence a deepened financial system can better mobilize funds and better manage risk exposure to investors. Similarly, Levine (1977) submits that financial markets and institutions are created because of information and transaction costs. In attempt to reduce such costs they perform five (5) major functions. These include mobilization of savings, allocation of resources, amelioration of risk, facilitation of exchange and exertion of corporate control. Thus, financial systems play intermediation, informative and transformative roles in the process of economic development of nations. They mobilize financial resources from both internal and external sources, price the funds and allocate the funds to their most productive uses.

According to Rajan and Zingales (2003) financial development includes but not limited to the process that marks the expansion in quantity, quality, affordability, accessibility and liquidity of financial systems' products and services. In other words, general improvement

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in the financial sector will enable it provide attractive and high quality services and products to wide range of customers, at easily accessible service points or outlets, at reasonable and predictable costs. Additionally, Bencivenga and Smith (1991) describe the beneficial role or activities of banks and other intermediaries saying banks accept deposits from and lend to many economic agents, hold liquid reserves against foreseeable withdrawal demand, issue liabilities which are highly liquid than their principal assets, and do away with the quest for self-financing or supporting of investments. They conclude that these factors lead to efficient mobilization and allocation of capital, while Gulde et al. (2006) maintain that when banks are efficient they allow mobilization of savings from diverse sources and allocate funds to the most productive sectors, which benefit not just investors and beneficiaries but the whole economy. Besides, Levine (1991) argues that stock markets aid in protecting investors against idiosyncratic risk by offering firms access to hold diversified portfolio, whiles Bencivenga et al (1995) contend that active stock markets make financial assets tradable, and thereby reduce liquidity risk. Hence, developed financial sector can gauge, subdivide and spread difficult risks at the least associated cost. Moreover, Levine and Zervos (1998) contend that stock markets are not substitute for credit delivering intermediaries such as banks. This infers that, stock markets for that matter capital markets offer different financial products and services from those delivered by banks.

However, Bende-Nabende and Slater (2003) observe that generally, stock markets in low income countries are narrow compared to that of high income countries. Undeniably in low income countries the share is about one-sixth (1/6) of that in high income countries, and in middle income countries it is about one-third (1/3) of that in high-income countries. Comparatively, they have smaller market size, lack accessibility and are highly illiquid with unstable levels typically characterizing these markets. Likewise, Eichengreen et al.

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(2006) observe that East Asia is "ahead" in terms of bond market capitalization while Latin America is "ahead" in terms of market liquidity and foreign investor participation in the bond market. But generally, foreign currency debts dominate the debt market in developing countries, mainly due to over reliance on concessional multilateral and bilateral funding, and the veracity that domestic markets are undeveloped (Sy, 2007). Also, a related study finds that market microstructure problems like small size, limited investor base, lack of long-term maturities, and low liquidity pose challenges for bond market development and debt strategy in especially the developing world (Blommestein and Horman, 2007). Meanwhile, Adelegan (2008) advances that bond market development is expected to make an important contribution to economic progress through improving access for firms to either invest surplus funds or for deficit units to issue bonds or borrow on long term. Besides, the finance-growth empirical literature provides support for the argument that nations with better or well-developed financial systems grow faster, while those with underdeveloped financial system bear the risk of failure (Kasekende, 2008). Adjasi and Yartey (2007) observe that local financial systems are robust in mobilizing resources and channeling them for productive uses. Thus, the financial sector mobilize funds from diverse sources and allocate the funds to the most productive activities which bring good returns that benefit the entire economy.

Čihák et al. (2012; 2013) theorize that;

> "*When banks screen borrowers and identify firms with the most promising prospects, this is a main step that helps allocate resources efficiently, expand economic opportunities and foster development. When banks and securities markets mobilize savings from households to invest in promising projects, this is another crucial step in fostering economic development. Also, focusing on only one characteristic- say banking sector size is not a measure of accessibility, stability, quality or efficiency of the financial system. It means missing other equally important characteristics of financial systems. Equally, focusing on only the*

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> *banking sector implies missing important components of the overall financial system as the banking sector is only one component of financial systems, but then stock and bond markets are important components in many economies*" *(Čihák et al., 2013).*

This view is supported by Kaserer and Rapp (2014), who opine that, in recent times, the growth of the capital markets has been driven primarily by bond markets. In this regard, financial sector development signifies the process that characterizes expansion and improvement in the depth, accessibility, stability and efficiency in the financial system to play its intermediary role effectively. Whenever this significant role is not performed effectively, it has serious implications on the financial sector and hence economic activities of such nations. In other words, general improvement in the financial sector will enable it provide attractive and high quality services and products to a wide range of customers at easily accessible service points or outlets at reasonable and predictable costs. Therefore, an inclusive financial sector with associated provision of effective financial products and services may provide a stimulating environment for the different dimensions and segments of the financial sector to flourish.

4.2.2 Financial Inclusion

Financial inclusion denotes offering opportunity or access to all economic agents to utilize readily available, customized, easily accessible, affordable, and convenient formal financial products and services. AfDB (2013) defines financial inclusion as "all initiatives that make formal financial services available, accessible, and affordable to all segments of the population" that covers both demand and supply side factors. Similarly, financial inclusion is "universal access" to a "wide range of financial services" at a "reasonable cost" (Bhaskar, 2013), while Allen *et. al.* (2012) refer to financial inclusion as the use of financial services. These definitions imply that financial inclusion should include access

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to and use of services of the securities markets as well. Thus, financial inclusion is a means of offering a wide range of mainstream financial products and services to the vast un- or under -served local population- low income earners, irregular employees, poor households-, and firms- micro enterprises, smallholder farmers, small and medium firms in both the informal and formal sectors to adequately access affordable financial services with ease and become empowered to participate in meaningful economic activity.

Sarma (2008) describes financial inclusion as a way of promoting easy accessibility, availability, and usage of formal financial products and services to everyone in a country. Thus, access to use a broad range of financial services including owning an account, saving, borrowing and financial advise e.t.c. from a formal financial sector. It is an effort to bring the large unserved or unbanked particularly, in the informal sector to the mainstream financial system, in order to mobilize and allocate idle funds, and also to make financial products and services accessible to a large section of the deprived population and firms particularly in the informal sector. Also, Amidizic (2014) opines that there are three major dimensions to financial inclusion, namely outreach, usage and quality of financial products and services. The outreach signifies the likelihood for beneficiaries to easily reach the point of service; the usage refers to the use of the financial system symbolized by the number of ATMs, banks branches, household depositors and borrowers; while quality considers the level of financial products in meeting the users need (desire). Similarly, Gulliford et al. (2002) advance a discussion on accessibility from two different perspectives "having access" which refers to availability of services, and "gaining access" which refers to an individual's ability to utilize the available services. This literally signifies having opportunity to access financial services, and having the capability to utilize the available financial services, each is exclusively crucial. Accordingly, the present

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study contends that availability (available opportunities) as well as capability for utilization (utilizing available opportunities) are the integral parts of financial inclusion.

In accordance with the Consultative Group to Assist the Poor- CGAP (2010), financial inclusion is a mechanism to bring on board all households, individuals, businesses, organizations and institutions to have access and effectively use appropriate financial services and products at the easiest convenience to mobilize all unused funds. Likewise, financial inclusion symbolizes providing affordable financial services to a large number of marginalized and low income earners who do not own or use bank accounts i.e. the unbanked (Kopala, 2010). Also, the unbanked are people or SMEs who hold no account and conduct their economic transactions with cash, but lack of holding bank account hinder their economic prospects. Thus, entrepreneurs, micro enterprises, small and medium firms can benefit greatly from affordable finance via financial inclusion promotion. Mor and Ananth (2007) observe that finance can help individuals smoothen their income, insure themselves against risks and broaden investment opportunities, as it will alleviate poverty and expand economic activities. Similarly, Subbaro (2009) advances a discussion on financial inclusion challenges and opportunities. The author contends that financial inclusion is all about offering people the opportunity to have better lives for their children and themselves. Thus given the opportunity, at community level, it may results in sustained enhancement of quality lives, stimulate economic growth and thereby reduce poverty. Besides, the author sumbits that the role of financial inclusion is to expand the coverage of mainstream financial services to embrace underprivileged individuals, households and sectors in remote communities.

Moreover, Demirgüç-Kunt and Klapper (2012), observe that in several developing or emerging economies, the proportion of unbanked adults can be as high as 90%. Their

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survey data also indicate that almost one (1) in five (5) adults has no bank account or alternative form of accessing the formal financial sector. Besides, world-wide, between 2008 and 2010 there was only about 1.34 bank accounts per adults. Account penetration differs immensely between high income and low income economies; with 89% of adults reporting that they have an account at a formal financial institution in high-income economies, but only 24% in low income economies. Also, approximately 2.5 billion of world's adult are excluded from the formal financial system with the vast majority in developing countries particularly Africa where their survey indicate; 58% in Southern Africa, 77% in Western Africa, 77% in Eastern Africa, 80% in Northern Africa and 93% from Central Africa Republic do not have bank account, compared to only 11% in developed economies. In addition, Global findex (2011) reports that globally only about 50% of adults have accounts at a formal financial institution in 2011.

Klapper and singers' survey data on the state of financial inclusion in Africa document that less than a quarter (23%) of adults own accounts with a formal financial institution. In its place, many adults use informal means to save, borrow, and or make payment in Africa. In addition the share (14%) of adults who use mobile phone to conduct financial transactions is much higher in Africa than other parts of the world. Moreover, their survey show that 36% of adult indicated having put aside some money in past past year, out of this (36%) 13% did so at a formal financial institution in past year. On the other hand, for informal borrowing 44% indicated they have borrowed money in the past year, of this (44%), as higher as 38% of adults indicated they borrowed from family or friends, while 28% indicated it was their only source of borrowing (Klapper and Singer, 2013). Therefore, this buttresses a study that Africa has the lowest account ownership where only 20% have or use the financial system, compared to emerging economics like China and Poland where over 60% are financially included. It also establishes that in Africa, the

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number of bank branches per 100,000 adults increased slightly from three (3) to five (5) across a period of 2004 to 2012; and in Latin America and the Caribbean it increased from eleven (11) to twenty-three (23) while in Europe the number of ATMs per 100,000 adults have fully fledged around the same time span (Demirgüç-Kunt and Klapper, 2013).

Ardic et al. (2011) find that worldwide, about 56% of adults do not own or use formal financial services but the numbers differ for high income and low income economies. Low income economies have 64% of adults unbank, compared to only 17% of adults who are unbanked in high income economies. They also observe that informal financial services were more expensive and less reliable than mainstream financial services. Claessen (2005) and Beck et al. (2006) opine that access to finance is enclosed on a range of issues such as cost, physical availability, and the quality and range of products being offered. Access implies that credit report and information should not be limited to only borrowers with connections and collateral as well as products with high expected returns that translate into profit for the provider, but also all type of credits that serve the needs of the poor and microenterprises (Beck et al.2006). Moreover, it is not only the prices of the services that have to be affordable, but also all non-price transaction costs such as information processing costs or physical distance (World Bank, 2008). Also, for most low income group having effective savings and payment products instead of credit facilities pose as their pressing financial need (World Bank, 2008; and Hawkins, 2011). However, in several emerging and developing countries, in 2013, less than 40% of small and medium size firms obtained a bank loan or credit from a formal financial sector (World Bank, 2014).

In a nutshell, financial inclusion is about individuals, households and firms that do not have access to the full benefits and use of mainstream financial products and services. This implies that wide array of affordable financial services should be readily available when

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desired. For these reasons, providing attractive and affordable formal financial services for the unbanked or un- and under- served should be the core of policymakers' agenda. Also, to ensure that resources are adequately mobilized and allocated effectively, in order to expand and improve the financial sectors in frontier markets, promoting financial inclusion is the way forward. Thus, the financial systems need to adapt products and vary services to suit and attract the patronage of local customers who are usually poor and illiterates, and also enterprises and firms in the informal sector which are typically small and highly illiquid.

In conclusion therefore, as evidenced by the literature evaluated, most of the existing studies have failed to recognize the important role of financial inclusion in ameliorating financial sector development.

4.3 Methodology

4.3.1 Data Source and Type

Data for the study are sourced from Global Financial Development (GFD), World Development Indicators (WDI) and Worldwide Governance Indicators (WGI) all of the World Bank (2015); and the International Financial Statistics (IFS) of the International Monetary Fund (2015). It is secondary data covering the period 2005 to 2014, for twenty (20) frontier markets (Argentina, Bangladesh, Botswana, Cyprus, Ecuador, Ghana, Jamaica, Kenya, Kuwait, Latvia, Lebanon, Mauritius, Namibia, Nigeria, Panama, Pakistan, Qatar, Saudi Arabia, Sri Lanka and Tunisia) by S&P July, 2014 Indices were extracted and utilized (Appendix A). Besides, because financial inclusion is a relatively new concept, most countries in the sample did not have exploitable data before the 2000's. Also, due to mixing values (figures) the panel is unbalanced for most of the estimations conducted.

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4.3.2 Model Specifications

To specifically examine the effects of financial inclusion and banking sector development, the models are as stated below:

Banking Sector Development impacted by Financial Inclusion

$$BSD_{it} = \alpha_i + \beta_1 BSD_{it-1} + \gamma_2 BSFinIncn_{it} + A_{it}\lambda' + \mu_{it} \quad \text{.....(1.0)}$$

Financial Inclusion impacted by Banking Sector Development

$$BSFinIncn_{it} = \sigma_i + \phi_1 BSFinIncn_{it-1} + \rho_2 BSD_{it} + K_{it}\delta' + \mu_{it}' \quad \text{.....(1.1)}$$

where

BSD_{it} is banking sector development for country ***i*** at time ***t***;

$BSFinIncn_{it}$ is banking sector financial inclusion for country ***i*** at time ***t***;

α_i and σ_i are unobserved country-specific effects;

A_{it} is a vector of banking sector development control variables for country ***i*** at time ***t***;

K_{it} is a vector of banking sector financial inclusion control variables for country **i** at time **t**;

μ_{it} and μ_{it}' are error terms for remaining disturbance.

NB: 1. *The inclusion of the lagged dependent variable (e.g. BSD_{it-1}) as an independent variable transforms the model into a System GMM. This is necessary because, present financial sector performance often depends on the previous years' performance.*

2. The *controls for equation 1.0 comprise but not exclusively limited to Economic Activity-GDP pc at PPP, Financial Openness, Trade Openness, Investment-FDI, Rule of Law, and Inflation-GDP deflator, while that of equation 1.1 consist of Income Level, Financial Literacy, Employment Status, Financial Charges, Rural Market Size, and Regulatory Quality.*

Also, to specifically investigate the effects of financial inclusion and capital market development, the models are as follows:

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Capital Market Development impacted by Financial Inclusion

$$CMD_{it}^{\tau} = \varphi_i + \omega_j CMD_{it-1} + \partial_j CMFinInc_{it}^{\pi} + X_{it}\mathrm{P}' + \mu_{it}^{"} \quad \text{.....(2.0)}$$

Financial Inclusion impacted by Capital Market Development

$$CMFinInc_{it}^{\pi} = \theta_i + \varpi_j CMFinInc_{it-1}^{\pi} + \Upsilon_j CMD_{it}^{\tau} + Z_{it}\Phi' + \mu_{it}^{'''} \quad \text{.....(2.1)}$$

where

CMD_{it}^{τ} is capital market development (τ = bond and stock markets) for country i at time t;

$CMFinInc_{it}^{\pi}$ is capital market financial inclusion (π = bond and stock markets) for country i at time t;

φ_i and θ_i are unobserved country-specific effects,

X_{it} is a vector of capital market development control variables for country i at time t,

Z_{it} is a vector of capital market financial inclusion control variables for country i at time t,

$\mu_{it}^{"}$ and $\mu_{it}^{'''}$ are error terms for remaining disturbance.

NB: 1. *The controls for bond market development consist of; Economic Activity- GDP pc at PPP, Interest on Loans, Population Size, Gross Domestic Savings, Natural Openness, Investment- Gross Capital Formation (GCF), Rule of Law, and Inflation-GDP deflator. The Stock Market adds or instead uses Financial Openness, Trade Openness, Investment_FDI, and/ or Regulatory Quality.*

2. *The controls for bond market financial inclusion is made up of Income Level, Financial Literacy, Employment Status, Financial Charges, Market Size, and Regulatory Quality, while Stock Market adds or instead uses Urban Market Size.*

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4.3.3.1 Measures of the Dependent Indicators Utilized

In line with the underlying theory of Čihák et al. (2013) and Demirgüç-Kunt, et al (2008), the study has explored three dimensions and segments of the financial system- bank, bond (debt) and stock (equity) markets, and has used three indicators individually and jointly for each market segment. First, for the banking sector; (1) depth; size of the banking system- M2% of GDP (ratio of bank liquid liabilities to GDP), (2) breadth/ access; degree to which individuals, households, and firms can and do use banking products and services- bank intermediation ratio (private credit by bank divided by bank deposits, all % of GDP), and (3) efficiency/ liquidity; effectiveness of the banking system in intermediating resources and facilitating financial transactions- interest rate spread (lending interest rate minus deposits interest rate).

Second, for the bond market; (1) depth; size of the bond market- bond market capitalization % of GDP (Outstanding domestic private and public debt securities % of GDP), (2) breadth/ access; degree to which private firms can and do use financial systems' credit facilities- private debt % of GDP (Private credit by deposit money banks and other financial institutions (% of GDP) divided by debt market capitalization), and (3) efficiency/ liquidity; effectiveness of the bond market in intermediating resources and facilitating financial transactions- public debt % of GDP (Credit to government and state owned enterprises % of GDP). Finally, for the stock market; (1) depth; stock market size- stock market capitalization (% of GDP), (2) breadth/ access; degree to which firms can conduct transactions and trade on the local stock market- total value of shares traded (% of GDP), and (3) efficiency/ liquidity; effectiveness of the stock market in trading both domestic and foreign shares, and facilitating transactions- stock market turnover (total value of shares traded to stock market capitalization). Positive relations are expected and are sourced from GFD and WDI (2015). There was no adequate data for stability indicators covering all the markets so they were left out.

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Similarly, in accordance with Čihák et al. (2013) and Demirgüç-Kunt, et al (2013), financial inclusion parameters used individually and to present the overall comprise; Banking sector- number of bank accounts per 1,000 adults, borrowers from commercial banks per 1,000 adults, and ATMs per 100,000 Adults; for Bond market- Credit to private firms (Loans from entire financial system to private sector % of GDP), and Financial intermediation ratio (entire financial system credit divided by entire financial system deposits); and for Stock Market- Number of companies listed on the local stock market, and Listed companies per 1,000,000 (1m) people. Positive relations are expected and are sourced from IFS and GFD (2015). This study utilizes financial inclusion parameters that focus mainly on the 'number of people whose lives have been touched' by varieties of financial products and services instead of the 'amounts' deposited, loaned or available opportunities. Besides, due to the crucial role of modern technological and financial innovation devices such as internet, mobile telephony, and telecommunication, which are measured as internet subscribers per 100 people, mobile telephone subscribers per 100 people, and mobile and fixed telephones plus internet subscribers per 100 people respectively, are tested as direct measures of financial inclusion. The study estimated them independently to observe their distinctive significant effects. Positive relations are expected and they are sourced from WDI of World Bank (2015).

4.3.2.2 Description of other Independent and Control Variables:

1. *Mobile penetration*: Mobile cellular subscriptions (per 100 people)	It refers to mobile telephone services that provide access to voice communication using cellular technology, per 100 people (WDI, 2015).
2. Fixed telephone subscriptions (per 100 people)	It refers to the sum of active number of analogue fixed telephone lines, voice-over-IP (VoIP) subscriptions, fixed wireless local loop (WLL) subscriptions, ISDN voice-channel equivalents and fixed public payphones (WDI, 2015).

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3. *Telephone Penetration*	Fixed telephone plus Mobile telephone subscriptions per 100 people.
4. *Internet penetration*: Internet users (per 100 people)	Are individuals who have used the Internet (from any location) in the last 12 months, per 100 people (WDI, 2015).
5. *Telecommunication Penetration*	Fixed telephone, Mobile telephone plus internet subscriptions per 100 people.
6. *FDI- Foreign direct investment*, net inflows (% of GDP)	Are the net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor (WDI, 2015).
7. *DPI- Domestic private investment*: Gross capital formation (% of GDP)	It covers gross outlays by the private sector on additions to its fixed domestic assets plus net changes in the level of inventories (WDI, 2015).
8. *Interest on Loans*	Interest in arrears plus actual amount of interest paid by the borrower currency, goods, or services in the year specified. (WDI, 2015).
9. *Inflation:* Inflation, GDP deflator (annual %)	As measured by the annual growth rate of the GDP implicit deflator, it shows the rate of price change in the economy as a whole (WDI, 2015).
10. *Rule of Law*	It captures perceptions of the extent to which agents have confidence in and abide by the rules of society (WGI, 2015).
11. *Financial openness*: Gross savings (% of GDP).	It is gross national income less total consumption, plus net transfers (WDI, 2015).
12. Natural Openness: Exports of goods and services (% of GDP)	It represents the value of all goods and other market services such as financial, information provided to the rest of the world (WDI, 2015).
13. *Economy size*: GDP per capita, PPP (constant 2011 international $)	It is the Gross Domestic Product (GDP) converted to international dollars using purchasing power parity (PPP) rates (WDI, 2015).
14. *Savings:* Gross domestic savings (% of GDP)	It is the gross domestic product (GDP) less final consumption expenditure- total consumption (WDI, 2015).

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15. *Income level*: Gross national income (GNI) per capita growth	It is the sum of value added by all resident producers in the economy plus any product taxes minus any subsidies not included in the valuation of output plus net receipts of primary income divided by midyear population (WDI, 2015).
16. Financial literacy/ Education: Primary and Secondary completion rate	It is the number of new entrants in the last grade of primary education, divided by the population at the entrance age for the last grade of primary education (WDI, 2015).
17. *Market Size*: Population, total	It is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship (WDI, 2015).
18. *Market size /Rural Economy (Rural Population)*	Rural population refers to people living in rural areas as defined by national statistical offices. It is calculated as the difference between total population and urban population (WDI, 2015).
19. Financial charges: Lending interest rate (%)	It is the bank rate that usually meets the short- and medium- term financing needs of the private sector (WDI, 2015).
20. *Employment status:* Employment to population ratio, 15+, total (%)	It is the proportion of a country's population that is employed. Ages 15 and older are generally considered the working-age population.
21. Regulatory Quality	It captures perceptions of the ability of the government to formulate and implement sound policies and regulations (WGI, 2015).

NB: Per the literature evaluated the above are the standard independent or control variables. Aside 7, 8 and 18 for which negative relations are predicted, positive relations are anticipated for all the indicators. Also, all the indicators are sourced from IFS and WDI (2015), apart from 9 and 20, which are sourced from WGI (2015).

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4.3.3 Choice and Justification of Methodology

4.3.3.1 Dynamic Panel Generalized Methods of Moments (System GMM) Approach

The dynamic panel Generalized Methods of Moments (system GMM) approach has been proposed as a superior econometric technique for use in cross-country regressions because it allows the inclusion of country-specific effects and time series dimension of data, thereby giving greater degrees of freedom. As ordinary least square (OLS) regressions have flaws that can be addressed using system GMM. Also previous panel methods such as random effects or fixed effects estimator which allows the modelling of the unobserved country specific effects and fixed parameters to be estimated may present bias in their results due to issues of endogeneity and collinearity. Yet, to control for potential collinearity and endogeneity bias, the system GMM estimator advanced by Arellano and Bond (1991) is employed by most recent studies, as it deals with endogeneity bias, collinearity issues and measurement errors to achieve unbiased, efficient and consistent estimates. The lag of the dependent and independent variables are included in the model (s) as valid instruments which control for potential measurement errors, omitted variable and simultaneous causality bias. Moreover, this technique is able to overcome econometric problems, relating to cross-sectional dependence of countries and multi-correlation, which are prevalent in macro panel models (Arellano and Bond, 1991).

The current study employs the Generalized Method of Moments (system GMM) method proposed by Arellano and Bond (1991) to obtain reliable results. Thus, the choice of this approach is justified on the grounds that it is able to overcome endogeneity and collinearity of the regresssors which characterize the basic models of this Study. It is the most appropriate method to use when cross-sectional data (N) is more than the time dimension (T) of the data. Also, by using this technique one is able to remove any bias created by

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unobserved country-specific effects. In addition, it controls for potential endogeneity bias, as the direction of causality between dependent and independent variables could run in both directions. For example, while increased financial inclusion may drive high levels of financial sector growth, it is possible for higher levels of financial sector expansion and improvement to also promote greater financial inclusion. For such likelihood, the evidence of reverse direction presents an imperative issue of endogeneity that has been taken care of by this estimation technique: system GMM. Subsequently, applying this methodology bi-directional relationships are anticipated.

Thus, it difference the dependent variables and utilizes the lagged values as regressors or instruments. The inclusion of the lagged dependent variable (e.g. lagged financial sector development) as an independent variable transforms the model into a system GMM model. This is necessary because, recent financial sector development performance often depends on the previous year's performance. Also, it difference the regressors and uses the lagged values in levels of all the explanatory variables as instruments. It then combines difference and level regressors in a system. Additionally, the choice of the system GMM over other techniques goes beyond the I(0) nature of the variables. Besides, it permits the Sargan test for the over-identification, which test the overall validity of the instruments used, and the first- and second-order correlation test, which examines the hypothesis that the instruments are not serially correlated with the error terms (Baltagi, 2008; Arellano and Bond, 1991; Arellano and Bover, 1995; and Blundell and Bond, 1997) are carried out.

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4.4 EMPIRICAL FINDINGS AND DISCUSSIONS

The section presents and discusses the findings of the second empirical study.

4.4.1 Sensitivity Analysis

The Hausman test and the endogeneity test confirm that the estimation technique suitable for the dynamic panel data model with fixed effects is the dynamic panel Generalised Method of Moments (System GMM) technique developed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1997).

4.4.1.1 Hausman test for fixed or random effects

There exist arbitrarily distributed fixed individual effects as shown in the results below.

Table 4.1: Hausman test for fixed or random effects

Null Hypothesis (Ho)	Output
Difference in coefficients not systematic	Chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 134.72
(There is random effect)	Prob>chi2 = 0.0000
	(V_b-V_B is not positive definite)

b = consistent under Ho and Ha,
B = inconsistent under Ha, efficient under Ho.

Source: Author's computation using Stata 13.1

Fixed effects is confirmed by the Hausman test. The null hypothesis is rejected at 1 per cent in favour of fixed effects as shown in Table 4.1 above. But the model cannot be estimated using Ordinary Least Squares (OLS) techniques due to the existence of endogenous variables.

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4.4.1.2 Endogeneity Test

Stata 13.1 is employed to test for endogeneity among the suspected endogenous variables in each of the model. The null hypotheses confirm that OLS will be consistent because the variables are exogenous since they are not correlated with the error term. First, residuals of the variables are obtained after regressing the variables on their instruments including the exogenous variables, and the residuals are then tested for significance. The rejection of the null hypotheses prove that the variables are in indeed endogenous. The significance test results are as shown in Table 4.2 below.

Table 4.2: Endogeneity Test Results

Null Hypothesis (Ho)	F-Statistics	Prob>F
Bank accounts per 1,000 adults is uncorrelated with the error term	F(1, 104) = 36.00	0.0055
Bank borrowers per 1,000 adults is uncorrelated with the error term	F(1, 104) = 131.900	0.0004
ATM per 100,000 adults is uncorrelated with the error term	F(1, 104) = 36.00	0.0055
Financial intermediation is uncorrelated with the error term	F(1, 48) = 113.00	0.0029
Private credit is uncorrelated with the error term	F(1, 48) = 23.33	0.0013
Listed companies per 1m adults is uncorrelated with the error term	F(1, 77) = 65.70	0.0012
Listed companies is uncorrelated with the error term	F(1, 77) = 75.00	0.0003

Source: Author's computation using Stata 13.1

Table 4.2 above, show that bank accounts per 1,000 adults, borrowers per 1,000 adults, ATM per 100,000 adults, financial intermediation, private credit, number of listed companies and listed companies per 1m adults are highly correlated with the error term at

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1 per cent significance value. The results reiterate that OLS or fixed effects estimator will be inconsistent and also the results will be bias and unreliable if it is employed in the estimation analysis.

4.4.1.3 Test Result for Cross-Sectional Dependence

Table 4.3: Test Result for Cross-sectional Dependence

Null Hypothesis (Ho)	Output
Cross-sectional independence	Pesaran's test of cross sectional independence = 0.683, Pr = 0.5017 Average absolute value of the off-diagonal elements = 0.352

Source: Authors' computation using Stata 13.1

Conclusion: the test result detects no dependency among the cross-sections.

4.4.1.4 Wald Test for Heteroskedasticity

Table 4.4: Wald Test for Heteroskedasticity Results

Null Hypothesis (Ho)	Chi2-Statistics	Prob>chi2
Sigma(i)^2 for all i (Homoskedasticity)	Chi2(18) = 633.99	0.0000

Source: Author's computation using Stata 13.1

From Table 4.4 above, we reject the null hypothesis at 1 percent and conclude that heteroscedasticity is present in model.

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All the sensitivity analyses permmit the use of the system GMM estimator and they are necessary for the reliability of the results obtained. Accordingly, the next section applies the System GMM, and presents the estimated results and discussions.

4.4.2 Financial Inclusion and Banking Sector Development

The results of the AR (2) i.e. second-order autocorrelation test show that the instruments used and error terms are not correlated. Besides, the Sargan test results suggest that the instruments used are valid, and therefore the results obtained are reliable.

Bank account penetration is positive and statistically significant for depth, but it is positive and statistically insignificant for breadth and efficiency of the banking sector. This result suggests that opening more accounts at formal banks promote only the depth dimension of the banking system. Borrowers' penetration is positive and statistically significant for only breadth of banking sector, while it is negative and significant for efficiency of the banking sector which implies that acquiring more readily available credit facilities from mainstream banks is a deceive factor for promoting the accessibility of the banking sector. It also suggests that borrowers are more concerned about interest spread risk exposure to firms and individuals. The findings reinforce the empirical works that maintain financial inclusion expands bank coverage (Getnet, 2014), and offers individuals' right to use savings instruments, surges in savings and credit facilities (Aportela, 1999; Ashraf *et al.*, 2010a) which are important for financial sector inclusiveness and development. ATM penetration is positive and highly significant for the depth and breadth of the banking sector. This finding signifies that easy usage or access to bank services is very crucial to stimulate the deepness and accessibility of the banking sector. Additionally, the study documents statistically significant positive values for mobile penetration for all the dimensions, telephone penetration for the depth dimension, while internet penetration is positive and statistically significant for all the estimations, except for the depth dimension

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of the banking sector. The findings agree with the empirical works which document that modern technology such as ATMs (Kempson and Whyley, 1999), mobile telephony, internet and branchless services (Porteous 2007; Chant and link, 2004) are important for promoting financial inclusion. Although the non-responsiveness of mobile and internet in some of the estimations is a puzzle. The findings confirm that modern technological devices, in particular mobile telephony and internet, are very influential to the furthering of inclusive banking sector. Undeniably, modern technology is making the use of banking services very easy, accessible, faster and attractive.

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Table 4.5: The Effects of Financial Inclusion and Banking Sector Development

Variables	(1) Depth (Size)	(2) Breadth (Access)	(3) Efficiency (Liquidity)	(4) Bank Sector Development (Overall)	(5) Bank Financial Inclusion (Overall)
Bank Accounts Penetration	**0.199*** **	**0.102**	**0.0114**		
	(0.0689)	**(0.105)**	**(0.0105)**		
Borrowers Penetration	**0.147**	**0.140** **	**-0.0521*** **		
	(0.122)	**(0.0580)**	**(0.0124)**		
ATM Penetration	**0.0763** **	**0.0522***	**0.00158**		
	(0.0327)	**(0.0297)**	**(0.00443)**		
Mobile Penetration	***0.869**** **	***0.158**** **	***1.540**** **		
	(0.316)	***(0.0417)***	***(0.524)***		
Telephone Penetration	***0.0225**** **	***0.261***	***0.113***		
	(0.00754)	***(0.145)***	***(0.112)***		
Internet Penetration	***0.0135***	***0.0278**** **	***0.677**** **		
	(0.868)	***(0.00795)***	***(0.186)***		
Economic Activity (Econ. Size)	-0.0422	0.0945**	0.0135***	0.181***	
	(0.0399)	(0.0390)	(0.00467)	(0.0613)	
Financial Openness	0.238	0.189	-0.0264	2.699***	
	(0.192)	(0.239)	(0.0250)	(0.450)	
Investment-FDI (% of GDP)	0.939	-0.493	0.0542	-0.528	
	(0.862)	(0.588)	(0.0696)	(1.441)	
Inflation (GDP deflator)	-0.229***	0.00149	-0.0393***	-0.704**	
	(0.0883)	(0.0928)	(0.0112)	(0.326)	
Rule of Law	-0.148	0.146	-0.0325**	1.047***	
	(0.180)	(0.106)	(0.0156)	(0.245)	
Bank financial Inclusion				**0.276*** **	
				(0.0955)	
Bank Sector Development					**1.734****

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					(0.681)
Mobile Penetration					***0.857******
					(0.0947)
Internet Penetration					***1.615******
					(0.291)
Income Level (Living Standards)					0.0201***
					(0.00290)
Financial Literacy (Education)					0.00549
					(0.0138)
Cost of Financial Services					-0.0234***
					(0.00341)
Rural Economic Size					-0.699***
					(0.172)
Employment Status					-3.955***
					(0.409)
Regulatory Quality					1.431***
					(0.214)
Lag Dependent	1.296***	0.978***	-0.254**	0.0968	0.266***
	(0.142)	(0.220)	(0.125)	(0.0859)	(0.0711)
Observations	77	82	82	132	69
Number of Countries	12	12	12	18	15
Number of Instruments	15	16	16	16	15
AR-1 (Prob.)	0.121	0.016	0.778	0.024	0.423
AR-2 (Prob.)	0.987	0.942	0.382	0.162	0.497
Sargan Test (P-Value)	0.317	0.161	0.125	0.260	0.827

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

***NB**: Bank account penetration is number of bank accounts per 1,000, borrowers' penetration is borrowers from commercial banks per 1,000 adults, and ATM penetration is ATMs per 100,000 Adults. Mobile penetration is mobile subscribers per 100 people, internet penetration is internet subscribers per 100 people, telephone penetration is telephone (mobile and fixed phone subscribers per 100 people), and telecommunication penetration is telecommunication subscribers per 100 people (telephone plus internet). Depth is M2% of GDP*

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(ratio of bank liquid liabilities to GDP), breadth is private credit by bank divided by bank deposits (all % of GDP), and efficiency is interest rate spread (lending interest rate- deposits interest rate).

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Moreover, the overall banking sector financial inclusion is positive and highly significant at 1% significance level with the overall banking sector development. The findings signify that promoting complete increased financial inclusion by banks is very important to scale-up an inclusive well-functioning banking sector. These findings reinforce studies by Demirguc-Kunt et al. (2008) and Čihák *et al.* (2013) that broader access to and use of mainstream financial services should be a central development agenda of financial sector transformations. Similarly, the overall banking sector development is positive and statically significant at 5% significance level with the overall banking sector financial inclusion. This result shows that countries that have a more developed banking sector are more likely to promote more financial inclusion. This results also imply that as more and more economic agents have and use formalized bank products and services, this help to broaden its development, and as well this in turn facilitates the scaling up of higher bank financial inclusion. The findings buttress the works of Čihák *et a*l. (2012 and 2013), which argue that better-functioning financial systems e.g. inclusive banks, encourage new firm formulation and aid small up-springing firms to grow, as more firms get access to use the financial system.

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Table 4.6: The Effects of Financial Inclusion and Bond (Debt) Market Development

Variables	(1) Depth (Size)	(2) Breadth (Access)	(3) Efficiency (Liquidity)	(4) Bond Market Development (Overall)	(5) Bond Mkt Fin. Incln. (Overall)
Credit to Private Firms	**0.194*** **	**25.32*** **	**-0.0656*** **		
	(0.0267)	**(7.504)**	**(0.0175)**		
Financial Intermediation	**0.479*** **	**-11.88**	**-0.0470** **		
	(0.0459)	**(12.18)**	**(0.0187)**		
Mobile Penetration	**0.0286**	**0.226****	**0.00709*** **		
	(0.0201)	**(0.111)**	**(0.00219)**		
Telephone Penetration	**0.0139*** **	**1.368*** **	**0.289*** **		
	(0.000481)	**(0.263)**	**(0.105)**		
Internet Penetration	**0.0744***	**0.0524****	**0.0852**		
	(0.0450)	**(0.0259)**	**(0.0547)**		
Interest on Loan	1.138***	-153.6**	-0.125	-2.076*	
	(0.228)	(68.28)	(0.0965)	(1.160)	
GDP at PPP (Econ. Activity)	0.103***	-21.66***	0.0287***	0.316***	
	(0.0103)	(4.207)	(0.00416)	(0.0370)	
Population (Market size)	-0.0415***	11.67***	0.0441***	-0.204***	0.113
	(0.00469)	(1.556)	(0.00512)	(0.0197)	(0.102)
Savings (Fin. Openness)	-0.181***	13.56	-0.0619**	-1.282***	
	(0.0694)	(21.97)	(0.0276)	(0.286)	
Natural Openness	-0.242***	58.06***	0.0587**	1.665***	
	(0.0419)	(11.10)	(0.0269)	(0.213)	
Domestic Investment (GCF)	0.842***	46.02	0.0428	4.886***	
	(0.104)	(37.93)	(0.0554)	(0.718)	
Inflation (GDP Deflator)	0.0867*	23.09**	-0.00588	0.120	
	(0.0463)	(9.780)	(0.0193)	(0.233)	
Rule of Law	-0.953***	35.89**	0.377***	-2.182***	

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	(0.0783)	(14.71)	(0.0503)	(0.286)	
Bond Financial Incln				**0.553*** **	
				(0.126)	
Bond Mkt Dev't					**0.507*** **
					(0.0842)
Income Level					0.00181***
					(0.000347)
Financial Literacy					-0.150
					(0.109)
Cost of Financial Services					-2.054**
					(0.872)
Telephone Penetration					**0.00186*** **
					(0.000516)
Employment Status					1.012***
					(0.390)
Population (Econ. size)					
Regulatory Quality					-0.133
					(0.179)
Lag Dependent	-0.0529	-0.104	-0.141	-0.307***	0.509***
	(0.0775)	(0.0946)	(0.131)	(0.103)	(0.115)
Observations	115	54	106	106	83
Number of Countries	15	9	14	14	16
Number of Instruments	14	14	14	14	13
AR-1 (Prob.)	0.259	0.010	0.982	0.533	0.460
AR-2 (Prob.)	0.175	0.182	0.320	0.503	0.675
Sargan test (P-Value)	.0169	0.141	0,112	0.123	0.222

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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***NB**: Credit to Private Firms is loans from entire financial system to private sector % of GDP, and financial intermediation is entire financial system credit divided by entire financial system deposits. Mobile penetration is mobile subscribers per 100 people, internet penetration is internet subscribers per 100 people, telephone penetration is telephone (mobile and fixed phone subscribers per 100 people), and telecommunication penetration is telecommunication subscribers per 100 people (telephone plus internet). Depth is bond market capitalization % of GDP, breadth is private debt % of GDP divided by debt market capitalization, and efficiency is public debt % of GDP.*

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4.4.3 Financial Inclusion and Bond (Debt) Market Development

The second-order autocorrelation- AR (2) test result shows that the error terms are not correlated with the instruments used. Moreover, the results of Sargan test of over-identifying restrictions indicate that the instruments used are valid, therefore, suggesting the results are consistent.

Financial intermediation ratio is positive and highly significant at 1% significance level for depth and access of the bond market, but it is negative and significant at 5% significance level for efficiency of the bond market. This result signifies that the degree of financial intermediation is key to enhancing the depth of bond market, but it hinders the efficacy of the bond market. Credit to private firms is significantly positive at 1% significance level for depth and breadth of the bond market but it is negative and significant at 1% significance level for the efficiency of the bond market. This shows that credit to private firms facilitate depth and access (breadth) of the bond market whilst long term borrowers are affected by rise in public borrowing. The findings buttress the thinking of the SDG (2015) that aims at strengthening the capacity of domestic financial systems to encourage and expand access to banking, insurance and financial services for all, and these include services by the bond market.

Moreover, the study establishes that mobile penetration is significantly positive for the breadth and efficiency of the bond market, telephone penetration is significantly positive for all the bond market dimensions, while internet penetration is significantly positive for the depth and breadth of the bond market. The findings support the empirical works (Global Findex, 2011; Ignacio, 2008; Porteous 2007), which document that modern technology such as mobile telephony, internet and branchless services are important for promoting financial inclusion. The findings signify that modern technological devices especially telephone is an instrumental factor for furthering inclusiveness of the bond

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market. Additionally, the bond market financial inclusion index entered the bond market development model being positive and highly significant at 1% significance level. Equally, bond market development index entered the bond market financial inclusion model positive and highly significant at 1% significance level. This suggests that nations that have a more inclusive developed bond market are able to encourage more financial inclusion. i.e. greater use of debt instruments and products.

The findings imply that greater debt financial inclusion is very crucial to the holistic development of the bond market and also the findings support the theoretical reasoning of Čihák *et a*l. (2012 and 2013), that when stock, bond and derivatives markets permit risk diversification by obtaining varieties of portfolios, this boosts investments in greater return projects which could have been rejected. Projects with higher returns may have been ignored. Besides, developing a deeper, accessible and liquid bond markets may reduce the over-dependence of firms and companies for banks and foreign loans financing. This assertion is supported by Plummer & Click (2005) who conclude that through the local bond market, the corporate sector can borrow for longer maturity periods in local currency which matches their investment needs. This finding implies that as more and more economic agents have and use formalized bond market products and services that fosters its development and also that in turn promote greater bond market financial inclusion. The findings strengthen the works of Čihák *et a*l. (2012 and 2013), which put forward that better-functioning financial systems e.g. inclusive bond markets inspire new firm creation and support small bouncing firms to enlarge, as more firms secure access to the financial system .

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Table 4.7: The Effects of Financial Inclusion and Stock Market Development

Variables	(1) Depth (Size)	(2) Breadth (Access)	(3) Efficiency (Liquidity)	(4) Stock Market Development (Overall)	(5) Stock Mkt Fin. Incln. (Overall)
Stock Market Penetration	**0.750*** **	**0.0745*** **	**0.166**		
	(0.117)	**(0.0190)**	**(0.164)**		
Stock Market Accessibility	**0.0573*** **	**0.186***	**-0.0211**		
	(0.00937)	**(0.0907)**	**(0.0225)**		
Mobile Penetration	***0.0648****	***0.246****	***0.0544****		
	(0.0318)	***(0.0693)***	***(0.0106)***		
Telephone Penetration	***0.178****	***0.00197****	***0.0154****		
	(0.101)	***(0.000551)***	***(0.00852)***		
Internet Penetration	***0.190****	***0.308****	***0.0281****		
	(0.0461)	***(0.0990)***	***(0.00925)***		
Economic Activity (Econ. Size)	-0.191***	0.0907	0.153	-0.0406	
	(0.0562)	(0.0707)	(0.137)	(0.0478)	
Population (Market size)	0.231***	-0.0542	-0.0172	0.0255	
	(0.0397)	(0.0347)	(0.0793)	(0.0190)	
Financial Openness	0.876***	1.522***	0.833	0.548***	
	(0.220)	(0.332)	(0.678)	(0.195)	
Trade Openness	0.811***	-0.166	0.601*	0.176	
	(0.206)	(0.178)	(0.341)	(0.116)	
Investment (FDI)	3.691***	0.206	0.0450	0.650	
	(0.910)	(0.573)	(1.036)	(0.652)	
Inflation (GDP Deflator)	-0.188	-0.146	-0.482	-0.0217	
	(0.141)	(0.379)	(0.691)	(0.124)	
Regulatory Quality	3.696***	0.285	-1.619	0.734***	-0.0895

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	(0.596)	(0.586)	(1.185)	(0.242)	(0.239)
Stock Mkt Fin Incln				**0.163*** **	
				(0.0607)	
Stock Mkt Devt					**0.440*** **
					(0.145)
Income Level (Living Standards)					0.00247
					(0.0169)
Financial Literacy (Education)					0.0113***
					(0.00402)
Cost of Financial Services					-0.526
					(0.681)
Urban Economic Size					-0.0959
					(0.115)
Mobile Penetration					0.198***
					(0.0623)
Telephone Penetration					0.000948
					(0.000762)
Internet Penetration					4.819***
					(1.132)
Regulatory Quality					6.178***
					(1.861)
Lag Dependent	0.193*	-0.367*	1.131**	0.211**	0.991***
	(0.101)	(0.207)	(0.554)	(0.0885)	(0.0555)
Observations	91	33	30	102	68
Number of Countries	15	6	6	16	12
Number of Instruments	13	13	13	13	14
AR-1 (Prob.)	0.248	0.018	0.149	0.067	0.062
AR-2 (Prob.)	0.863	0.202	0.290	0.443	0.117
Sargan test (P-Value)	0.162	0.173	0.116	0.927	0.898

Standard errors in parentheses

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

***NB**: Stock market penetration is listed companies per 1,000,000 (1m) people, and stock market accessibility is number of companies listed on the local stock market. Mobile penetration is mobile subscribers per 100 people, internet penetration is internet subscribers per 100 people, telephone penetration is telephone (mobile and fixed phone subscribers per 100 people), and telecommunication penetration is telecommunication subscribers per 100 people (telephone plus internet). Depth) is stock market capitalization (% of GDP), breadth is total value of shares traded (% of GDP), and efficiency is stock market turnover.*

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4.4.4 Financial Inclusion and Stock Market Development

The second-order autocorrelation- AR (2) tests results suggest that the error terms are not correlated with the instruments used. In addition, the results of Sargan test of over-identifying restrictions indicate that the instruments used are valid, therefore, showing the results are reliable.

Stock market penetration is positive and highly significant at 1 percent significance level for the depth and breadth dimensions of stock market development. The finding indicates that listed companies per 1 million people is an important factor for heightening the depth and breadth of the local stock market, but it has no significance for its efficiency. Also, stock market accessibility- firms listed on the local stock market- is significantly positive at different significance level for the depth and breadth of the stock market. The results suggest that the number of companies listed on a local stock market is also very critical to boost the inclusiveness of developed stock markets especially their depth and accessibility, while it is of no significance for its efficiency. The findings reinforce the thinking of the SDG (2015) that aims at strengthening the capacity of domestic financial systems to encourage and expand access to banking, insurance and financial services for all, and these include services by the stock market.

Additionally, the study observes significantly positive values for mobile penetration, telephone penetration and internet penetration on all the dimensions for the stock market. The findings establish that modern technological devices, particularly internet usage are undeniably a decisive factor for furthering the inclusiveness of the stock market. The findings agree with the empirical works (Global Findex, 2011; DFID, 2008; Chant and link, 2004) which document that modern technology such as mobile telephony, internet and branchless services are important for promoting financial inclusion by the equity markets.

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Furthermore, the stock market financial inclusion index entered the stock market development model being positive and highly significant at 1% significance level. The finding infers that increased financial inclusion is a decisive factor in furthering the inclusivity of the local stock market. Likewise, stock market development index entered the stock market financial inclusion model being negative and highly significant at 1% significance level. The findings imply that greater equity financial inclusion is very critical to the all-inclusive development of the local stock market and also, the findings support the theoretical reasoning of Čihák *et a*l. (2012 and 2013), which contend that stock, bond and derivatives markets facilitate diversification of risk, this promotes investments in better return projects which may have been shirked.

The findings suggest that frontier markets that have inclusively well-developed stock markets do promote more financial inclusion. The findings support the study's claims and extant intuitions like Čihák *et a*l. (2012 and 2013), which maintain that better-functioning financial systems e.g. inclusive stock markets encourage fresh firm formulation and assist small buoyant firms to progress, as more firms obtain access to use the financial system. The findings signify that as more and more economic agents have and use formal stock market products and services, that will help to foster its development, and also, this does in turn facilitate the promotion of increased stock market financial inclusion i.e. greater use of equity instruments and services. The results show strong support for this study's hypothesis.

4.4.5 Control Variables for Financial inclusion and Financial Sector Development

The size of the economy is positive and statistically significant at 1 percent significance level for banking sector breadth, and also for all the bond market estimations and the stock market depth. This implies that the size of the economy really matters for financial sector development, particularly it is very important for a deepened financial sector. Financial

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openness is positive and statistically significant for the overall development of banking sector, and also for all the bond market dimensions with the exception of the breadth dimension and the overall development of the stock market. This suggests that, particularly for the debt market, financial openness is required for its progress.

Trade openness is positive and statistically significant at different significance levels for the banking sector depth, and for the stock market depth and efficiency, whereas natural openness is positive and statistically significant for all the estimations conducted. This suggest that a country's level of openness to international trade activities is very crucial in promoting the development of its financial sector. Investment- FDI is positive and statistically significant for stock market depth, while investment- GCF is positive and statistically significant for the depth and the overall development of the bond market. This finding somehow validates the growing evidence that investment is a prerequisite to financial sector development. Also, interest on loans is negative and statistically significant at different significance levels for the bond market breadth and its overall development, but it is positive and significant at 1 percent significance level for the depth of the bond market. Yet, the results imply that high interest on loans usually impede the development of the bond market.

Besides, rule of law is positive and statistically significant for the overall development of the banking sector, but it has a negative and significant value for the banking sector efficiency; and it is positive and statistically significant for the bond market breadth and efficiency, while it has negative and highly significant values for the bond market depth and its overall development. Inflation is negative and statistically significant at different significance level for the banking sector depth, efficiency and its overall development; but it is positive and statistically significant at different significance level for bond market depth and breadth. But a rather puzzle result is the non-responsive or insignificantly

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positive inflation obtained respectively for all the estimations of the stock and bond markets. Notwithstanding, the former finding attests that macroeconomic stability is indeed a precondition to financial sector development as posited by the extant body of literature. It signifies that high inflation obstructs the development of the banking sector because savers and borrowers prefer economies with a sound and cautious monetary policy, accordingly inflation should be kept within manageable rates.

On the other hand, the results show that income level is significantly positive at 1% significance level for the overall banking sector financial inclusion, and bond market financial inclusion. This signifies that income levels or living standards is very important to facilitate increased inclusion in the debt markets. Financial literacy is significantly positive at 1% significance level for stock market financial inclusion. This result shows that education is really a decisive factor for promoting greater inclusion especially in the stock market. Cost of financial services has a negative and statistically significant values at different significance level for the banking sector and bond market financial inclusion. The results indicate that high cost of opening and maintaining accounts with the debt markets usually prevent potential customers and clients from using formal financial products and services provided by banks and bond markets. Market size is positive and statistically significant for bond market financial inclusion but rural economy size has a negative and statistically significant values at different significance level for banking sector financial inclusion. This infers that high population which is indication of ready and active market for financial products and services, surges bond market financial inclusion, however, it hampers banking sector financial inclusion. This may be triggered by high consumption by economic agents, and/ or diverting limited resources to meet the needs of a swelling population.

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Employment status has a negative and statistically significant values at 1% significance level for banking sector and bond market financial inclusion. This signifies that countries with high unemployment suffer from limited financial inclusion mostly for their banking sector and bond market. Regulatory quality is significantly positive at 1% significance level for banking sector and stock market financial inclusion. This suggest that a country's ability to formulate and effectively implement workable regulations and sound policies is very important to encourage inclusive financial sector especially for banks and stock markets. Also, this is so because savers, borrowers and investors prefer economies with prudent governance policies. The result of the previous performance has significantly positive values for banking sector depth, breadth, and overall banks' financial inclusion, overall bond market development and bond market's financial inclusion, and stock market depth, efficiency, overall stock market development and stock market financial inclusion.

Also, previous performance is negative and statistically significant for banking sector efficiency and stock market breadth. This signifies that previous performance acts as a catalyst to the overall inclusiveness and development of all the three markets. The findings confirm the empirical works which maintain that factors such as high financial charges (Kumar & Mohanty, 2011; Osei-Assibey, 2011; Allen *et al.*, 2008), high unemployment (Kempson and Whyley,1999) are detrimental, while income level or living standards (Demirguc-Kunt and Klapper, 2012; World Bank, 2005; Barr, 2004; Connoly and Hajaj, 2001), and literacy (Osei-Assibey, 2011; Amaeshi, 2006; Zeti, 2005) are underlying factors in promoting financial inclusion.

4.5 Conclusion and Policy Implications

4.5.1 Conclusion

The study examined the relation between financial inclusion and financial sector development in frontier markets. It concludes that inclusive financial systems can

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mobilize, channel, and provide efficiently the financial resources required for productive activities of the frontier markets. To establish the findings, the study estimates a dynamic GMM Instrumental Variable (IV) regressions, since financial inclusion and financial sector development may be endogenously determined. Thus, increased financial inclusion can lead to a comprehensive developed financial sector, while a more inclusive developed financial sector can also promote greater financial inclusion. The findings of the study suggest that bank penetration- adults who have and use savings accounts- is very critical to the development of the banking sector depth while borrowers' penetration- adults who take and use credit facilities- is very perilous to the development of the banking sector breadth and efficiency. Besides, ATM penetration- how individuals, households and firms use technological innovation to save, deposit, insure or make payments- is a necessity to the development of banking system depth and breadth.

Likewise, credit to private firms enhances the depth and breadth of bond market but it hampers its efficacy. Financial intermediation is essential to the development of the bond market depth only. Similarly, the finding shows that stock market penetration is important for the development of stock market depth, while companies listed on stock market plays a crucial role in both the development of stock market depth and breadth, attesting that the latter is more critical than the former in frontier markets' context. These results confirm that modern technology such as mobile telephony, telephone and internet are certainly the drivers for promoting increased financial inclusion in all the major segments of the financial sector in frontier market nations. Moreover, the study suggests that there exist bi-directional linkage between financial inclusion, and banking sector, bond market and stock market development. Besides, a more inclusive advanced financial system, attracts economic agents to access and use more financial products and services. The result is consistent with the study's claim that as more and more economic agents have and use mainstream bank accounts, it promotes more financial inclusion which in turn help in

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furthering banking sector development. The more mobilized funds the banks have, the more credit facilities it can offer, thereby aiding the intermediation process. The results also, indicate that increased financial inclusion may lead to the development of the bond market. The more economic agents patronize in acquiring of long-term debt financial instruments or raise long-term finance from the bond market to support their businesses, operations and/or boost their capital, they help promote greater financial inclusion which will in turn help in fostering bond market development. Thus, a deepened, accessible and efficient bond market acts as an effective tool to meet investors' long-term financing needs.

Furthermore, the results show that greater financial inclusion fosters the development of the stock market. As more and more firms and companies list on the local stock market to acquire equity capital, to expand their operations, satisfy government regulations, and/or boost their corporate image they foster its development. Likewise, well-developed stock markets are able to attract firms to enlist, acquire capital, and diversify their risks. Consequently, increased financial inclusion also causes inclusive capital market development, while a broadened well-developed capital market may lead to greater financial inclusion. Therefore higher financial inclusion makes more funds available to the financial sector to intermediate effectively. Likewise, financial sector development promotes more financial inclusion, which in turn facilitates further development of the financial sector. In conclusion, the study finds relevant complementarities and response between financial inclusion and financial sector development.

This study contributes uniquely to the on-going debates and to the body of knowledge in the following ways; it analyzes the various parameters of financial inclusion on depth, breadth, and efficiency dimensions of the three key financial systems- banks, bond and stock markets. Moreover, it explores the overall effects of financial inclusion on the overall development of banks, bond and stock markets. Furthermore, it utilizes the criteria for

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frontier markets- GDP at PPP, trade, FDI and population size- as control variables. Also, the bond market segment which has been probed is a neglected area of investigation. Additionally, unlike most previous studies which used only depth indicators as a measure for financial system development, this study analyzes breadth (access) and efficiency indicators as well. Therefore, this study is among the first to conclude that increased financial inclusion fosters the development of different dimensions of the financial sector, in terms of its depth, breadth and efficiency; as it makes more funds available to intermediate, raise capital and reduce liquidity risks. Therefore to the best knowledge of the researcher, the study is entirely new, unique, and very innovative.

4.5.2 Policy Recommendations

The study highlights significant policy consents including the need for strong collaboration and consultations among financial service providers and users, potential customers and clients, financial supervisors and regulators, and governments to ensure flexible, affordable and attractive rates on deposits and credit facilities. Relax conditions, terms and rigidities of having, using and operating bank accounts, acquiring debt instruments, issuing shares and reallocation of financial instruments. Financial providers must offer improved and better services through specifically mobile and internet platforms to make their services easily accessible, very attractive, faster and user-friendly. Governments should, therefore, expand telecommunication infrastructure to enhance platforms such as mobile money, mobile banking, internet- or e- banking, e- or online- trading. This, when done, will empower service providers to serve customers and clients everywhere and at every time (24/7), and to attract firms to enlist and use the services of the stock exchange and monitor their investments with ease. Also, there is the need to vary services and adapt products to suit and attract the patronage of local customers who are usually poor and illiterates.

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Moreover, education in the local languages is essential to inform potential customers and clients on the availability and importance of financial products and services being provided. Besides, if there are platforms to use mobile phones, ATMs and other automated means to pay bills, send money, and receive money, then there should also be similar means or platforms to deposit monies and other financial resources. Furthermore, frontier markets' policy makers should concentrate on the need and importance of moving towards a more market-based economies which is most desirable, and accordingly develop the financial market infrastructure to mobilize and allocate more long-term funds from both the private and public sectors as well as local and foreign sources. For instance, governments should relax rules, regulations and policies on foreign funds influxes to make the capital markets more liquid and broaden their financing capacity. In addition, trading activities on these markets need to be enhanced via promotions to attract medium firms and private business entities to desire to raise long term capital through the bond and stock markets instead of short-term loans through the banks to finance long term projects. Besides, host governments should include in their regulatory requirements for foreign investors, a compulsory listing on the local stock markets, raising funds from the local bond market, and utilizing the local banking systems as packages offered to foreign investors. Moreover, to enable auxiliary institutions play their role effectively, states should modernize, support and strengthen supervisory, regulatory, and law enforcement bodies. There is therefore, the need to design innovative products that will attract more people, groups and firms to save, acquire credit or use greatly the mainstream financial sector.

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CHAPTER FIVE

THIRD EMPIRICAL STUDY

BANKS VERSUS CAPITAL MARKET: THE ROLE OF FINANCIAL INCLUSION

ABSTRACT

*This empirical study investigates the third objective of the thesis. The study examines the effect of inclusive banking sector on capital market development. It also examines the effect of inclusive capital market on banking sector development, both in the context of emerging markets. Banking sector and capital market development nexus is a much researched area of scholarship worldwide. Yet few, if any have dedicated attention on the critical role of financial inclusion in the linkage, and its implication for regulators, policy makers and development partners which this study seeks to address. It therefore, hypothesizes and contends that the banking sector and capital market cannot independently foster each other's progress unless there is the presence of greater financial inclusion. The research models for study are tested with data that spans from 2005 to 2014 for fifteen (15) emerging markets by Standard and Poor's Indices, and are analyzed utilizing the panel dynamic generalized methods of moments (*system *GMM*). *The study documents original and exciting evidence that analyzing the banking sector, bond market, stock market indicators independently, and banking sector financial inclusion, bond market financial inclusion and stock market financial inclusion proxies separately have negative or insignificant impacts. But their interacted terms yield positive and statistically significant effects. It observes that inclusive banking sector drives capital market development; and similarly, inclusive capital market facilitates the development of the banking sector. Besides, when there is greater financial inclusion, it establishes evidence of a uni-causal linkage between banks and stock market, and confirms a bi-causal linkage between banks and bond market. This study positions inclusive capital market in the financial inclusion debate. The original contributions of the study to the body of knowledge on finance literature and practice are that the study widens the perspicacity of academics and professionals that greater financial inclusion is indeed a catalyst for banks and capital market development nexus in the context of emerging markets. The findings should therefore serve as a policy document to identify the most appropriate policy response required to address the relatively underdeveloped capital market in emerging market economies and thereby facilitate the development of a more inclusive financial sector.*

Key Words: Inclusive Banking Sector, Inclusive Capital Market, System GMM, Emerging Markets

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5.1 Introduction

This study investigates whether greater financial inclusion plays a significant role in the linkage between banking sector and capital market development in emerging markets. Financial inclusion is any effort to bring the large un- or under- served population and firms in particular, in the informal sector to the mainstream financial system in order to use and/or mobilize and allocate all idle funds. It makes formal financial products and services accessible, user friendly and affordable, and also available everywhere and everytime (24/7) to a large section of the population and firms. Sarma and Pais (2008) states that financial inclusion is the means of ensuring easy accessibility, availability, and usage of the official financial system for every member of a country. Financial inclusion is greater use of financial instrument, products, and services provided by mainstream financial sector such as banks, debt and equity markets.

A banking sector with greater financial inclusion is inclusive banking sector while capital market with greater financial inclusion is inclusive capital market. Inclusive banks and inclusive capital markets may aid in more funds mobilization and allocation, which will enable banks and capital markets to facilitate each other's progress. Low financial inclusion may lead to a dysfunctional banking sector and un- or under- developed capital market and hence impede each other's progress. For instance, inclusive capital market can advise clients to open and use bank accounts to facilitate their day to day operations and transactions with the capital market. Also, interests earned on bond purchase could be paid into a client's bank account, and monies raised from the issue of shares could also be paid into the bank account of the issuing company, thereby making more funds available to banks for effective intermediation, and in effect spurring the expansion of the banking sector.

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Also, inclusive stock markets could entice more local firms to enlist, which is accompanied with enlisted firms opening and using more bank accounts and accessing short-term loans from banks. Besides, most foreign companies involve in foreign portfolios or listed on local capital markets are likely to transact their financial dealings through local banks, which are typically utilized by foreign investors to maintain a relationship with local banks. Such actions are likely to promote the expansion or improvement of the banking sector. Similarly, as the capital market develops through greater financial inclusion, it is able to attract more firms to enlist, acquire debt or equity capital, diversify risks, expand their operations, satisfy government regulations, and/or enhance their business image. In addition, developed local currency debt markets are usually used widely for recapitalizing banks, setting targets for the pricing of financial instruments or assets and risk management tools. Also, this can help governments to fund or back their debits.

Conversely, an inclusive banking sector can advise customers to raise long-term finance either in the form of debit, equity or hybrid from the capital market, instead of from the banks where they could only offer short-term loans which will not be appropriate for undertaking capital investments and projects. They can also advise customers who buy short-term investments such as 91-days treasury bills and rollover for a long period of time to rather buy long-term investments such as long-term debts instruments or products from the capital markets. Inclusive banks could use greater inclusion prospects to boost their profits by relocating their surplus liquidity put in reserves at the central bank into equities and bonds through the capital market. In these ways, an inclusive banking sector could likewise promote the development of the capital market.

Furthermore, well-functioning banks could attract listed firms to open accounts with the local banks, and to aid in the channeling of their daily financial transactions through the banking system, and equally take advantage of attractive opportunities that become

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available to them. Subsequently, a banking sector without greater financial inclusion may only have a marginal or no effect on the capital market. In the same vein, a capital market without greater financial inclusion may have marginal or no impact on the banking sector. Thus, a well-developed capital market cannot be achieved without the presence of an inclusive banking sector; and likewise, a well-functioning banking sector cannot be achieved without the presence of inclusive capital market. In effect the limited funds mobilized and inadequate number of portfolio options in terms of deposits, equities and bonds as a result of dysfunctional banking sector and underdeveloped capital market hinder the inclusiveness and hence the development of especially banks and capital markets. Mobilizing resources by putting together monies from a great number of depositors, savers or investors, and allocating them to their most productive use, is therefore key to the development of a strong, vibrant, and healthier banking sector and capital market.

Therefore, in contrast to the widely held belief that the banking sector and capital market substitute or compete each other regardless of the level of financial inclusiveness, this study proposes and argues that the banking sector cannot independently impact the capital market unless there is the presence of greater financial inclusion, and likewise, the capital market cannot independently influence the banking sector unless there is the presence of greater financial inclusion. This claim is reinforced by the theoretical intuitions of Čihák *et al.* (2013). Yet, there has been some narrow views that promoting financial inclusion is a preserve of informal financial enterprises and micro finance institutions. But, financial inclusion has been discussed in a much broader view, which covers the formalized financial sector such as banks, bond and stock markets in a theoretical study advanced by Čihák *et al* (2013), Global Findex (2011), and the Global Financial Development databases.

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Moreover, financial inclusion has emerged as a commercial profitable avenue. Therefore, formal financial systems specifically capital market practitioners and regulators, need to think outside the box to unleash capital markets still stuck in doldrums, for there is a 'fortune at the bottom of the pyramid'. Accordingly, developmental policy makers are shifting their attention to building inclusive financial systems not focusing on only micro finance and bank services, but on an array of other formalized financial products, most importantly from capital markets to foster inclusive financial sector. For instance, recently in Ghana, Access Bank was promoting greater financial inclusion through public-offer of shares at GH¢4 per share to economic agents with idle funds to become part owners of the bank (shareholders), whilst it raises equity capital to expand its operations and intermediation activities, and augment the local stock market. Likewise promoting more financial inclusion, the government of Ghana has just issued 10 year GH¢ 200 million domestic bond at a face value of GH¢ 1 only as part of efforts to encourage greater use of debt instruments, raise debt finance from economic agents with idle funds desiring to become long-term lenders, and meet government financing requirements, while it enhances the bond market (Bank and Financial Times, 2016).

Besides, the extant literature have focused principally on the relation between the banking sector and capital market development (Kaserer and Rapp, 2014; Demirguc-Kunt *et al.*, 2012; Yartey, 2008; El-Wassal, 2005). Previous studies such as Garcia and Liu (1999) focused on specific geographical regions like Latin American and Asian countries, while Quartey and Gaddah (2007) focused on only one country i.e. Ghana. Additionally, most of the studies, were conducted on only the banking sector and the stock markets (Yartey, 2008b; Quartey and Gaddah, 2007; Demirguc-Kunt and Levine, 2001; and Levine, 1997) but they neglected the bond market. Moreover, some of the studies, in terms of the variables employed used depth indicators (Garcia and Liu, 1999; and Yartey, 2008b) as

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proxy for banking sector but neglected breadth and efficiency indicators. Furthermore, some were based on only time series (Quartey and Gaddah, 2007; Yartey, 2008b) or cross section (Levine, 1997; Beck *et al*, 2008) techniques. Besides, although most of the previous studies show that positive relationship exists between banking sector and capital market, a few (El-Wassal, 2005) find no relationship or weak (Yartey, 2008b) relationship. Also, limited studies have been conducted on emerging markets which now serve as pacesetters or models of development for other developing regions with regard to the subject matter. Yet, the important role played by financial inclusion in the nexus has been ignored by these studies, hence conclusions drawn from prior studies are inconclusive. Therefore this study seeks to address this lacuna in literature. Against this backdrop, the study puts forward the following hypotheses to be tested.

Ho_1: The Banking Sector has independent effect on Capital Market Development in the absence of greater financial inclusion.

Ho_2: Capital Market has independent effect on Banking Sector Development in the absence of greater financial inclusion.

Besides, due to the important role of physical development in the form of modern technological and financial innovations devices such as mobile, internet and telecommunication facilities, they are independently (separately and jointly) analyzed. The study controls for human development indicators such as income and literacy levels, governance indicators like corruption control and regulatory quality, and macroeconomic stability indicators such as interest and inflation, among other economic parameters. Therefore, the present study is new, innovative and different from previous studies on the issue of exploration.

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The remainder of the study is developed in four more sections. The second section reviews literature underpining the analysis. The third section describes the data and methodology used. The fourth section presents and discusses the results, while the fifth concludes with policy implications.

5.2 Literature Review

5.2.1 Bank and Capital Market Development

Currently the growth of the capital market has been motivated largely by the bond market. This observation was made by Kaserer and Rapp (2014). The authors also liken the average stock market depth of bank-based markets from 1990-1999 with the period from 2000-2012 and discovered a progression of 65%. Correspondingly, during that period, stock market depth in market based economies improved by only 7%. Accordingly, stock market depth of bank-based markets was near 32% of stock market depth in market based economies throughout the 1990s. Amazingly, since the year 2000, the ratio has blossomed to 58%. Besides, evaluating the total capital market, capital market depth in bank-based markets grew by 37% likening the average of the year 1990-1999 to the years 2000-2012. Similarly, capital market depth in market-based economies increased only by 12%. This supports the finding that bond market development is expected to make an important contribution to economic progress through improving access for firms to either invest surplus funds or for deficit units to issue bonds or borrow on long term (Adelegan, 2008).

Čihák *et al.* (2013) state as follows.

> "*When banks screen borrowers and identify firms with the most promising prospects, this is a main step that helps allocate resources efficiently, expand economic opportunities and foster growth. When banks and securities markets mobilize savings from households to invest in promising projects, this is another crucial step in fostering economic development. Also, focusing on only one*

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> *characteristic- say banking sector size is not a measure of accessibility, stability, quality or efficiency of the financial system. It means missing other equally important characteristics of financial systems. Equally, focusing on only the banking sector implies missing important components of the overall financial system as the banking sector is only one component of financial systems, but then stock and bond markets are important components in many economies*" *(Čihák et al., 2013).*

The financial sector therefore, mobilizes funds from diverse sources and allocates the funds to the most productive activities which bring good returns that benefit the entire economy. Therefore, an inclusive financial sector with associated provision of effective financial products and services provide a stimulating environment for the different segments of the financial sector- banking sector, bond market and stock market- to blossom.

Besides, Demirguc-Kunt *et al.* (2008; 2012) opine that as economies progress, services offered by the capital markets get increasingly critical for economic or productive activity, while those offered by banks get less important. Also, they contend that as economies progess, the minimal increase in economic activity related with an upsurge in bank development drops, while the minimal increase in economic activity related with a surge in capital market development increases. This signals complementarities between banks and capital markets. Moreover, Levine and Zervos (1998) submit that stock markets are not replacement for credit proving intermediaries like banks. Thus, capital markets provide financial services exclusively different from those provided by banks which fundamentally influence the ability of the entire financial system to provide high quality financial services.

Studies conducted by Quartey and Gaddah (2007) and Garcia and Liu (1999) establish positive linkage between banks and capital markets. Garcia and Liu's (1999) work

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examine the macroeconomic determinant of stock market development in Latin American and Asian countries. They find among other parameters that banking system development is important in any economy. Additionally, Gulde et al (2006) also maintain that efficient financial intermediaries allow mobilisation of resources or savings from diverse sources and distribution of funds to several productive segments, which did not only benefit investors and beneficiaries, but the entire country. Similarly, Adjasi and Yartey (2007) find that local financial markets are robust in mobilizing resources and channeling them for productive uses. Bank deposits constitute a key source of bank funding structure which could stout banks to be more efficient. The inquiry by El-Wassal (2005) shows that stock development has no direct relationship with banking sector development. But Yartey (2008) challenged this opinon by saying as stock market develop, they begin competing with banks in financing productive activity or investment.

Studies on whether the financial system is more bank-based in emerging economies or more market-based as in advanced economies, show they are more bank-based in emerging economies (Calderon and Lieu, 2003; Christopoulo and Tsionas, 2004; Guiso et a.,l 2004), while other empirical studies maintain support for both being available (Levine and Zervo, 1998; Demirguc-Kunt, and Masksinovic, 1998; Allen and Gale, 2000; Demirguc-Kunt and Levine, 2001; and Levine, 2002). But, Bende-Nabende and Slater (2003), observe that generally, stock markets in low-income countries are narrow compared to those of high-income countries. It is about one-sixth of those in advanced countries, while in those of middle-income countries, the share is also about one-third of that in high-income countries. These imply small market size, lack of accessibility and high illiquidity with unstable levels typically characterize these developing markets.

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Consequently, most of these markets are excluded from the main regional stock market indices and so attract little Global Emerging Markets (GEM) portfolio funds. In spite of these challenges, there has been some outstanding performance in terms of their returns. For instance, in 2004, the Ghana stock exchange was the best performing exchange in the world. Likewise, Uganda, Kenya, Mauritius, Nigerian and Egypt were among the best performers in the same year (Andrianivo and Yartey, 2009). Moreover, in comparison to other stock exchanges, the Hong Kong stock exchange and the Johannesburg Stock Exchange (JSE) grades higher than other top markets in United Kingdom and United States in standings of market capitalization when normalized by GDP (Nakagwa and Psalida, 2007). Overall, especially between 2004 and 2010, most exchanges in Africa were among the best performers with Egypt having returns exceeding 100% (Allen et al, 2010). This outstanding performance could be attributed to promotion of greater financial inclusion across the regions of the developing world. However, these studies' view are challenged by a more recent data (GCAP, 2010; Global Findex, 2014; GFD, 2015) which show that financial inclusions plays a crucial role in banking sector and capital market development, and hence require empirical investigation. .

5.2.2 Financial Inclusion

The significant role of broad access to, and utilization of finance i.e. financial inclusion in the financial sector as discussed, it first, causes restructuring of the financial system by widening access to financial services and products. Second, it causes significant enhancement of financial intermediation, which is improvement in mobilization and allocation of financial resources. Third, this in turn causes overall expansion of the financial system in terms of its depth, access, stability and efficiency. Finally, financial inclusion ameliorate the banks and capital markets to expand their outreach and capacity to meet the demands of a larger proportion of the population, enterprises and firms.

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According to Hannig and Jansen (2010) "financial inclusion aims at drawing the population and firms which are out of the financial system into the formal financial system to give them the opportunity to access financial services ranging from savings, payments, and transfers to credit and insurance". Similarly, studies conducted from 38 countries indicate that financial depth, measured as the share of total credit to GDP is positively related to the level of financial inclusion. Klapper and Singer (2013) are of the view that notwithstanding the positive relationship between financial depth and access, there exist financial systems that are not highly financial inclusive where credit facilities are only given to the rich and the big or largest firms.

Besides, Han and Meleeky (2013) indicate that during the era of global financial crunch, total savings fell by smaller margin in countries where financial inclusion was greater in terms of bank savings or deposits. This happened for especially middle income countries after controlling other associated factors.

A study on financial inclusion in Africa by Demirguc-Kunt and Klapper (2012) observe that only 11% of adults in Central Africa have, and use commercial bank accounts, with about 5% in the Democratic Republic of Congo and Central African Republic. Also, 10% have bank accounts in Morocco, 39% in Egypt and 51% in South Africa. Moreover, in their global study, Demirgüç-Kunt and Klapper (2012) observe that in most developing countries, one (1) in five (5) adults has no bank account or other means of accessing the official financial sector. Agreeingly, a study by Ardic et al (2011) document that 56% adults worldwide do not have access to formal financial services. In contrast, in high income countries 17% of adults are unbanked. Additionally, low income countries, informal financial services were more expensive and less dependable than formal financial services.

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According to Beck et al. (2008), about 54% of total population in Cameroon, 94% in Malawi, 93% in Uganda and 81% in Kenya, cannot afford the fees charged by banks for maintaining a checking account given their low and irregular level of income. Besides, high demand for documents from prospective clients or customers such as passport, driver's license, national identification cards, house address, utility bills, pay slips and letters of recommendations hinder access to opening account and accessing credit by potential investors, savers and borrowers. Moreover, their study shows that in Uganda and Cameroon, not less than three of the aforementioned documents are required for a prospective customer to open an account, consequently access to effective financial services is seriously impeded. Meanwhile prospective and account holders cannot apply for loan via mobile phone or internet but must only do so through physical presence at a bank's headquarters and/ or branch office. Financial inclusion in the developing world compared to the developed world is very low. For instance, only 6% of people who live in North Africa and the Middle East have an account with a formal financial system. About 27% of households who live in Asia and Pacific have accounts with formal financial sector compared to over 89% in advanced nations. For this reason, attractive and affordable formal financial services provided for the unserved should be the core of policy-makers agenda as it will lead to improved lifestyles, and empowerment of firms.

Getnet (2014) documents that, in Ethiopia, financial inclusion is in progress amidst expanding bank branches and areas of coverage (financial development). But the author maintains that a lot needs to be done on financial accessibility (financial inclusion). As less than 8% of Ethiopians have bank accounts with the proportion of borrowers being smaller. The percentage of households in Ethiopia who can have access to Microfinance institution (MFI) service is about 14.5%. He observed that lack of financial capacity is not positioning MFIs to ensure financial access to MSMEs and the poorer segment of the

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society. Indeed, a spectrum of reasons point to lack of interest and patronage in the formal financial sector services and products. For most urban dwellers in developing countries, like Ghana, insufficient documentation is a major obstacle for adults to open and use account with a formal financial system while for most rural dwellers distance from a financial facility is a major hindrance for adults to open and use account with a mainstream financial sector (Osei-Assibey, 2011). Therefore, formal financial development might be necessary to promote financial inclusion scale up.

According to the World Bank (2006), the number one reason persons in the informal sector may not apply for or may be refused loans is insufficient collateral. Also, for Africa Competitiveness Report (2009), the second reason for loan refusal is insufficient collateral which is at 137% of the value of the loan. The difficulties in accessing credit hinder investment participation, engagement in economic activities and inclusion in development process. Moreover, in India, increasing households' debt burden resulting from high interest on loan, has in some instance led to suicides (Kumar & Mohanty, 2011). Besides, the high demand for documents from prospective clients or customers such as passport, driver's license, national identification cards, house address, utility bills, pay slips and letters of recommendations hinder access to opening account and accessing credit by potential investors, savers and borrowers. Their study show that in Uganda and Cameroon not less than three of the documents are required for a prospective customer to open an account. Thus, access to effective financial services is seriously impeded. Meanwhile, prospective and account holders cannot apply for loan via mobile phone or internet but must only do so through physical presence at a bank's headquarters and or branch office.

Even though the financial sector development framework is rich in content, this study considers that an important ingredient, financial inclusion, is missing and needs to be included to make the literature holistic. Thus, extant studies have considered the link

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between banking sector and capital market development but examining the role of financial inclusion in the nexus remains a gap in literature. Therefore, it is flawless from the extant literature that the conclusions regarding the causal nexus of banks and capital markets debate are mixed and inconclusive.

5.3 Methodology and Data

5.3.1 Data Type and Source

The study employs secondary data from the International Financial Statistics (IFS) of the IMF, and World Development Indicators (WDI), Global Financial Development (GFD), Worldwide governance indicators and all of the World Bank. It utilizes recent data across a time span of 2005 to 2014 for fifteen (15) Emerging Markets, comprising Brazil, Chile, China, Colombia, Egypt, Hungary, India, Indonesia, Malaysia, Morocco, Peru, Poland, South Africa, Thailand and Turkey by Standard & Poors' Indices. Because financial inclusion is a relatively new phenomenon, most countries in the sample did not have exploitable data before the 2000's. Also, because of mixing values (figures) the panel is unbalanced for most of the estimations conducted.

5.3.2 Model Specificaton (s)

5.3.2.1 Banking Sector and Capital Market Development via Greater Financial Inclusion

The relevant econometric models to be estimated for inclusive banking sector and capital market development, and inclusive capital market and banking sector development respectively are as stated below.

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5.3.2.1.1 Specific Models to be tested applying System GMM are as follows.

Inclusive Banking Sector (IBS) on Capital Market Development (CMD)

$$CMD_{it}^{J} = \gamma_i + \gamma_\tau CMD_{it-1}^{J} + \gamma_\tau Inclv_BS_{it} + \sum_{m=1}^{p} X_{it}\lambda^{'} + \mu_{it} \quad \text{.....(1)}$$

Inclusive Capital Market (ICM) on Banking Sector Development (BSD)

$$BSD_{it} = \delta_i + \delta_\tau BSD_{it-1} + \delta_\tau Inclv_CapMkt_{it}^{J} + \sum_{n=1}^{q} Z_{it}\lambda^{"} + \mu_{it}^{'} \quad \text{.....(2)}$$

where

CMD_{it}^{J} Capital Market Development for country i at time t, J is bond and stock markets;

BSD_{it} Banking Sector Development for country i at time t;

$Inclv_CapMkt_{it}^{J}$ is inclusive capital market for country i at time t, J ={1= bond market, 2 = stock market};

$Inclv_BS_{it}$ is inclusive banking sector for country i at time t;

γ_i and δ_i are unobserved country-specific effects;

X_{it} *and* Z_{it} set of explanatory control variables for the first and second equations;

μ_{it} are $\mu_{it}^{'}$ the remaining disturbance terms.

NB: The inclusion of the lagged dependent variable (CMD_{it-1}; or BSD_{it-1}) as an independent variable transforms the model into System GMM. This is necessary because, present financial sector performance often depends on the previous years' performance.

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5.3.2.1.2 Testing causalities utilizing Panel Granger Causality Test are modelled below.

5.3.2.1.2.1 Bivariate Causality Models:

Inclusive Banking Sector (IBS) and Capital Market Development (CMD)

$$\Delta CMD_{it}^{J} = \gamma_0 + \gamma_j \Delta Inclv_BS_{it} + \sum_{m=1}^{P} \Delta X_{it} \lambda_n^{'} + \phi_i ECT_{it-1} + \varepsilon_{it} \quad \text{.....(3)}$$

Inclusive Capital Market (ICM) and Banking Sector Development (BSD)

$$\Delta BSD_{it} = \delta_0 + \delta_j \Delta Inclv_CapMkt_{it}^{J} + \sum_{n=1}^{q} \Delta Z_{it} \lambda_m^{''} + \varpi_i ECT_{it-1} + \varepsilon_{it}^{'} \quad \text{.....(4)}$$

where;

ECT_{it-1} is the error correction term;

ε_{it} and $\varepsilon_{it}^{'}$ are the remaining disturbance terms.

NB: the addition of the ECT_{it-1} transforms the model into Panel Granger Causality. This is crucial because, ECT_{it-1} helps predict causal correlation above and beyond the use of CMD_{it-1}; or BSD_{it-1} which establishes mere correlation.

5.3.3.1 Measures of Dependent Indicators Employed1

In accordance with the underlying theory of Čihák et al. (2013) and Demirgüç-Kunt, et al (2008), the study has explored three segments of the financial system: bank, bond (debt) and stock (equity) markets, and it has used three indicators each to represent the dimensions of these markets. First, for the banking sector; (1) size of the banking system (depth)- M2% of GDP (ratio of bank liquid liabilities to GDP), (2) level to which individuals, households and firms can and do use banking products and services (breadth/

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access)- bank intermediation ratio (private credit by bank divided by bank deposits, all % of GDP), and (3) efficiency of the banking system in intermediating resources and facilitating financial transactions (liquidity)- interest rate spread (lending interest rate-deposits interest rate). Second, for the bond market; (1) size of the bond market (depth)- bond market capitalization % of GDP (Outstanding domestic private and public debt securities % of GDP), (2) degree to which private firms can and do use financial systems' credit facilities (breadth/ access)- private debt % of GDP (Private credit by deposit money banks and other financial institutions (% of GDP) divided by debt market capitalization), and (3) efficiency of the bond market in intermediating resources and facilitating financial transactions (liquidity)- public debt % of GDP (Credit to government and state owned enterprises % of GDP). Finally, for the stock market; (1) size of the stock market (depth)- stock market capitalization (% of GDP), (2) degree to which firms can conduct transactions and trade on the local stock market (breadth/ access)- total value of shares traded (% of GDP), and (3) efficiency of the stock market in trading both domestic and foreign shares, and facilitating transactions (liquidity)- stock market turnover (total value of shares traded to stock market capitalization). Positive relations are expected and they are sourced from GFD and WDI (2015). There was no adequate data for stability indicators covering all the markets so they were left out.

Similarly, in line with Čihák et al. (2013) and Demirgüç-Kunt, et al (2013), financial inclusion parameters used comprise the banking sector- ATMs per 100,000 Adults; for Bond market- credit to private firms (Loans from entire financial system to private sector % of GDP), and financial intermediation (entire financial system credit divided by entire financial system deposits) index; and for Stock Market- number of companies listed on the local stock market per 1,000,000 (1m) people. Positive relations are expected and are sourced from IFS and GFD of World Bank (2015). This study utilizes inclusion parameters

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that focus mainly on the "number of people" whose lives have been improved by varieties of financial products and services instead of the "amounts" deposited, loaned or available opportunities. Besides, due to the crucial role of modern technological and financial innovation devices as the major drivers of inclusive finance, the study used internet subscribers per 100 people; mobile subscribers per 100 people; and mobile, fixed phone and internet subscribers per 100 people. This study estimated them independently-separately and jointly- to observe their distinct important effects. Positive relations are expected and they are sourced from WDI of World Bank (2015).

5.3.3.2 Description of Control / Other Independent Variables Employed

1. *Mobile penetration*: Mobile cellular subscriptions (per 100 people)	It refers to mobile telephone services that provide access to voice communication using cellular technology, per 100 people (WDI, 2015).
2. *Internet penetration*: Internet users (per 100 people)	Are individuals who have used the Internet (from any location) in the last 12 months, per 100 people (WDI, 2015).
3. Telecommunication:	Telephone (fixed and mobile) plus Internet subscriptions per 100 people (WDI, 2015).
4. *Income level*: Gross national income (GNI) per capita growth	Is the sum of value added by all resident producers in the economy plus any product taxes minus any subsidies not included in the valuation of output plus net receipts of primary income divided by midyear population (WDI, 2015).
5. *Financial literacy/ Education*: Primary completion rate	It is the number of new entrants in the last grade of primary education, divided by the population at the entrance age for the last grade of primary education (WDI, 2015).
6. *Financial charges*: Lending interest rate (%)	It is the bank rate that usually meets the short- and medium- term financing needs of the private sector (WDI, 2015).

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7. *Interest on Loans*	Interest in arrears plus actual amount of interest paid by the borrower currency, goods, or services in the year specified. It includes interest unpaid and / or paid on long-term debt, IMF charges, and interest paid on short-term debt, in current U.S. dollars (WDI, 2015).
8. *Economy size*: GDP per capita, PPP (constant 2011 international $)	It is the Gross Domestic Product (GDP) converted to international dollars using purchasing power parity (PPP) rates (WDI, 2015).
9. *Financial openness*: Gross savings (% of GDP).	It is gross national income less total consumption, plus net transfers (WDI, 2015).
10. *Trade openness*: Trade (% of GDP)	It is the sum of exports and imports of goods and services measured as a share of GDP (WDI, 2015).
11. *Natural Resources* Exports of goods and services (% of GDP)	It represents the value of all goods and other market services provided to the rest of the world (WDI, 2015).
12. *FDI- Foreign direct investment*, net inflows (% of GDP)	Are the net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor (WDI, 2015).
13. *DPI- Domestic private investment*: Gross capital formation (% of GDP)	It covers gross outlays by the private sector on additions to its fixed domestic assets plus net changes in the level of inventories (WDI, 2015).
14. Regulatory Quality	It captures perceptions of the ability of the government to formulate and implement sound policies and regulations (WGI, 2015).
15. *Corruption Control*	It captures ability to curb the extent to which public power is exercised for private gain (WGI, 2015).

NB: These are the standard independent and/or control factors from the literature analysed. Aside 6, 7 and 17 for which negative relations are predicted, positive relations are anticipated for all the indicators. Also, all the indicators are sourced from IFS and WDI (2015), aside 15 and 16, which are from WGI (2015).

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5.3.4 Choice and Justification of Methodology

5.3.2.2 Dynamic Generalized Method of Moments (System GMM)

The dynamic panel Generalized Methods of Moments (system GMM) technique and the panel granger causality test are employed to establish the presence of causal relation between banking sector and capital market development considering the role of greater financial inclusion. The dynamic panel Generalized Methods of Moments (system GMM) have been proposed as a superior econometric technique for use in cross-country regressions because it allows the inclusion of country-specific effects and time series dimension of data, thereby giving greater degrees of freedom. It is most appropriate panel method to employ when cross-sectional data (N) is more than the time dimension (T) of the data. Previous panel methods such as random effects or fixed effects estimator which allows the modelling of the unobserved country specific effects and fixed parameters to be estimated may present bias in their results due to issues of endogeneity and collinearity. Therefore, to control for potential collinearity and endogeneity bias, the System GMM estimator proposed by Arellano and Bond (1991) is employed by most recent studies as it deals with endogeneity bias, collinearity issues and measurement errors to obtain unbiased, efficient and consistent estimates.

The current study employs the Generalized Method of Moments (system GMM) dynamic instrumental variable modelling method by Arellano and Bond (1991) to overcome these problems and to obtain reliable results. The choice of this approach is justified on the grounds that it is able to overcome endogeneity and collinearity of the regresssors which characterize the basic models of this study. It controls for potential endogeneity bias as the direction of causality between dependent and independent variables may run in both directions. As the lag of dependent variables are utilized as regressors in the models. Also, collinearity issues i.e. independent variables that may be correlated with other explanatory

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variables are controlled. As the lagged values of the original regressors (explanatory variables) in the model (s) are used as instrumental variables. Moreover, this technique is able to overcome econometric problems relating to cross-sectional dependence of countries and multi-correlation, which are prevalent in macro panel models (Arellano and Bond, 1991). Additionally, the choice of the dynamic GMM over other techniques goes beyond the I(0) nature of the variables. Besides, it permits the first- and second-order autocorrelation test, which is to test the hypothesis that the instrument used are not serially correlated with the error terms (ε_{it}), and the Sargan test which test the complete validity of the instruments (Baltagi, 2008; Arellano and Bond, 1991) to be performed.

5.4 Results and Analysis

This section presents and analyzes the results of the third empirical study.

5.4.1 Sensitivity Analysis

5.4.1.1 Hausman test for fixed or random effects

There exist arbitrarily distributed fixed individual effects as shown in the results below.

Table 5.1: Hausman test for fixed or random effects

Null Hypothesis (Ho)	Output
Difference in coefficients not systematic	Chi2(1) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 282.60
(There is random effect)	Prob>chi2 = 0.0000
	(V_b-V_B is not positive definite)

b = consistent under Ho and Ha,
B = inconsistent under Ha, efficient under Ho.

Source: Author's computation using Stata 13.1

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Fixed effects is confirmed by the Hausman test. The null hypothesis is rejected at 1 per cent in favour of fixed effects as shown in Table 5.1 above. But the model cannot be estimated using Ordinary Least Squares (OLS) techniques due to the existence of endogenous variables.

5.4.1.2 Endogeneity Test

Stata 13.1 is employed to test for endogeneity among the suspected endogenous variables in each of the model. The null hypotheses confirm that OLS will be consistent because the variables are exogenous since they are not correlated with the error term. First, residuals of the variables are obtained after regressing the variables on their instruments including the exogenous variables, and the residuals are then tested for significance. The rejection of the null hypotheses prove that the variables are in indeed endogenous. The significance test results are as shown in Table 5.2 below.

Table 5.2: Endogeneity Test Results

Null Hypothesis (Ho)	F-Statistics	Prob>F
M2 % of GDP is uncorrelated with the error term	F(1, 57) = 6.0000	0.0080
Bank intermediation is uncorrelated with the error term	F(1, 57) = 6.0000	0.0002
Bank Interest spread is uncorrelated with the error term	F(1, 57) = 6.0000	0.0009
Stock market capitalization is uncorrelated with the error term	F(1, 79) = 10.07	0.0096
Stock value traded is uncorrelated with the error term	F(1, 79) = 15.00	0.0069
Stock market turnover is uncorrelated with the error term	F(1, 79) = 33.33	0.0085

Source: Author's computation using Stata 13.1

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From the table 5.2 above, M2 per cent of GDP, bank intermediation, bank interest spread, stock market capitalization, stock market value traded and stock market turnover are correlated with the error term, significant at 1 per cent. The results reaffirm that OLS or fixed effects estimator will be inconsistent, and also the results will be bias and unreliable if fixed effects approach is employed in the estimation analysis.

The Hausman test and the endogeneity test confirm that the estimation technique suitable for the dynamic panel data model with fixed effects is the dynamic panel Generalised Method of Moments (System GMM) developed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1997).

5.4.1.3 Test for Cross-Sectional Dependence

The test for cross-sectional dependence is performed by applying the Pesaran CD test which is suitable for panel data with the cross-sectional dimension more than the time dimension. Table 5.3 presents the test result for cross-sectional dependence.

Table 5.3: Test Result for Cross-sectional Dependence

Null Hypothesis (Ho)	Output
Cross-sectional independence	Pesaran's test of cross sectional independence = 0.615, Pr = 0.5045 Average absolute value of the off-diagonal elements = 0.347

Source: Authors' computation using Stata 13.1

The test result reported in table 5.3, fails to reject the null hypothesis, implying there is no cross-sectional dependence among the micro panels. The probability value of '0.5045' also suggests that there is not enough proof for cross-sectional dependence among the cross-sectional units in the model. Besides, the absolute value of the off-diagonal elements of

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'0.347' suggests a weak correlation between the error terms. In this light, the test result detects no dependency among the cross-sections.

5.4.1.3 Wald Test for Heteroskedasticity

Table 5.4: Wald Test for Heteroskedasticity Results

Null Hypothesis (Ho)	Chi2-Statistics	Prob>chi2
Sigma(i)^2 for all i (Homoskedasticity)	Chi2(13) = 2071.98	0.0000

Source: Author's computation using Stata 13.1

From Table 5.4 above, we reject the null hypothesis at 1 percent and conclude that heteroscedasticity is present in the model.

All the sensitivity analyses are necessary for the consistency and they support the use of the system GMM estimator. Accordingly, the next section applies the System GMM, and presents estimation results and discussions.

The empirical results presented in tables 5.5 and 5.6 are based on system GMM estimations. Thus, the empirical results pertaining to Equation (1) are presented in Table 5.5, whilst that of equation (2) are presented in Table 5.6.

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Table 5.5: The effects of Inclusive Banking Sector on Capital Market Development

VARIABLES	(1) **Bond Mkt Devt**	(2) **Stock Mkt Devt**
Bank Sector Index	-0.920**	-0.318
	(0.430)	(0.657)
BSFI Indicator	-0.164*	0.110
	(0.0923)	(0.186)
Inclusive Bank Sector	**1.705*** **	**2.547*** **
	(0.354)	**(0.844)**
Internet Penetration	*1.924***	*-3.393****
	(0.755)	*(1.026)*
Telecommunication	*-3.081****	*4.393****
	(0.870)	*(1.420)*
Income Level (Living Standards)	0.0269***	0.0175**
	(0.00425)	(0.00863)
Financial Literacy (Education)	3.449***	4.753***
	(1.307)	(1.579)
Interest on Loan	1.268	
	(1.854)	
Economic size	0.856***	0.995***
	(0.257)	(0.327)
Financial Openness	-4.199	4.167*
	(2.742)	(2.365)
Trade Openness		1.293**
		(0.592)
Natural Resources	2.827***	
	(0.379)	
Investment _FDI		7.319***
		(2.265)
Investment _GFCF	-0.0326	
	(1.966)	
Regulatory Quality		4.162***
		(1.267)
Corruption Control	1.247**	
	(0.569)	
Inflation	1.859	-2.955
	(1.871)	(2.324)
Lag Dependent	0.428***	0.273*
	(0.149)	(0.157)
Observations	70	80
Number of Countries	12	13
Number of Instruments	16	15
AR-1 (Prob.)	0.601	0.300
AR-2 (Prob.)	0.727	0.474
Sargan test (P-Value)	0.428	0.312

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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***NB**: Banking sector index is M2% of GDP (ratio of bank liquid liabilities to GDP), bank intermediation-private credit by bank divided by bank deposits (all % of GDP), and interest rate spread (lending interest rate- deposits interest rate). Bank financial inclusion is ATMs per 100,000 adults. Internet penetration is internet subscribers per 100 people, and telecommunication penetration is telecommunication subscribers per 100 people (mobile and fixed telephones plus internet). Bond market development is bond market capitalization % of GDP, private debt % of GDP divided by debt market capitalization, and public debt % of GDP combined. Stock market development is stock market capitalization (% of GDP), total value of shares traded (% of GDP), and stock market turnover combined. BSFI is banking sector financial inclusion, Inclusive Bank Sector is interacted term (Banking Sector*BSFI); BMFI is bond market financial inclusion, Inclusive Bond Market is interacted term (Bond Market*BMFI); SMFI is stock market financial inclusion, Inclusive Stock Market is interacted term (Stock Market*SMFI).*

The second-order autocorrelation- AR (2) test results indicate that the instruments used and error terms are not correlated. Besides, the results of the Sargan test for the validity of the over-identifying restrictions in the estimations are insignificant showing that the results obtained are consistent.

The result shows that the impacts of both the banking sector (BS) and banking sector financial inclusion (BSFI) indicators independently on bond market development are negative and statistically significant in Emerging Markets. Similarly, banking sector indicator independently on stock market development is negative but statistically insignificant, while BSFI indicator independently on stock market development is positive but statistically insignificant in Emerging Markets. The result of inclusive banking sector i.e. the interacted term (BS*BSFI) on capital market development is positive and statistically significant. To ensure that the interaction term (BS*BSFI) does not proxy for BS or the level of financial inclusion, both BS and BSFI indicators were independently included in the regression. The result shows that only the interaction terms turn out to be positive and significant in both markets. The results confirm the contention that banking sector cannot independently promote capital market development unless it act together with BSFI. Certainly, the results signify that each may independently stagnate or have injurious impact on the development of the capital market. The findings buttress the assertion that broader access to, and use of financial services- financial inclusion- should

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be a central development agenda of financial sector transformations (Demirguc-Kunt et al, 2008).

Moreover, the study documents a positive and statistically significant value for internet penetration in the bond market, but it observes a negative and highly significant value for telecommunication. The negative effects of telecommunication on the bond market is surprising as most emerging nations have more modernized telecommunication facilities relative to say frontier market nations. It finds a positive and highly significant value for telecommunication in the stock market, while the influence of internet penetration is negative and significant. The negative effect of internet usage on stock market is also a puzzle. As most stock markets in emerging countries use a combination of more modernized and innovative telecommunication facilities expedited by the internet.

Besides, for the bond market, the impact of living standards, financial literacy, the degree of size of the economy, the degree of natural resources openness, the degree of control of corruption and previous bond market performance is positive and statistically significant at different levels of significance. Similarly, for the stock market, the influence of living standards, financial literacy, infrastructure, the degree of size of the economy, openness of the economy in terms of the degree of international trade, the degree of financial openness, openness of the economy in terms of FDI inflows, the degree of regulatory quality, and previous stock market performance are positive and statistically significant at different levels of significance. Furthermore, the effect of macroeconomic parameters such as interest on loan and inflation is strange yet cannot be explained in this context. The results imply that in the absence of an inclusive banking sector, the banking sector may have deleterious effects on the level of capital market development. Thus the results attest to the fact that inclusive banking sector stimulates inclusive bond and stock markets due to the presence of greater financial inclusion. The findings support the works of Čihák *et al,*.

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(2013) and SDGs (2015) which maintains that all the financial systems are important for providing and promoting inclusive finance for economic progress and inclusion respectively.

Table 5.6: The Effects of Inclusive Capital Market on Banking Sector Development

	(1)	(2)
VARIABLES	**Banking Sector Development**	**Banking Sector Development**
Bond Market Index	-0.781	
	(0.855)	
BMFI Indicator	-2.954**	
	(1.279)	
Inclusive Bond Market	**1.466*** **	
	(0.549)	
Stock Market Index		3.273
		(2.511)
SMFI Indicator		-1.269
		(1.047)
Inclusive Stock Market		**2.305*** **
		(0.313)
Mobile Penetration	*8.617*** *	*8.843*** *
	(3.157)	*(3.239)*
Internet Penetration	*13.35*** *	*8.748*** *
	(4.864)	*(3.145)*
Telecommunication	*18.91*** *	*13.59*** *
	(6.897)	*(4.972)*
Income Level (Living Standards)	0.353*	0.00195
	(0.198)	(0.0134)
Financial Literacy (Education)	13.23**	3.411**
	(6.481)	(1.714)
Financial Charges		-22.21***
		(7.449)
Interest on Loan	-5.657	
	(5.641)	
Economic size	5.798***	6.627***
	(2.093)	(2.372)
Financial Openness	37.74***	15.82***
	(13.02)	(5.332)
Trade Openness		-1.597*
		(0.922)
Natural Resources	-1.384	
	(1.951)	
Investment_FDI	-1.081	7.703**
	(2.033)	(3.903)

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Regulatory Quality		17.28***
		(6.197)
Corruption Control	-1.125	
	(2.802)	
Inflation	-7.777*	0.176
	(4.640)	(3.322)
Lag Dependent	-0.361*	-0.353*
	(0.197)	(0.198)
Observations	70	70
Number of Countries	12	11
Number of Instruments	19	19
AR-1 (Prob.)	0.029	0.215
AR-2 (Prob.)	0.175	0.199
Sargan test (P-Value)	0.371	0.542

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

***NB**: Bond market index is bond market capitalization % of GDP, private debt % of GDP divided by debt market capitalization, and public debt % of GDP. Stock market index is stock market capitalization (% of GDP), total value of shares traded (% of GDP), and stock market turnover. Bond market financial inclusion is an index of credit to private firms; loans or credit facilities to private sector by the entire financial system (% of GDP), and financial intermediation; the ratio of private credit to deposits by entire financial sector. Stock market financial inclusion is listed companies per 1,000,000 people. Mobile penetration is mobile subscribers per 100 people, internet penetration is internet subscribers per 100 people, telephone penetration is telephone (mobile and fixed phone subscribers per 100 people), and telecommunication penetration is telecommunication subscribers per 100 people (telephone plus internet). Banking sector development is M2% of GDP (ratio of bank liquid liabilities to GDP), bank intermediation- private credit by bank divided by bank deposits (all % of GDP), and interest rate spread (lending interest rate- deposits interest rate combined. BSFI is banking sector financial inclusion, Inclusive Bank Sector is interacted term (Banking Sector*BSFI); BMFI is bond market financial inclusion, Inclusive Bond Market is interacted term (Bond Market*BMFI); SMFI is stock market financial inclusion, Inclusive Stock Market is interacted term (Stock Market*SMFI).*

The second-order autocorrelation- AR (2) tests results show that the error terms are not correlated with instruments used. Moreover, the results of Sargan test of over-identifying restrictions indicate that the instruments used are valid, therefore, suggesting the results are reliable.

The study examines the effects of inclusive capital market on the banking sector development. For this, the result shows that bond market (BM) index independently has a negative and statistically insignificant impact on banking sector development, bond market financial inclusion (BMFI) indicator independently has a negative and statistically

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significant impact on banking sector development, while inclusive bond market i.e. the interacted term (BM*BMFI) has a positive statistically significance association with banking sector development in emerging markets. Likewise, the result indicates that stock market (SM) index independently has a positive and statistically insignificant impact on the banking sector development. Stock market financial inclusion (SMFI) indicator independently has a negative and statistically insignificant impact on the banking sector development, while inclusive stock market i.e. the interacted term (SM*SMFI) has a positive and statistically significant correlation with banking sector development in emerging markets. To ensure that the interaction terms do not proxy for bond and stock markets or the level of BMFI and SMFI, both the bond and stock markets indicators, and BMFI and SMFI indicators were independently included in the regression.

Yet, the results indicate that only the interaction terms turn out to be positive and significant in both estimations. The results infer that in the absence of an inclusive capital market, the capital market may have destructive or no effect on the level of banking sector development. Thus, the findings infer that inclusive bond and inclusive stock markets stimulate banking sector development due to the presence of greater financial inclusion. The findings buttress the empirical works that maintain financial inclusion expands financial coverage (Getnet, 2014), and offers people access to savings instruments, surges in savings, and also credit facilities (Aportela, 1999; Ashraf *et al.*, 2010a) which are important for financial sector inclusiveness and development. Besides, the study finds a positive and highly significant values for mobile penetration, internet penetration, and telecommunication in the banking sector of emerging markets. The findings agree with the empirical works which document that modern technology such as ATMs (Amidzic, 2014; Kempson and Whyley,1999), mobile telephony, internet and branchless services (Global Findex, 2011; DFID, 2008; Ignacio, 2008; Porteous 2007; Chant and link, 2004) are

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important for promoting financial inclusion such as greater use of debt and equity instruments and products.

Also, the effect of living standards in column 1; financial literacy, the degree of size of the economy and financial openness in both columns; as well as openness of the economy in terms of FDI inflows and regulatory quality in column 2 are positive and statistically significant at different levels of significance for the banking sector while the effect of openness of the economy in terms of trade and financial charges in column 2; inflation in column 1; and previous banking sector performance in both columns are negative and statistically significant at different significance levels for the banking sector. The findings support empirical works which establish that factors such as high financial charges (Kumar & Mohanty, 2011; Osei-Assibey, 2011; Allen *et al.*, 2008), high unemployment (Kempson and Whyley,1999), and physical distance (Demirguc-Kunt and Klapper, 2012; World Bank, 2008) are detrimental, while income level (Demirguc-Kunt and Klapper, 2012; World Bank, 2005; Barr, 2004; Connoly and Hajaj, 2001), and financial literacy (Osei-Assibey, 2011; Amaeshi, 2006; Zeti, 2005) are driving factors in promoting financial inclusion.

The negative effects of trade for the banking sector is not a mystery as most emerging states are suffering from the problem of low exports relative to imports. Equally, the negative effects of previous banking sector performance suggests that the banking sector's prior performance is not instrumental in fostering its present development. Besides, the unresponsive results of interest on loan, natural resources, FDI inflows and corruption control in column 1; and also living standards and inflation in column 2 are interesting but they are beyond theoretical explanations. The findings confirm Čihák *et al,*. (2013) and it endorses the thinking of SDGs (2015) that countries should promote financial inclusion in all segments of the financial sector to attain an inclusive financial system.

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5.4.2 Granger Causality Test Results and Analysis

[Insert Here Empirical Results: Appendix B]

Furthermore, the granger causality establishes a uni-directional linkage between banks and stock market, but failing to assert the truth of the null, implies that the data are not sufficiently persuasive for the study to prefer the alternative over the null. Correspondingly, it beckons that they compete each other in the context of emerging markets. It confirms bi-directional linkage between banks and bond markets. Therefore, to find an effect signifies that the data are not different from theoretical intuitions and reasoning, so the study opts for the alternative over the null, signaling that they are complements in the context of emerging markets. Generally, the study finds partial support for the study's first hypothesis but not in the case of the second hypothesis.

5.5 Conclusion and Policy Implications

5.5.1 Conclusion

The purpose of this empirical analysis is to examine the causal linkage between banking sector development and capital market development by modeling financial inclusion on their nexus. The study proposes and contends that the banking sector and capital market development cannot independently impact each other without the presence of greater financial inclusion. The banking sector share is either significantly negative or insignificant for the independent estimations. This result clearly attests to the problem that exists in the literature. This unclear effect of the banking sector forms the basis of the motivation for this research. The banking sector share is either significantly negative or insignificant for the independent estimations. This result clearly attests to the problem that exists in the literature. This unclear effect of the banking sector forms the basis of the motivation for this research. Subsequently, it interacts banking sector and banking sector financial inclusion indicators, and then used the interacted term as a regressor to test for

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the significance of financial inclusion in enhancing the positive influence associated with banking sector.

Similarly, the share of the capital market- bond market and stock market- is either significantly negative or insignificant for the independent estimations. This uncertain influence of capital market also forms the heart of the inspiration for this research. This result also evidently buttress the lacuna that exists in the literature. Again, it interacts capital markets bond market and stock market indicators with their respective financial inclusion indicators, and utilize them as regressors to test for the significance of financial inclusion in improving the positive effect associated with the capital market. The study finds substantial response and complementarities between banking sector development and capital market development via greater financial inclusion. Thus, the empirical evidence suggests that greater financial inclusion plays an important role in contributing to banking sector and capital market in furthering each other's development. The findings buttress the empirical works of Čihák *et a*l. (2012 and 2013), which sustain that when bond, stock, and derivative markets permit the holding of a lot of diversified portfolio, this inspires investment in greater return projects that might otherwise be evaded. The present study provides evidence that the linkage between inclusive banking sector and bond market development is bi-causal, where the banking sector and the bond market promote each other's development through increased financial inclusion.

Likewise, inclusive banking sector and stock market development is uni-causal, where the banking sector promotes the development of the stock market through greater financial inclusion but the reverse does not apply. Therefore, a well-inclusive banking sector depends on greater financial inclusion that makes a lot of funds available to banks to facilitate their lending or intermediation activities. Trading activities on inclusive capital market could attract corporate and business entities to desire to raise long-term capital

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through the bond and stock markets instead of through the credit and money markets such as banks. Since long-term capital in the form of equity, debt or hybrid financing with maturity exceeding one year establishes its importance for firms' progress. In general, an investors' decision to participate in investment activities depends on ready access to finance which is driven by inclusive banks and inclusive capital markets. In conclusion therefore, the level of inclusiveness of the banking sector and capital market is very important for these positive effects to be realized. The study contributes exclusively to literature as it positions inclusive capital market in the financial inclusion debate. Moreover, it is among the first to contribute to the limited body of knowledge which models financial inclusion on nexus between banking sector development and capital market development in emerging markets' context.

5.5.2 Policy Recommendations

The findings of this study suggest that countries should put in place policies aimed at enticing all individuals, households and firms to have and use mainstream financial products and services as well as improve local conditions to attract foreign funds inflow. Thus, high levels of inclusion and better local conditions may not only offer opportunities to local economic agents to engage in domestic investment activities but also, it will attract foreign portfolio inflows. Therefore, policy measures such as relaxing rules and regulations regarding local enterprises or firms participation in the local capital market are needed, developing strong regulatory and law enforcement institutions, automating, and modernizing of capital markets operations should be put in place to encourage more financial inclusion for the capital markets. Additionally, measures such as flexible, affordable and attractive rates and conditions for savers, borrowers or investors; and conducive, favourable and investor friendly environment should be put in place to promote higher inclusion in the banking sector. Moreover, there should be strong linkage and

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collaboration between banks and capital markets' activities especially the debt markets. Besides, reforms to help move emerging markets to a more market-based economies are most desirable. Emerging markets' governments and policy-makers should concentrate diversifying or varying the services, products or financial instruments of the capital markets to attract the participation of more local firms and enterprises by "thinking outside the box", to promote greater financial inclusion through the capital markets.

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CHAPTER SIX

FOURTH EMPIRICAL STUDY

FINANCIAL INCLUSION AND INCLUSIVE DEVELOPMENT: FRONTIER AND EMERGING MARKETS' PERSPECTIVES

ABSTRACT

This empirical study investigates the fourth and last objective of the thesis. The study verifies whether financial inclusion is a precondition for promoting inclusive development in the contexts of frontier and emerging markets. Inclusive development is a topmost priority concern of the Sustainable Development of 2015. Yet limited studies, if any, have dedicated attention to empirically investigate the inextricable role of financial inclusion in promoting inclusive development. The study postulates and argues that financial inclusion plays an inextricable role in the process of inclusive development. The research models for the study are verified with data that spans from 2010 to 2014 for thirty (30) frontier and emerging markets by Standard and Poor's Indices, and are analyzed applying the panel dynamic generalized method of moments (system-GMM). The study finds that more and more marginalized, disadvantaged and excluded people, groups and firms via accounts opening, credit facilities and digital innovations, are empowered to have the ability to pay for basic healthcare, basic education and engage in economic activities to earn basic incomes. Also, it finds effective financial intermediation and long-term credit to private firms empower deprived, vulnerable and excluded groups and firms to afford basic healthcare, basic education and earn basic incomes, but not in the case of the latter for inclusive education. Further, it documents that financially empowering more and more marginalized, vulnerable and / or excluded groups or firms via local stock market penetration offers excluded firms or groups the capacity to effectively participate in basic healthcare, basic education, and engage in economic activities to earn basic incomes. But merely enlisting on the stock market hinders inclusive health and inclusive education. Besides, it establishes a positive bi-directional ordinary linkage between financial inclusion and inclusive development for the banking sector, but uni-directional ordinary linkage between financial inclusion and inclusive development for the bond and stock markets. The study originally contributes to the limited body of knowledge on inclusivity of- finance and- development, as it deepens intuitions and positions the capital markets' inclusiveness in the inclusive finance-inclusive development debate, thereby contributing significantly to the accomplishment of the sustainable development goals.

Keywords: *Financial Inclusion, Inclusive-Income, Inclusive-Education, Inclusive-Health, Inclusive Development, System-GMM, Frontier and Emerging Markets.*

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6.1 Introduction

In recent years, development initiatives have attracted renewed attention from governments, development agencies and other policy-makers. There is a new direction to the current debate on development, the focus is now placed on inclusive development as the way forward to promote freedom and wellbeing, that is, development which trickles down to the majority of local society. This view is reinforced by the thinking of the Sustainable Development Goals of 2015. More often, many people are excluded from 'developmental resources, outcomes and opportunities' simply because of their gender, ethnicity, age, disability, poverty or incapacity. According to SDGs of UNDP (2015) the effects of such exclusions are rising levels of inequality worldwide. Inclusive development is also 'progress in general wellbeing, freedom and emancipation combined with empowerment and equal opportunities for all citizens'. It focuses on creating opportunities and making them accessible to all, not just for the affluent, elite or the powerful minority, but equally for the majority poor, illiterates, vulnerable individuals, households, excluded groups and sectors. It has become very crucial because "development fails when governments- 'the governors'- neglect the needs of the very people- 'the governed'- it ought to help", but instead, governors embark on development policies, initiatives and programs in their private interests or respond to donor demands at the cost of citizens' involvement or participation, which results in ineffective and sometimes destructive developmental agendas.

There is inclusive development when all members of a society benefit from, participate in and contribute to developmental processes equally regardless of their circumstances, i.e. economic resources, outcomes and opportunities created are made available to all. Inclusive development, therefore, seems to be 'the beginning of a wonderful, new and happy life' for low income earners, poor households, smallholder farmers, small

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enterprises and medium firms in the developing world. This reasoning buttresses Ali and Zhuang (2007) that document, inclusive development has addressed extreme poverty and rising inequalities in Asian countries, creating economic opportunities and broadening access to opportunities to support social and economic inclusion in the form of access to basic rights, education, health, income, employment, financial opportunities, and general wellbeing among others. This implies that to achieve inclusive development, inclusion initiatives such as financial inclusion should be promoted.

World Bank research (2014; 2015) document that inability to obtain finance is often the most notable cause of persistent income inequality, poverty and slower or no growth and development. This shows there is an inextricable linkage between financial inclusion and inclusive development. Consequently, financial inclusion has emerged as an important global policy initiative for sustainable inclusive economic development (SDGs of UNDP, 2015). It is a must-have initiative for inequality and poverty alleviation, capacity building, economic freedom and wellbeing. Consistent with economic developmental theory (Gupta *et al.*, 2015), the distribution of opportunities in any economy to enhance general human wellbeing and freedom is substantially shaped by inclusive finance i.e. financial inclusion.

Financial inclusion refers to access and utilization of affordable, available, accessible, convenient and customized financial products and services to the enormous un- or under-served economic agents and/ or excluded groups. It plays a prominent role in improving the wellbeing and freedom of marginalized people, disadvantaged groups and vulnerable sectors. It is a development policy priority that helps to eradicate poverty by offering savings products, credit facilities and easy payment products to poor people and vulnerable sectors. It empowers and shapes who can afford quality education (knowledge acquisition), healthcare (long and healthy life), earn decent income (improved living standards). Also who can engage in a decent employment, business start-up, and who can

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pursue his/her economic dreams or prospects, among others. Studies suggest that absence of access to financial services hinders growth and development (Demirguc-Kunt et al, 2008; World Bank, 2008) and hence inclusive development. Financial inclusion addresses the importance of access to, and use of financial products and services for growth, inequality and poverty reduction, as it offers widespread access and utilization of finance for un- or under- served people, groups and sectors.

Also, research show that a number of benefits such as making savings and securing loans to pay school fees for children, buy land or build houses have been derived by individuals, households firms and communities through financial inclusion initiatives (Asia Development Bank, 2015). As it offers financial opportunities to everyone to empower, equip and build their capacities. Thus, financially empowered hitherto excluded groups could seek or afford basic education, healthcare, earn income (living standards) and general wellbeing and freedom. Likewise, readily available finance is required to address the financial inequalities of the toiling majority engaged as micro- or small- entrepreneurs, the self-employed and those working in small farms, small businesses and/or medium firms that are not set-up as companies, because as more and more excluded groups own accounts, save, borrow, make payments with ease and manage their risk exposures via a formal financial sector, the more their income, health, education, employment opportunities and overall well-being improve, which is an indication of development by inclusion. Subsequently, financial inclusion seems to be the 'searched for treasure' by financial economics scholars and practitioners, governments, development partners and policy-makers, as it is improving the conditions of vulnerable people, groups and enterprises in the developing world. Yet, while the importance of inclusiveness for the financial sector and economic growth is recognized and quite widely researched, there is limited empirical literature focusing on financial inclusion fostering inclusive development. Against this backdrop, the study first hypothesizes and argues as follows:

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Ho_1: Financial Inclusion is not a precondition for promoting Inclusive Development in Frontier and Emerging Markets.

Similarly, it is plausible that once inclusive development has been achieved that will in turn promote increased financial inclusion. Globally, more than 50% of unbanked adults stated lack of money among other factors as the major impediment to being financial included (Demirguc-Kunt and Klapper, 2012). Subsequently, through promoting inclusive development- promotion of equality and empowerment of vulnerable or excluded groups- majority of people, groups and sectors will be eradicated from extreme poverty. As more excluded people will possibly attain quality education, improved healthcare, decent employment/ income, and overall well-being, and also that may transform or build their capabilities to become more financially inclusive. Studies show that the main drawbacks to financial inclusion are high unemployment (lack of livelihood and decent work) resulting in no or low income (poor living standards), lack of financial literacy (lack of awareness, knowledge about financial products and management), poor healthcare (ill-health, short lifespan or premature deaths), exorbitant financial charges (high service and maintenance costs), lack of modern technological devices (inadequate mobile telephony, internet and innovative strategies), unsuitable products (not customized/ user-friendly services), among others.

No or low income earners are unable to meet basic primary needs such as food, clothing and shelter, let alone participate in any meaningful developmental activity. No job or irregular employment opportunities limit the credit worthiness of individuals, households and firms to access credit to participate in any meaning economic activity. Also, most parents may not send their children to school not because it is not a panacea or there are no policies but usually because they lack financial empowerment to do so. Access to quality health services such as medical examinations, treatment and quality drugs are

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limited to the poor majority due to lack of funds to patronize such services, hence leading to low productivity as a result of ill-health or pre-mature deaths. Readily accessible finance may permit individuals and household to maintain or improve their health status especially when faced with sudden illness. This is through easily accessing their savings or credit facilities to pay for medical treatments and drugs. This should lead to the less likeliness to abandon medical appointments, discontinue the use of regular quality medication, cut back on nutritious food consumption, thereby resulting in reduced infant and child mortality, better health and long life for the majority of the hitherto deprived people and sectors.

Therefore, in the absence of all these components of developmental barriers, excluded groups and sectors will benefit from developmental opportunities and outcomes, leading to the attainment of general wellbeing and freedom. Therefore, as more and more excluded people, groups and sectors are involved, transformed and empowered to become inclusive participants in development processes that should equally promote increased financial inclusion. Indeed 'there is an inextricable link between inclusive development and financial inclusion'. But the effects of inclusive development in scaling up financial inclusion remain under-researched. Subsequently, the study similarly proposes and argues as follows:

Ho_2: Inclusive Development plays no role in promoting Financial Inclusion in Frontier and Emerging Markets.

Widespread financial inclusion facilitated by all the key segments of the financial sector needs to be recognized as an important pathway to securing a more equal access to financial opportunities and resources, in particular, among local communities. Besides, financial inclusion has been evaluated in broader view to include formal financial sectors such as banks, bond and stock markets in a study advanced by Čihák *et al.* (2013). Yet, there still remains some untrue beliefs that financial inclusion promotion is reserve for

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informal financial enterprises and micro finance institutions. Moreover, financial inclusion intiatives have emerged as a commercial profitable engineering. Therefore, formal financial system, especially capital market practitioners and regulators, need to think outside the box to unleash capital markets still stuck in the doldrums, for there is a 'fortune at the bottom of the pyramid'. Furthermore, Čihák *et al.* (2013) asribe that considering only the banking sector means leaving other equally important sectors of the financial systems such as the bond and stock markets, which are influential in most economies. In this light, the study analyses the case of the formalized money (banks) and capital markets in frontier and emerging markets' context.

Besides, the ability of vulnerable and excluded people, enterprises and firms to reach and engage in developmental processes and opportunities are also influenced by the imperative role of modern technological and financial innovation devices such as mobile telephony, internet and telecommunication facilities. Also governance indicators like the rule of law, regulatory quality, governance effectiveness, and corruption control; and macroeconomic stability indicators such as interest and inflation control among other economic parameters have been examined. The study contributes distinctively to literature by contending and empirically supporting with evidence that developmental inclusivity is enhanced when greater financial inclusion is realized, and the reverse applies in the case of the banking sector. Therefore, the present study is original, innovative and different from prior studies on the issue of exploration.

The rest of the study is structured in four more sections. The second section discusses theoretical and empirical literature for the analysis. The third section describes the data and methodology applied. The fourth section presents and discusses the results, while the fifth concludes and provides policy inferences.

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6.2 Literature Review

6.2.1 Inclusive Development

Inclusive development is a pro-poor approach that equally values and incorporates the contributions of all stakeholders- including marginalized or disadvantaged groups and vulnerable sectors- in addressing developmental issues. Typically, it consists of economic, political and social dimensions such as basic income, finance, rights, governance policy, education, health, and employment opportunities among others. Harberger (1998) opines that inclusive development refers to a wide range of factors including marginalized people, sectors and countries in governance, social and economic processes. It contributes to enhanced human wellbeing, empowerment, social and environment sustainability. He distinguishes inclusive development from inclusive growth. Inclusive growth symbolizes a welfare route to development, and it means generating employment for the poor to improve their incomes, assets and other social goods, as well as encouraging competition and aggregate growth in a nation. In comparison, inclusive development emphasizes individual wealth accumulation over collective well-being, and short-term gains over long-term sustainability (Pouw and McGregor, 2014). Ravallion and Chen (2003) best describes inclusive development, as development which can be possible by mass participation i.e. through the process of inclusion. The process of inclusion engages each individual, households, firms, and all stakeholders and makes them feel valued. This statement buttresses Ravaillon & Chen (2007) who find that from 1980 to 2001, the proportion of people living in poverty fell from 53% to 8% due to inclusion. Yet, till date local people have been excluded or marginalized from participating in economic development.

Inclusive development is said to be a strategy towards attaining empowerment and equity that depend on a broad range of activity, including human capital development (healthcare, education), poverty reduction, social capital development (community-based steering, and participatory decision-making), gender development (healthcare, welfare and participation

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in societal development for women), and social protection-reducing risks, poverty reduction, and vulnerabilities allied with age, disability, illness, economic crises, natural disasters and civil conflicts- (Asian Development Bank, 2007). Besides, the concept of participatory development submits that the protection of interest of disadvantaged groups and sectors, within an economic system can be measured by the extent of their involvement in relevant financial empowerment processes, rather than their outcomes which are decisive for achieving inclusive development (Di John and Putzel, 2009).

Rauniyar and Kanbur (2009) argue that inclusive economic development is economic progression coupled with equal economic opportunities. Thus, it focuses on creating economic opportunities and making them accessible to everyone in society at all levels, not just to the deprived. Accordingly, economic development process is said to be inclusive when all members of a society participate in, benefit from, and contribute to that process equally regardless of their individual credentials, status, or circumstances. It is the process of ensuring that all deprived, marginalized and/or debarred groups within a society are included in the development process. World Bank (2013b) supports this statement "universal financial access is vital to reducing poverty, innovation key to overcoming the enormous challenge", said by President Jim Yong Kim in a press release of 11th October, 2013. This statement buttresses the contention that income disparity is often the outcome of unequal economic opportunities and monopolized markets that result in the relegation of the comparative poor, as lack of financial inclusion should be more prevalent in nations with high income disparities (Aridic et.al, 2011).

Otsubo et al. (2015), on the mutual relationships among growth-inequality-poverty-triangle, claim that poverty alleviation can be realized from two different effects economic growth, and distribution of income and assets. In their opinion, whether growth effect and distribution effect can be treated independently depends largely on growth inequality

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trade-off. Additionally, they observe that in a short to mid-term, development strategies that affect economic growth and income distribution can be undertaken independently. However, they caution that when taking the effect on poverty reduction into account, economic growth strategy that causes additional inequality in income distribution must be avoided - "if not it should be accompanied with adequate polices that transfer income and consumption to the poor". The outcome is that growth often leads to reduction in poverty, therefore redistributions of wealth could self-augment growth. For that reason, finance which influences positively on growth should aid reduce poverty, albeit indirectly. Besides, the poor can derive many potential benefits from having a direct access to finance, but the important question is how finance can be provided directly to the poor. The best answer to this question so far has amazingly gone in favor of promoting financial inclusion incentives. Since its introduction, financial inclusion has realized astounding successes **(**Morduch and Haley, 2002; Mor and Ananth, 2007; and Beck *et al.*, 2009**),** as it has reduce income inequality and poverty.

The debate on inclusive development is usually conveyed (understood) in the framework of participatory and civil society centred approaches. But this is often done without directly channeling the distribution of power and resources between state elite, rich and dominant economic actors on the one hand, and illiterates, asset-poor and marginalized economic actors on the other (Bass, 2007). Besides, horizontal inequality, that is, economic inequality across regions and ethnic groups, which is a source of political instability needs to be guarded against (Stewart, 2005). Disadvantaged groups, sectors and communities usually have been largely silenced and sidelined from mainstream developmental processes. Political and economic exclusion or the calculated dominance of one ethnic group can be a source of grievances and a trigger for political violence (Githinji & Holmquist, 2009), especially in situations where the minority ethnic group deliberately excludes the majority ethnic group from governance and economic opportunities. But

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inclusive development is valid, it includes sensible macroeconomic policies, sound institutions, effective economic policy management, consensus-building on public policies and programmes, and policies and interventions tempered to socio-economic and cultural factors (Chibba, 2008).

Inclusive development calls for evaluating not just poverty but also actors and elements driving inequalities within and between countries. Worldwide, about seventy percent (70%) of people live in countries where the gap between the poor and the rich has full-grown in the last thirty (30) years (Rauniyar and Kanbur, 2009). But extreme poverty hurts the poor, as it serves as an impediment to poverty alleviation. Also, inequalities undermine economic development by surmounting in particular, inequalities between women and men. Ali (2007) documents that rising inequalities pose a danger to social stability and sustainability of the development process itself. In addition it compounds inequality of access to education and health (Oxfam, 2014). This view supports the claim by Mehrotra and Yetman (2015) that access to suitable financial assets or instruments may allow the deprived or poor to invest in education and physical assets, thereby improving income and fostering development.

Development inclusiveness calls for analyzing not just poverty, but the factors and actors driving inequalities between and within countries: seventy per cent (70%) of people worldwide live in countries where the gap between rich and poor has fully-fledged over the last thirty (30) years (Rauniyar and Kanbur, 2009). Ali (2007) documents that rising inequalities pose a danger to social stability and sustainability of the development process itself. But, extreme inequality hurts the poor by being a barrier to poverty reduction, inequalities also undermines economic development by compounding inequalities between men and women, and drives other inequalities of access to health and education (Oxfam, 2014).

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Furthermore, according to SDGs of UNDP (2015), the international debates on inclusive development emphasizes the importance of political, governance, social, economic and finance parameters among others. The inclusiveness in the development process has thus become one of the crucial policies to alleviate poverty, inequality and incapacity of enterprises and firms, and it also creates opportunities for decent work and livelihood for all. To achieve this new way of developmental objective, many developing nations including emerging and frontier market economies, prioritize to expand finance as core developmental agenda. This is because without removing barriers to funds mobilization and allocation, vulnerable economic agents may find themselves in extreme poverty. This assertion is substantiated by Demirguc-Kunt et al. (2008).

It is interesting to observe that the minority wealthier in society often form part of the politically and economically powerful elites. Consequently, foothold for the exploitation of poorer, disadvantaged groups and sectors are created due to existing relations of power and inequality at the national, community or local level, may override the interest and entitlements of the deprived. The UNDP Human Development Reports (2010-2015) document the growing gap between the incomes of the affluent-elite minorities and the toiling-illiterate majorities. Asongu *et al*. (2014) allude various Human Development Reports (HDRs) indicate that South Asia and the Arab States have the highest IHDI in education, while SSACs have the highest IHDI in health, and Latin American and the Caribbean have the highest IHDI in income. According to International Policy Center for Inclusive Growth (2015), "over one billion people live without many of the basics that the other six billion take as given".

Barr (2004) observes that person who fall within low income group are usually financial excluded. Besides, the employed or persons with regular and secure employment are more likely to participate in the financial system's products and services provided This view is

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buttressed by a study that finds positive linkage between employment and financial inclusion (Goodwin *et al.*, 2000). Similarly, the proportion of formal sector employment should be an important indicator of the level of financial inclusion (Sarma and Pais, 2011). Also, access to finance is widely considered the foremost constraint to growth (World Bank, 2008; Beck, Andrianaivo & Kpodar, 2012). Recent thinking in development economics "finance for all" (World Bank, 2008; Chibba, 2009) comprises finance for Small and Medium-sized Enterprises-SMEs- (Ardic, Mylenko, & Saltane, 2012), and should in particular include easy access and use of securities market instruments.

Yet, till date a large majority of the world's poor do not use mainstream financial products and services. Theory says that as poverty levels fall, the demand for financial services may be inspired (Perez-Moreno 2011). Hanning and Jansen (2010) aver that improving access to financial services has positive effect on the poor's' living standard and their well being. Also lack of financial inclusion may widen income inequality (Conroy, 2008). Levine's theory (2008) hypothesizes that finance reduces poverty and alleviates inequality. If the poor are empowered through financial access, then by funding educational and business endeavours, they may escape poverty over a generation. Likewise, Beck et al (2008) propose that having more financial inclusion reduces poverty and income inequality. Also persons with secure and regular jobs are better able to use financial products and services provided by the formal financial sector. Buckland et al. (2005), and Kempson et al. (2004) find that countries with low income inequality tend to have high levels of financial inclusion. They find that income inequality causes low financial inclusion in an economy. In addition, areas with high unemployment or areas where informal sector employment is high are more likely to have high financial exclusion.

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Inclusive development is, therefore, a capacity building and emancipation concept that aims to empower the majority poor, marginalized groups and vulnerable sectors caught in nested circles of exclusion of all forms, to actively participate in developmental processes in particular, at local community level. Thus, development cannot effectively reduce poverty unless all groups contribute to the creation of opportunities, share the benefits of development and participate in decision-making. One of the most effective pathways to bridge the problem of deeply entrenched inequalities, is to promote increased financial inclusion.

6.2.2 Finance Inclusion

Financial inclusion is a requisite for economic development and poverty reduction (UN, 2005; Beck & Demirguc-Kunt, 2008). It is a top-priority development policy of the SDGs of UNDP (2015) that is targeted at improving the conditions of vulnerable people, groups and sectors in many countries. It is one of the perimeters of inclusive and sustainable development as it helps the poor and vulnerable to build domestic savings, credit, financial resilience and stimulates business and entrepreneurial drive. It has been recognized worldwide as an important instrument for progress; and pre-condition for poverty alleviation, income inequality and exclusion (Demirguc-Kunt and Klapper, 2012; CGAP, 2010; Sarma and Pais, 2008). Mor and Ananth (2007) observe that financial inclusion can help individuals smoothen their income, insure themselves against risks and broaden investment opportunities, as it will alleviate poverty and expand economic activity. Thus, entrepreneurs, micro enterprises, small and medium firms can benefit greatly from affordable finance through financial inclusion promotion. Global and national-level policy makers have been embracing financial inclusion as an important development priority (Cull et al, 2014). The World Bank Group, in October 2013, advanced the global goal of universal access to basic transaction services as an important milestone toward a full

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financial inclusion- a world where everyone has access and can use the financial services he or she needs to capture opportunities and reduce vulnerability (World Bank 2013b). In this regard, financial inclusion will empower and integrate economic agents particularly in the informal sector into the development process. Thus, the deprived or marginalized groups need a comprehensive range of financial products and services to make and sustain livelihoods, build assets, and manage risks.

The quest for financial inclusion and inclusive economic development is very critical in recent times (Aduda & Kalunda, 2012). From the perspective of households and SMEs, financial inclusion provides opportunities to borrow and save, offers efficient means of making payments, and facilitate investment in housing, education, insurance, and firm growth (Aduda & Kalunda, 2012; Hurtado, Torres, & Hayem, 2013). According to Beck & Demirkuc-Kunt (2008), Ardic, et. al. (2012) and Demirguc-Kunt et. al (2013) often times the poor and SMEs, tend to have limited access to finance. Moreover, there is inequality in access to finance, where people of different ethnic groups, regions, gender and political group have differential access. Global commitment to inclusive finance as a means to achieving inclusive development (Chibba, 2009; AFI, 2010; Aduda & Kalunda, 2012; Dittus & Klein, 2011). Studies have observed that financial inclusion offers possibilities to advance inclusive development (Mendoza & Thelen, 2008; Chibba, 2009; Gencer 2011; Aduda & Kalunda, 2012). Improved access to formal finance can improve economic development and social services (IMF, 2008; Gencer, 2011; Aduda & Kalunda, 2012).

World Bank (2008) report that limited access to finance is the leading factor accounting for persistent disparity in income, slower or no development. Numerous research also show that limited access to financial services thwarts development (Demirguc-Kunt et al, 2008; World Bank, 2008). It is crucial to improve pro-poor financial sector policy by

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eliminating financial barriers through an absence of price and non-price barriers (Demirgüç-Kunt *et al.*, 2008). Besides, Beck et al. (2004) advanced a study analyzing the impact of financial intermediary development on the poor and income disparity. They find that better developed financial sector is positively associated with falling income disparity (Gini coefficient), greater incomes for the poorest people, and falling percentage of people living in poverty. Similarly, Beck et al., (2008) show that economies with pro-poor financial access undergo faster drops in income inequality and faster reductions in poverty levels. Undeniably, Cook (2006) contends that growth alone is not a sufficient condition to work towards sustained poverty reduction and inclusive development. But it is the various and specific challenges raised by dissimilarities in spatial distributions of growth and development that arguably contribute to rising inequality, persistently high levels of poverty and social instability.

Osei-Assibey (2011) investigated the relation between financial inclusion and poverty reduction in Ghana by exploring the socioeconomic factors that underlie financial exclusion. The study used primary data from a field survey from Ashanti region of Ghana, and secondary data from Ghana Statistical Service between September 2005 and September 2006. The factors examined are cultural and religious beliefs on credit, and interest rate sensitivity, perception of difficulties in accessing finance, and information gap on the probability of voluntary self-exclusion. The study controlled for enterprise specific level and demographic characteristics. The study establishes evidence that the most prominent factors underlying voluntary self-exclusion are financial literacy, negative cultural and religious beliefs on credit use, and strong perception of difficulties in accessing finance. Also it finds that high transaction costs, stringent collateral requirements, and others constraints like lack of financial records discouraged people, microenterprises and firm from borrowing and generally accessing financial services.

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Also, the second pillar of financial inclusion is financial literacy, defined "as the ability to make informed judgments and to take effective decisions regarding the use and the management of money" (Chibba, 2009). An important component of financial inclusion is access to financial instruments which permits savings, borrowing or both (Mehrotra and Yetman, 2015). Also, they opine that financial inclusion is the pivot to financing a firm's of production and purchases of long term or capital goods, in the similar ways as it helps to smooth households' consumption, and this can best be attained, if firms have readily accessible financial opportunities. Subsequently, financial inclusion is seen as a supporting initiative to inequality reduction, poverty reduction, and capacity building mechanism necessary to engender progressive social and economic prosperity, through the provision of affordable finance. Allen et al. (2010) find that reasons accounting for low financial inclusion include income level- not enough money to use let alone save some; temporal or no employment; proximity- financial facility or branch location too far away; no necessary documentation to be eligible to open account; high cost- exorbitant financial charges on account opening and maintenance; women, youth, the poor, and rural residents are the least likely to have a formal bank account; religious and cultural reasons; no trust for financial sector.

Kempson (2006) finds economies with low disparity in income, usually have high degree of financial exclusion. Conversely, they also establish that high income inequality results in low financial inclusion. Similarly, Sarma (2008) finds that where households have bank accounts, they enjoy greater degree of consumption, have more assets and have higher tendency to be college educated, while Beck and Brown (2010) observe that at household level, the probability to have a bank account or bank card increases with income level, wealth possessed and education acquired in most transition economies. Besides at national level access to financial service do have positive effects on inequality and poverty

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reduction (Beck *et al.*, 2009; World Bank, 2008). Also, there is reason to believe that well-managed innovative community based financial products can reduce poverty (Morduch and Haley, 2002). Therefore, access to finance may allow poor households to save, borrow or invest in the future in the form of physical and human capital and insure against income and health shocks. Moreover, a study finds that people with bank accounts are less likely to cancel doctors' appointments, cease the use of regular medication and cut back on consumption of staple food (Johan Peurilak, 2013). This is because they are able to access deposits or borrow to pay for medical examinations, treatments, and drugs. So, inclusive finance may permit individuals to maintain their health levels when faced with an unexpected illness. In sum, inclusive finance can be described as efforts to ensure that all marginalized, vulnerable and excluded people, groups and firms particularly, in the local communities are financially empowered, by having access to the full benefits and use of formalized financial products and services.

The Asian Development Bank (2015) documents that financial inclusion is a key strategy in reaching the SDGs (2015) and in building global inclusive financial systems that meet the desires of the poorest people and that the poor are viable customers. Supporting this view, the World Bank (2015) also reiterates that financial inclusion is an important initiative with robust influence on the realization of the SDGs and distinctive among all development interventions. According to the World Bank (2015), financial inclusion has the potential to deliver social benefits on a permanent and large scale basis. Some of these existent studies show positive effect of financial inclusion as contributing to improving health, education as well as empowering the poor and excluded groups to engage in meaningful economic activities to earn a decent income. One of the most effective pathways to bridge the problem of deeply entrenched inequalities is to promote increased financial inclusion. Therefore, financial inclusion meets the financing needs of the poor,

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excluded groups and sectors; thus, it has the ability to reduce poverty and inequality hence, it plays a significant role in inclusive development. However, empirical investigation on this subject remains largely inconclusive in literature.

6.3 Methodology

The study models after the theoretical intuitions of Čihák et al. (2013), the Sustainable Development Goals (SDGs of UNDP, 2015) and Gupta *et al.* (2015) to examine the impacts of financial inclusion on inclusive development and vice versa. It employs the dynamic panel Generalized Methods of Moments (system GMM) for the ananlysis.

6.3.1 Data Source and Type

The data for the study were obtained from Global Financial Development (GFD), World Development Indicators (WDI) and Worldwide Governance Indicators (WGI) all of the World Bank (2015); International Financial Statistics (IFS) and Financial Access Survey (FAS) of the International Monetary Fund (2015), and Human Development Databases of the UNDP (2015). Secondary data spanning from 2010 to 2014, for seventeen (17) frontier markets, consisting of Argentina, Bangladesh, Botswana, Cyprus, Ecuador, Ghana, Jamaica, Kenya, Latvia, Lebanon, Mauritius, Namibia, Nigeria, Panama, Pakistan, Sri Lanka and Tunisia), and thirteen (13) Emerging Markets (Brazil, Chile, China, Colombia, Egypt, Hungary, India, Indonesia, Morocco, Peru, Poland, Thailand and Turkey; and 13 emerging markets comprising Brazil, Chile, China, Colombia, Egypt, Hungary, India, Indonesia, Morocco, Peru, Poland, Thailand and Turkey, by Standards and Poor's (S&P) July, 2014 indices were extracted and utilized (Appendix A). Because financial inclusion is a relatively new phenomenon, most countries in the sample did not have exploitable data before the 2000's. Also, because of mixing values (figures) the panel is unbalanced for most of the estimations conducted.

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6.3.2 Model Specifications

The general Inclusive Development model is specified as follows:

$$InclvDevt_{it}^{\eta} = \alpha_i + \beta_j InclvDevt_{it-1}^{\eta} + \delta_j FinInc\ln_{it}^{\tau} + X_{it}\rho' + \mu_{it} \quad \text{.....(1)}$$

where;

$InclvDevt_{it}$ is a matrix of the indices of Inclusive Development (ID), other than the lag ID,

η is inclusive development for different indicators,

$FinIncln_{it}$ is a matrix of the indices of financial inclusion (FI), other than the lag FI,

τ is financial inclusion for bank, bond and stock markets,

$\alpha_i \ and \ \sigma_i$ are unobserved country-specific effects,

The general Financial Inclusion model is stated as follows:

$$FinInc\ln_{it}^{\tau} = \sigma_i + \phi_j FinInc\ln_{it-1}^{\tau} + \varphi_j InclvDevt_{it}^{\eta} + Z_{it}\gamma' + \mu_{it}^{'} \quad \text{.....(2)}$$

where

φ_j = represents the inequality adjusted Human Development Index term: inclusive development. X_{it} is matrix of control variables for inclusive development.

Z_{it} is matrix of control variables for financial inclusion.

μ_{it} and μ_{it}' are the remaining disturbance terms.

NB: the inclusion of the lagged dependent variable ($InclvDevt_{it-1}^{\eta}$ or $FinInc\ln_{it-1}^{\tau}$) as an independent variable, transforms the model into a Dynamic Panel Model- system GMM. This is necessary because, development inclusiveness or financial inclusion performance often depends on the previous year's performance.

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6.3.3.1 Measures of Dependent Indicators Employed

In accordance with the United Nations Development Programme (UNDP, 2015), Asongu *et al*. (2014 and Asongu *et al*. (2015), the study employs the Inequality-Adjusted Human Development Index (IHDI) for each of the inclusive development components- inclusive income (growth), inclusive education (knowledge acquisition), inclusive health (long and healthy life), and overall inclusive development (wellbeing and freedom) being examined. The IHDI (proxy for inclusive development) combines a country's average achievements in health (long and healthy life), education (knowledge acquisition) and income (GDP growth per capita - improved living standards) with how those achievements are distributed among a country's population by "discounting" average value of each dimension according to its inequality level. The difference between the IHDI and HDI is the human development cost of inequality, also termed the loss to human development due to inequality. Thus, the IHDI factor into account the HDI less loss of the human development caused by inequality. The IHDI allows a direct link to inequalities in dimensions (Human Development Reports, 2015). Positive relations are expected and are sourced from Human Development Databases of the UNDP (2015).

Similarly, in line with Čihák et al. (2013) and Demirgüç-Kunt, et al (2008) the study adopts inclusion indicators for the three segments of the formal financial sector- bank, bond and stock markets being explored. Financial inclusion the predictor variable of interest consists for banks- number of bank accounts per 1,000 adults, borrowers from commercial banks per 1,000 adults, and ATMs per 100,000 adults; for the bond market- credit to private firms (Loans from entire financial system to private sector % of GDP), and financial intermediation ratio (entire financial system credit divided by entire financial system deposits); and for the stock market- listed companies per million (1m) people, and number of companies listed on the local stock market. Positive relations are expected and are

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sourced from IFS and GFD (2015). This study utilizes parameters that focus mainly on the "number of people" whose lives have been inspired by varieties of financial products and services instead of the "amounts" deposited, loaned or avenues available.

In addition, due to the important role of modern technological and financial innovation devices as major drivers of inclusive finance, the study estimated them independently i.e. individually and jointly to observe their individual and combined impacts. The parameters utilized here are mobile telephony proxied by mobile subscribers per 100 people, internet- internet subscribers per 100 people, telephone- mobile and fixed phone subscribers per 100 people and telecommunication- telephone and internet subscribers per 100 people.

6.3.3.2 Description of standard independent / Control variables used

1. *Internet penetration*: Internet users (per 100 people)	These are individuals who have used the Internet (from any location) in the last 12 months, per 100 people (WDI, 2015).
2. *Mobile penetration*: Mobile cellular subscriptions (per 100 people)	It refers to mobile telephone services that provide access to voice communication using cellular technology per 100 people (WDI, 2015).
3. *Telephone Penetration*	Fixed telephone plus Mobile phone subscriptions per 100 people (WDI, 2015).
4. *Telecommunication*:	Telephone (fixed and mobile) plus Internet subscriptions per 100 people (WDI, 2015)
5. *Income level*: Gross national income (GNI) per capita growth (constant 2005 US$)	It is the sum of value added by all resident producers in the economy plus any product taxes minus any subsidies not included in the valuation of output plus net receipts of primary income divided by midyear population (WDI, 2015).
6. *Financial literacy/ Education*: Primary completion rate	It is the number of new entrants in the last grade of primary education, divided by the population at the entrance age for the last grade of primary education (WDI, 2015).

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7. *Life expectancy* at birth, total (years)	It indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life (WDI, 2015).
8. *Market Size / Local Economy* (Urban Population)	It refers to people living in urban areas as a percentage of total population (WDI, 2015).
9. *Market size / Local Economy* (Rural Population)	Rural population refers to people living in rural areas as defined by national statistical offices. It is calculated as the difference between total population and urban population (WDI, 2015).
10. *Employment status:* Unemployment, total (% of total labor force)	It refers to the share of the labor force that is without work but available for and seeking employment (WDI, 2015).
11. *Financial services costs*: Lending interest rate (%)	It is the bank rate that usually meets the short- and medium- term financing needs of the private sector (WDI, 2015).
12. *Market Size/ National Economy:* Population, total	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship (WDI, 2015).
13. *Rule of Law*	It captures perceptions of the extent to which agents have confidence in and abide by the rules of society (WGI, 2015).
14. *Proximity* (Branch Location)	Are physical locations of commercial bank branches per 1000 Km^2. (FAS of IMF, 2015).
15. *Natural Resources:* Exports of goods and services (% of GDP)	It represents the value of all goods and other market services provided to the rest of the world (WDI, 2015).
16. *FDI- Foreign direct investment*: net inflows (% of GDP)	These are the net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor (WDI, 2015).
17. *Corruption Control*	It captures ability to curb the extent to which public power is exercised for private gain (WGI, 2015).

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18. *Governance Effectiveness*	It captures perceptions of the quality of public services, the civil service, policy formulation and implementation, the degree of its independence from political pressures, and the credibility of the government's commitment to such policies (WDI, 2015).

NB: The above are the standard independent and/or control indicators from literature. Besides, aside 10 and 11 for which negative relations are anticipated, positive relations are expected for all the indicators. Also, all the indicators are sourced from IFS and WDI (2015), aside 14 from Financial Access Survey of IMF (2015), and 13, 17 and 18 from WGI (2015).

6.3.4 Choice and Justification of Methodology

6.3.4.1 Dynamic Panel Data Methodology (System-GMM)

The study employed the dynamic panel generalized methods of moments approach which is the most suitable for panel data estimations. It is referred to as the dynamic panel instrumental variables (IV) approach. It is developed by Holtz-Eakin, Newey, and Rosen (1990); Arellano and Bond (1991); and Arellano and Bover (1995) for estimating panel models. Also Edison et al. (2002) submits that its application offers several merits for researchers. First, it allows one to analyze both time series and cross sectional data. Also it is the most befitting or suitable approach to apply when cross-sectional dimension (N) is more than the time dimension (T) of the data. Second, applying this approach allows the inclusion of lagged dependent variables as regressors, thereby controlling for any bias caused by unobserved country-specific effects. Third, because the direction of causal-effect between dependent and independent variables are likely (could, may) to run in both directions, this approach controls for endogeneity bias. For instance, whereas financial inclusion promotes inclusive development, it is plausible for a higher level of inclusive development to also promote increased financial inclusion. For such prospect the evidence of reverse direction presents an important issue of endogeneity that has be taken into

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consideration by dynamic panel instrumental variables approach. So, applying this approach mere bi-directional links are expected.

Specifically, it difference dependent variables and uses the lagged values as regressors or instruments. Besides, it differences the regressors and uses their lagged values as instruments. Thus, it uses the lagged differences of all explanatory variables as instrument for the level version of regressions. It then combines difference and level regressions in a system. The inclusion of the lagged dependent variable (e.g. lagged inclusive development) as an independent variable transforms the model into a dynamic panel instrumental variables model. This is also necessary because recent inclusive development performance often depends on the previous year's performance.

The validity of these assumptions are verified by ensuring that the results satisfy diagnostics of post-estimations i.e. Sargan test and autocorrelation test, and hence, it gives consistent results.

The Sargan test examine the overall validity of the instruments used, while autocorrelation tests examines the hypothesis that the error terms are not serially correlated with the instruments used (Baltagi, 2008; Arrelano and Bond, 1991). The system GMM therefore gives unbiased results with the assumption that there is no second-order autocorrelation and that the instruments are not correlated with the error terms.

Hence, in recent times, dynamic panel models are preferred by researchers. Accordingly it is chosen as the superior approch to examine the relationships stated above.

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6.4 Empirical Results qnd Analyses

The section here presents and analyzes the results of the fourth and final empirical study.

6.4.3 Sensitivity Analysis

6.4.3.1 Hausman test for fixed or random effects

There exist arbitrarily distributed fixed individual effects as shown in the results below.

Table 6.1: Hausman test for fixed or random effects

Null Hypothesis (Ho)	Output
Difference in coefficients not systematic	Chi2(13) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 39.84
(There is random effect)	Prob>chi2 = 0.0001
	(V_b-V_B is not positive definite)

b = consistent under Ho and Ha,
B = inconsistent under Ha, efficient under Ho.

Source: Author's computation using Stata 13.1

Fixed effects is confirmed by the Hausman test. The null hypothesis is rejected at 1 per cent in favour of fixed effects as shown in Table 6.1 above. But the model cannot be estimated using Ordinary Least Squares (OLS) techniques due to the existence of endogenous variables.

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6.4.3.2 Endogeneity Test Results

Table 6.2: Endogeneity test for assumed endogenous variables

Null Hypothesis (Ho)	F-Statistics	Prob>F
Bank accounts per 1,000 adults is uncorrelated with the error term	F(1, 15) = 11.80	0.0294
Bank borrowers per 1,000 adults is uncorrelated with the error term	F(1, 15) = 80.10	0.0076
ATM per 100,000 adults is uncorrelated with the error term	F(1, 15) = 11.10	0.0310

Source: Author's computation using Stata 13.1

From the table 6.2 above, the test results confirm that borrowers per 1,000 adults is correlated with the error term, and it is significant at 1 per cent, while bank accounts per 1,000 adults and ATM per 100,000 adults are significant 5 per cent. The result reinforces that OLS or fixed effects estimator will not be suitable, and also the results will be bias and unreliable if either is employed in the estimation analysis.

6.4.3.3 Test for Cross-Sectional Dependence

The test for cross-sectional dependence or contemporaneous correlation is carried out using the Pesaran CD test which is fit for panel data with the time dimension less than the cross-sectional dimension (micro panel). Table 6.3 presents the test result for cross-sectional dependence.

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Table 6.3: Test Result for Cross-sectional Dependence

Null Hypothesis (Ho)	Output
Cross-sectional independence	Pesaran's test of cross sectional independence = 0.694, Pr = 0.5032 Average absolute value of the off-diagonal elements = 0.388

Source: Authors' computation using Stata 13.1

The test result indicated in table 6.3, fails to reject the null hypothesis, symbolizing there is no cross-sectional dependence among the micro panels. The probability value of "0.5032" shows that there is not enough evidence for cross-sectional dependence among the cross-sectional units in the model. Moreover, the absolute value (0.388) of the off-diagonal elements suggests a weak correlation between the error terms. In conclusion, the test result detects no dependency among the cross-sections.

6.4.3.4 Wald Test for Heteroskedasticity

Table 6.4: Wald Test for Heteroskedasticity Results

Null Hypothesis (Ho)	Chi2-Statistics	Prob>chi2
Sigma(i)^2 for all i (Homoskedasticity)	Chi2(19) = 9658.98	0.0000

Source: Author's computation using Stata 13.1

From Table 6.4 above, we reject the null hypothesis at 1 percent and conclude that heteroscedasticity is present in model.

All the sensitivity analyses are necessary for the consistency, and as they support the use of the system GMM estimator. Accordingly, the next section applies the System GMM, and presents estimation results and discussions.

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6.4.4 Inclusive Development and Financial Inclusion by the Banking Sector

The result presented in table 6.5, indicates that the result of the second-order autocorrelation- AR (2) - test implies that the instruments used are not correlated with error terms. Also, the Sargan test result suggests that the instruments used are valid, and that the results obtained are reliable.

Besides, the result shows that bank accounts per adult is positive and highly significant at 1% significance level for inclusive health (long and healthy life) and inclusive income (inclusive growth), but it is negatively statistically significant for inclusive education (knowledge acquisition). Also, borrowers per account adults is positive and highly significant for inclusive health, inclusive education, and inclusive income (inclusive growth). Moreover, ATM per adult is positive and statistically significant for inclusive education and inclusive income (inclusive growth), but it is negatively statistically significant for inclusive health. Furthermore, the overall bank financial inclusion is positive and highly significant at 1% significance level for inclusive development and the reverse also applies. The findings reinforce the empirical work of Subbaro (2009), which maintains that financial inclusion gives people the opportunity to shape and improved the lives of their children and themselves. It also can contribute to sustained improvement in quality life at the community level, fosters growth and reduce poverty at the national level.

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Table 6.5: Inclusive Development and Financial Inclusion by the Banking Sector

Variables	(1) Inclusive Health	(2) Inclusive Education	(3) Inclusive Income	(4) Inclusive Development	(5) Overall Bank Financial Inclusion
Account Per Adult	***0.0726******	***-0.188****	***0.125******		
	(0.0273)	***(0.0741)***	***(0.0477)***		
Borrowers Per Adult	***0.196******	***0.0846******	***0.177******		
	(0.0228)	***(0.0242)***	***(0.0277)***		
ATM Per Adult	***-0.0567****	***0.0996****	***0.182******		
	(0.0272)	***(0.0402)***	***(0.0329)***		
Mobile Usage	*0.207****	*0.148*	*0.233****	*0.162****	*0.164*
	(0.0488)	*(0.160)*	*(0.0649)*	*(0.0194)*	*(0.256)*
Telephone Usage	*0.00126****	*0.00221****	*0.00206****	*0.00258****	*-0.00379*
	(0.000393)	*(0.000494)*	*(0.000446)*	*(0.000418)*	*(0.00450)*
Internet Usage	*0.0783****	*0.0667****	*0.0784****	*0.0480****	*0.169***
	(0.0171)	*(0.0207)*	*(0.0181)*	*(0.00879)*	*(0.0741)*
Economic Size	0.0648	0.558**	0.199	0.603***	
	(0.218)	(0.257)	(0.298)	(0.133)	
Financial Openness	0.629***	0.627***		0.194***	
	(0.133)	(0.142)		(0.0448)	
Trade openness	0.00441	0.200***	0.0905*	0.0508***	
	(0.0163)	(0.0467)	(0.0464)	(0.00988)	
Inflation	0.0435	-0.522*	-0.622***		
	(0.113)	(0.292)	(0.209)		
Rule of Law	0.261***	0.601***			0.416
	(0.0950)	(0.165)			(0.455)
Government Effectiveness	-0.639***	-0.205*	-0.0260	0.0503	
	(0.138)	(0.123)	(0.207)	(0.0335)	

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Regulatory Quality	-0.0770	0.552***	-0.103	0.259***	0.675***
	(0.0788)	(0.157)	(0.122)	(0.0730)	(0.140)
	(1)	(2)	(3)	(4)	(5)
Variables	**Inclusive Health**	**Inclusive Education**	**Inclusive Income**	**Inclusive Development**	**Overall Bank Financial Inclusion**
Bank Financial Inclusion				**0.153*** **	
				(0.0187)	
Telecommunication				0.140***	0.125
				(0.0145)	(0.129)
Employment Status				0.442***	1.546**
				(0.0590)	(0.649)
Corruption Control				0.382***	
				(0.0439)	
Inclusive Development					**1.588** **
					(0.631)
Income Level					0.290***
					(0.0599)
Financial Literacy					-0.474***
					(0.146)
Cost of Financial Services					-0.0149
					(0.229)
Proximity (Branch Location)					-0.00146
					(0.0234)
Previous Performance	0.0475	0.0406	0.213***	-0.0468	0.471
(Lag)	(0.0497)	(0.0796)	(0.0716)	(0.0334)	(0.397)
Observations	82	76	80	102	77
Number of Countries	25	20	23	29	21
Instruments	19	19	17	20	18

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AR-1 (Prob.)	0.557	0.782	0.759	0.785	0.117
AR-2 (Prob.)	0.898	0.847	0.834	0.790	0.175
Sargan Test (P-Value)	0.320	0.111	0.357	0.968	0.145

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

***NB**: Account per adult is number of bank accounts per 1,000, borrower per adult is borrowers from commercial banks per 1,000 adults, ATM per adult is ATMs per 100,000 Adults, mobile usage is mobile subscribers per 100 people, telephone usage is telephone (mobile and fixed phone subscribers per 100 people), and* internet usage *internet subscribers per 100 people. Inclusive development is inequality-adjusted human development index (IHDI), inclusive health is inclusive health index, inclusive education is inclusive education index, and inclusive income is inclusive income index.*

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This findings submit that increased financial inclusion through more accounts opening, credit facilities and technological innovations at a formal bank may prevent rampant or premature death resulting from lack of money to seek basic healthcare. Also excluded groups become financially empowered to participate in basic education and decent economic activities to earn income, and as well it facilitates freedom, well-being and economic progress that trickle down to the local people. On the other hand, empowered economic agents in turn pragmatically get involve in development processes by having and using more bank products and services which further spread banks' financial inclusiveness. The findings reinforce the works of Demirguc-Kunt and Klapper (2012), CGAP (2010) and Ali and Zhuang (2007) that assert that countries where developmental processes trickle down to local citizens, they are able to access more finance and vice versa.

Additionally, the results of internet usage establish positively statistically significant relation between financial inclusion, and the segments and overall inclusive development. This is simply because modern technological devices and innovations which make the use of bank products and services easily accessible, attractive, and faster via the internet are the foremost driver of inclusivity of finance and development. Besides, although the result of the modern technological devices- mobile, telephone and telecommunication- is strange and in sharp contrast with theory, it is poignant to note that it cannot be explained. The latter findings are inconsistent with the empirical works which document that modern technology such as ATMs (Amidzic, 2014; Kempson and Whyley, 1999), mobile telephony, internet and branchless services (Global Findex, 2011; DFID, 2008; Ignacio, 2008; Porteous 2007; Chant and link, 2004) are imperative for promoting financial inclusion to scale up swiftly.

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Furthermore, the level of economic activity, financial openness, trade openness, rule of law, and corruption control have statistically significant and positive values at different significance levels for all the components and overall inclusive development, while governance effectiveness and inflation have negative and statistically significant values. These results imply that the former factors do really matter for inclusive development particularly in frontier and emerging markets, whereas the latter parameters obstruct inclusive development. But, the results of the government's effectiveness remain a mystery because quality of the civil service, the degree of perceptions of the quality of public services and its independence from the quality of policy formulation and implementation, political pressures, and the credibility of the government's commitment to such policies should be very critical to foster inclusive development for the developing world, and frontier and emerging markets should not be an exception. Similarly, income level, financial literacy, regulatory quality, and employment status have positive and statistically significant values at different significance level, while cost of financial services has negative and highly significant value at 1% significance level. This reinforces the argument that banking activity is costly in terms of fees and transaction costs, so opening a bank account only becomes attractive if the individual has a minimum income (Beck and Demirguc-Kunt, 2008).

6.4.5 Inclusive Development and Financial Inclusion by the Bond (Debt) Market:

In table 6.6, the AR (2) -second-order autocorrelation- test result indicates that the instruments used and error terms are not correlated. Moreover, the results of Sargan test show that the instruments used are valid, and as such the results obtained are consistent.

Besides, from the same table, the results show that financial intermediation has positive and highly significant values for inclusive health, inclusive education, and inclusive income (inclusive growth), while private credit has positive and significant values for

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inclusive health and inclusive income, it is negative and statistically significant for inclusive education. The results imply that effective financial intermediation is a prerequisite to inclusive health, inclusive education and inclusive income, whilst increased long-term credit to private investors is critical in the case of inclusive health and inclusive income. Thus, rampant or premature death due to lack of money or funds to seek basic medical or healthcare may be prevented and as well excluded groups become financially empowered through patronage or acquiring long term debt to participate in decent economic activities to earn income. The findings buttress the empirical work of Subbaro (2009), which contends that financial inclusion gives people the opportunity to develop better lives for their children and themselves as well. It also can add to sustained improvement in the quality of life at the community level, fosters growth and reduce poverty at the national level. Quite surprisingly, the overall bond financial inclusion enters positively but insignificant, whilst inclusive development (IHDI) enters significantly negative. The finding does not align with the theoretical intuitions that financial inclusion spread via the entire financial system- including the bond market- plays a pivotal role in promoting development that trickles down to local citizens (CGAP, 2010, Demirguc-Kunt and Klapper, 2012, and SDGs of UNDP, 2015).

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Table 6.6: Inclusive Development and Financial Inclusion by the Bond (Debt) Market

Variables	(1) Inclusive Health	(2) Inclusive Education	(3) Inclusive Income	(4) Inclusive Development	(5) Overall Bond Financial Inclusion
Financial Intermediation	***0.255******	***0.0886******	***0.296******		
	(0.0657)	***(0.0308)***	***(0.0495)***		
Private Credit	***0.210******	***-0.129****	***0.0962****		
	(0.0416)	***(0.0710)***	***(0.0485)***		
Mobile Usage	*0.169****	*-0.0502**	*0.143****	*0.0680****	
	(0.0346)	*(0.0271)*	*(0.0238)*	*(0.0177)*	
Telephone Usage	*-0.000181*	*0.00196****	*0.00102****	*-0.00103****	*0.00478****
	(0.000230)	*(0.000239)*	*(0.000311)*	*(0.000279)*	*(0.00146)*
Internet Usage	*0.0499****	*0.0634****	*0.140****	*0.0186****	
	(0.0134)	*(0.0159)*	*(0.0192)*	*(0.00691)*	
Economic Size	0.136	-0.468**	-0.0700	-0.234**	
	(0.204)	(0.223)	(0.287)	(0.103)	
Market Size	0.0399***	-0.00564	0.0556***	0.0135***	0.375***
	(0.00957)	(0.00901)	(0.00585)	(0.00225)	(0.126)
Financial Openness	0.218***	0.155**	0.329***	0.210***	
	(0.0459)	(0.0744)	(0.106)	(0.0447)	
Natural Openness	0.176***	0.180***	0.0999***	0.0539***	
	(0.0460)	(0.0546)	(0.0373)	(0.00801)	
Investment (GCF)	-0.327***	-0.355***	-0.966***	-0.546***	
	(0.119)	(0.137)	(0.146)	(0.0580)	
Inflation	0.411***	0.562***	0.808***	0.0464	
	(0.146)	(0.214)	(0.175)	(0.0682)	

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Variables	(1) Inclusive Health	(2) Inclusive Education	(3) Inclusive Income	(4) Inclusive Development	(5) Overall Bond Financial Inclusion
Internet Usage	0.0499***	0.0634***	0.140***	0.0186***	
	(0.0134)	(0.0159)	(0.0192)	(0.00691)	
Telephone Usage	-0.000181	0.00196***	0.00102***	-0.00103***	0.00478***
	(0.000230)	(0.000239)	(0.000311)	(0.000279)	(0.00146)
Mobile Usage	0.169***	-0.0502*	0.143***	0.0680***	
	(0.0346)	(0.0271)	(0.0238)	(0.0177)	
Governance Effectiveness	0.311***	0.884***	0.300***	0.410***	
	(0.112)	(0.111)	(0.0979)	(0.0420)	
Rule of Law	-0.240***	-0.544***	-0.321***		
	(0.0705)	(0.0797)	(0.0743)		
Bond Mkt. Fin. Incln Index				**-0.00639**	
				(0.00868)	
Telecommunication				0.0652***	0.400***
				(0.00592)	(0.0711)
Corruption Control				0.131***	
				(0.0263)	
Inclusive Development					**-5.844*** **
					(1.432)
Income Level					0.0116***
					(0.00357)
Financial Literacy					0.235**
					(0.112)
Cost of Financial Services					-2.416***
					(0.467)
Employment Status					1.113***
					(0.280)

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Regulatory Quality					0.0642 (0.162)
Previous Performance (Lag)	-0.143** (0.0714)	-0.188*** (0.0670)	-0.0754 (0.0687)	-0.107*** (0.0243)	0.789*** (0.0436)
Observations	109	99	95	95	84
Number of Countries	32	29	28	28	25
Instruments	17	17	17	18	15
AR-1 (Prob.)	0.147	0.640	0.282	0.749	0.431
AR-2 (Prob.)	0.895	0.152	0.951	0.339	0.215
Sargan test (P-Value)	0.819	0.169	0.167	0.151	0.325

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0

***NB**: Financial intermediation is entire financial system credit divided by entire financial system deposits, private credit is loans from entire financial system to private sector % of GDP, mobile usage is mobile subscribers per 100 people, telephone usage is telephone (mobile and fixed phone subscribers per 100 people), and internet usage internet subscribers per 100 people. Inclusive development is inequality-adjusted human development index (IHDI), inclusive health is inclusive health index, inclusive education is inclusive education index, and inclusive income is inclusive income index.*

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Also, the findings establish that as more marginalized, vulnerable and / or excluded groups or firms are financially empowered through patronizing or acquiring long-term debt products, and / or ability to raise debt capital to finance their business operations and projects. Also, their capacity to effectively participate in basic health, basic education, and engage in decent economic activities to earn basic incomes are enhanced, but this does not influence their overall freedom and wellbeing. This finding is somehow inconsistent with the theoretical assertions of SDGs of UNDP (2015).

Besides, internet usage and telecommunication have positive and highly significant values at 1% significance level for all the estimations. Also, mobile usage is positive and highly significant at 1% significance level for inclusive health, inclusive income (inclusive growth) and inclusive development but the reverse holds for inclusive education. Likewise, telephone usage is positive and highly significant at 1% significance level for inclusive education, inclusive income (inclusive growth) and bond market financial inclusion but the reverse holds for inclusive development. The study aligns with existing reasoning (World Bank research, 2014) that modern technological devices and innovations such as mobile telephony, fixed line telephony, telecommunication, and in particular internet usage are really decisive factors for promoting inclusive wellbeing and financial opportunities. They also signify that modern technology drives financial inclusion to widen swiftly and this includes that of the bond market.

Moreover, market size, natural openness, government effectiveness, corruption control, and rather strangely inflation have positive and statistically significant values at different significance levels for most of the estimations. But the size of the economy, domestic private investment, rule of law, and previous performance of inclusive health, education and development have negative and statistically significant values at different significance

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level for most of the estimations. The study validates that former factors play critical role in fostering the well-being and opportunities in developmental processes, while it suggests the latter factors are damaging. Hence, the latter results do not support the claim of the study and existing theoretical intuitions. Yet, it corroborates growing evidence that if inflation is kept within manageable rates and there is realistic governance policies, more potential savers, borrowers and excluded groups are attracted to participate or get involved in developmental outcomes, opportunities and processes.

Similarly, with the exception of regulatory quality which is unresponsive, the control parameters- income level, financial literacy, employment status, and cost of financial services- for bond market financial inclusion support the study's expectations and theory. Also, the findings support empirical works which establish that factors such as high financial charges (Kumar & Mohanty, 2011; Osei-Assibey, 2011; Allen *et al.*, 2008;), high unemployment (Kempson and Whyley,1999), physical distance (Demirguc-Kunt and Klapper, 2012; World Bank, 2008) are detrimental, while income level (Demirguc-Kunt and Klapper, 2012; World Bank, 2005; Barr, 2004; Connoly and Hajaj, 2001), and financial literacy (Osei-Assibey, 2011; Amaeshi, 2006; Zeti, 2005) are principal factors in promoting financial inclusion. In addition, the result infers that previous bond market financial inclusion performance is critical to scale-up the current and future inclusivity of the debt market.

6.4.6 Inclusive Development and Financial Inclusion by the Stock Market:

The result presented in table 6.7, shows that the result of the second-order autocorrelation-AR (2)- test suggests that the instruments used are not correlated with error terms. As well, the result of Sargan test shows that the instruments used are valid, and therefore the results obtained are reliable.

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Besides, from the same table, the results indicate that stock market accessibility per adult-listed company per one (1) million people- is positive and highly significant at 1% significance level for inclusive health, inclusive education, and inclusive income (inclusive growth). However, stock market accessibility- the number of listed companies on the local stock market- is negative and statistically significant at different significant levels for inclusive health and inclusive education. The overall stock market financial inclusion is positive and highly significant at 1% significance level for inclusive development, the reverse is negatively unresponsive. Generally, the findings signify that financial inclusion through increased stock market products participation stimulates inclusive development.

For instance, the high rate of poverty due to lack of livelihood or regular income to ensure basic living standards may be reduced, as excluded groups or firms become financially empowered to participate effectively in decent economic activities to earn income. The findings reinforce the empirical work of Subbaro (2009), which maintains that financial inclusion empower people to have better lives for themselves, their children and it also can contribute to sustained improvement in the quality of life at the community level, foster growth and reduce poverty at the national level. But merely enlisting on the local stock market impedes inclusive health, inclusive education, and inclusive human development. The findings partially agree with theoretical reasoning that assert that financial inclusion spread via the entire financial system- including the stock market- plays a pivotal role in promoting development that trickles down to local citizens (World Bank, 2014 and 2015; and SDGs, 2015).

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Table 6.7: Inclusive Development and Financial Inclusion by the Stock Market

Variables	(1) Inclusive Health	(2) Inclusive Education	(3) Inclusive Income	(4) Inclusive Development	(5) Overall Stock Financial Inclusion
Stock Mkt. Accessibility per adult	***0.109******	***0.108******	***0.0617******		
	(0.0273)	***(0.0291)***	***(0.0175)***		
Stock Market Accessibility	***-3.214****	***-3.727*****	***-0.320***		
	(1.705)	***(1.451)***	***(0.227)***		
Mobile Usage	*-0.0688*	*-0.225****	*-0.171****	*-0.0130*	
	(0.0432)	*(0.0572)*	*(0.0443)*	*(0.0113)*	
Telephone Usage	*0.00142****	*0.00282****	*0.00231****	*0.000220*	*0.0166*
	(0.000354)	*(0.000400)*	*(0.000297)*	*(0.000200)*	*(0.0150)*
Internet Usage	*0.101****	*0.0993****	*0.0534****	*0.0469****	*3.873****
	(0.00789)	*(0.00911)*	*(0.00789)*	*(0.00504)*	*(0.793)*
Economic Size	0.776***	0.587**	0.477**	0.188**	
	(0.210)	(0.267)	(0.225)	(0.0891)	
Market Size	0.0280***	0.0303**	0.0442***	0.0155***	
	(0.00986)	(0.0123)	(0.00982)	(0.00209)	
Financial Opennes	-0.0601	0.0535	-0.330***	-0.0356**	
	(0.0504)	(0.0824)	(0.0726)	(0.0141)	
Trade Openness	0.0156	0.0562***	0.0941***	0.0537***	
	(0.0107)	(0.0158)	(0.0145)	(0.00596)	
Investment (FDI)	0.330*	-0.337	0.411**	0.139*	
	(0.181)	(0.247)	(0.201)	(0.0741)	
Inflation	-0.0844	0.898***	-0.110	0.214***	
	(0.0771)	(0.130)	(0.0980)	(0.0449)	
Governance Effectiveness	0.0833	-0.0384	0.504***	0.187***	
	(0.0782)	(0.117)	(0.195)	(0.0369)	

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Regulatory Quality	-0.161***	0.0972	-0.0616	-2.640***	0.945
	(0.0467)	(0.0612)	(0.0452)	(0.495)	(1.994)
	(1)	(2)	(3)	(4)	(5)
Variables	**Inclusive Health**	**Inclusive Education**	**Inclusive Income**	**Inclusive Development**	**Overall Stock Financial Inclusion**
Stock Mkt. Financial Inclusion				**0.0270*** **	
				(0.00855)	
Telecommunication				0.0416***	2.752***
				(0.00460)	(0.752)
Corruption Control				-0.0499***	
				(0.0186)	
Inclusive Development					**-3.009**
					(7.024)
Income Level					-0.00270
					(0.0149)
Financial Literacy					0.225***
					(0.0422)
Cost of Financial Service					-3.812
					(3.115)
Employment Status					0.486**
					(0.227)
Urban Market Size					0.00135
					(0.671)
Rule of Law					2.937***
					(0.667)
Previous Performance (Lag)	-0.243***	0.0496	-0.0351	-0.0408**	-0.442
	(0.0593)	(0.0468)	(0.0445)	(0.0188)	(0.733)
Observations	108	96	92	99	79

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Number of Countries	31	27	26	29	23
Instruments	17	17	17	18	15
AR-1 (Prob.)	0.142	0.677	0.775	0.947	0.160
AR-2 (Prob.)	0.507	0.597	0.916	0.933	0.191
Sargan Test (P-Value)	0.154	0.122	0.495	0.113	0.823

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

***NB**: Stock market accessibility per adult is listed companies per 1,000,000 (1m) people, Stock market accessibility is number of companies listed on the local stock market, mobile usage is mobile subscribers per 100 people, telephone usage is telephone (mobile and fixed phone subscribers per 100 people), and internet usage internet subscribers per 100 people. Inclusive development is inequality-adjusted human development index (IHDI), inclusive health is inclusive health index, inclusive education is inclusive education index, and inclusive income is inclusive income index.*

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On the other hand, the findings emphasize that more and more marginalized, vulnerable and / or excluded groups or firms are financially empowered through enlisting on the local stock market to raise equity capital to expand their businesses, operations and/ or undertake new projects. Excluded people or groups that get the opportunity to patronize public share offers and get empowered to effectively participate in basic health, basic education, and engage in economic activities to earn basic incomes, and overall freedom and wellbeing. The study confirms the findings of Beck et al. (2007 and 2010) that access to financial services facilitate economic growth and development as it ensure equality of income distribution to the poor, low income groups and firms in the informal sector.

Additionally, telephone usage, internet usage and telecommunication have positive and highly significant values at 1% significance level for most of the estimations, while mobile usage is negative and highly significant at 1% significance level for inclusive education and inclusive income (inclusive growth). The study reinforces existing thinking (World Bank research, 2014) that modern technological devices and innovations such as mobile and fixed lines telephony, telecommunication, and in particular internet usage are really driving factors for promoting inclusive well-being and opportunities. Also, the findings agree with the empirical works which document that modern technology such as mobile telephony, internet and branchless services are crucial for promoting financial inclusion (Global Findex, 2011; DFID, 2008; Ignacio, 2008; Porteous 2007; Chant and link, 2004).

Besides, the size of the economy, market size, trade openness, foreign direct investment, government effectiveness, and surprisingly inflation, have positive and statistically significant values at different significance levels for most of the estimations. But the degree of financial openness, corruption control, regulatory quality, and previous inclusive development performance have negative and statistically significant values at different

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significance level for most of the estimations. The study validates that the former factors play critical role in fostering the well-being and opportunities of developmental processes, while it suggests the latter factors are damaging.

Also, the result supports growing evidence that inflation should be kept within manageable rates. Additionally, it shows realistic governance policies, may attract more potential savers, borrowers and excluded groups to participate or get involved in developmental processes via inclusive stock market. Equally, financial literacy, employment status, and rule of law for stock market financial inclusion buttress the study's expectations and theory. The findings corroborate empirical works which establish that factors such as high financial charges (Kumar & Mohanty, 2011; Osei-Assibey, 2011; Allen *et al.*, 2008), high unemployment (Kempson and Whyley,1999), physical distance (Demirguc-Kunt and Klapper, 2012; World Bank, 2008) are detrimental, while income level (Demirguc-Kunt and Klapper, 2012; World Bank, 2005; Barr, 2004; Connoly and Hajaj, 2001), and financial literacy (Osei-Assibey, 2011; Amaeshi, 2006; Zeti, 2005) are core factors in promoting financial inclusion. The findings affirm that nations that have more inclusive stock market are able to promote more inclusive development, and the findings support the studies by Demirgüç-Kunt *et al.* (2008) and Čihák *et al. (*2013).

Further, developing a more deepened, accessible and liquid capital markets may reduce the over dependence of firms and companies on short term loans from banks, to rather seek long term loans and equity financing. Also, telecommunication, in particular internet usage, plays a pivotal role in promoting greater capital market financial inclusion. Similarly, it establishes that the level of income, literacy and employment do really matter for the scaling up of inclusive finance. This finding reinforces the study's claim that persons with high incomes could patronize and / or purchase money and debt instruments and, for instance, use their surplus incomes as collateral to acquire long-term loans for

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productive purposes. This study, therefore, aligns with prior empirical findings (Kumar and Brajaraj Mohanty, 2011 and Asongu *et al*., 2015) that financial inclusion spread plays a critical role in promoting inclusive development.

6.5 Conclusion and Policy Implications

6.5.3 Conclusion

The study investigates whether financial inclusion is a sine qua non to inclusive development and vice versa in Frontier and Emerging Markets. The findings show that as more marginalized, vulnerable and/ or excluded people, firms or groups have opportunity to use mainstream banking products and services, it empowers them to effectively participate in basic health, basic education, engage in economic activities to earn basic incomes, and overall freedom and wellbeing deeds. In the same vein, economic agents with good healthcare, quality education, decent income, economic freedom and wellbeing in turn have and use more mainstream banking products and services which help to promote more bank financial inclusiveness. In general these findings confirm important response and complementarities between banks' financial inclusion and inclusive development in the contexts of frontier and emerging markets.

Also, the findings establish that as more marginalized, vulnerable and / or excluded groups or firms are financially empowered through patronizing or acquiring long term debt and / or ability to raise debt capital to finance their business operations and projects, it enhances their capacity to effectively participate in basic health, basic education, and engage in economic activities to earn incomes, but that does not influence their overall freedom and wellbeing. Amazingly, in contrast, economic agents with good health, quality education, and decent income, in turn do not acquire or use more debt instruments or facilities from formalized bond markets, thereby obstructing bond market inclusivity. This finding is

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absurd because economic agents with improved/ good health, quality and lifelong education, and decent income, should rather patronize or acquire more long-term debt instruments for productive purposes with its spillover effects of scaling up the inclusivity of the bond market.

Moreover, the study documents that as more marginalized, vulnerable and/ or excluded firms or groups become financially empowered through enlisting on the local stock market to raise equity capital to expand their businesses, operations and/ or undertake new projects and as well excluded people or groups get the opportunity to patronize in public share offers, it empowers them to effectively participate in basic health, basic education, and engage in economic activities to earn basic incomes, and overall freedom and wellbeing. Therefore, as more and more vulnerable firms enlist on the local stock market to raise equity capital in order to expand their operations and/ undertake new projects, reduce liquidity risk, satisfy government regulations and boost their corporate image that will promote inclusive development. But, surprisingly, enlisted vulnerable firms and marginalized shareholders with good health, decent education, decent income, and wellbeing do not in turn participate in more public share offers and/ or patronize in acquiring more equity funds or instruments to further the inclusiveness of the local stock market. The former finding buttresses the thinking that broader access to, and use of mainstream financial services i.e. financial inclusion should be the pivot for promoting inclusive development (SDGs, 2015; World Bank, 2014).

Besides, the study fortifies the extant intuitions that modern technological devices and innovations such as mobile and fixed line telephony, telecommunication, and in particular, internet usage are really the drivers for promoting inclusive finance and inclusive development. The findings support the works of Global Findex (2011) and World Bank

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(2014), which observe that mobile telephony, internet and branchless services are important drivers for inclusive finance and development. In this context the study concludes that deprived groups often lack access to education, health, employment to earn income, technology, finance and other factors that expand opportunities to participate in business economic or productive activities and these may not be raveled if persistent developmental outcomes and opportunities do not trickle down.

The theoretical and empirical framework of inclusiveness of finance-development nexus has not been well-documented in the literature. This study contributes uniquely and innovatively with supporting empirical evidence to bridge the lacuna in literature. It contributes originally to literature and on-going debates by empirically reinforcing the assertion that financial inclusion is sine qua non to promoting inclusive development in Frontier and Emerging Markets. Likewise, it contributes uniquely to knowledge by confirming the study's claim that inclusive development is a catalyst for furthering inclusive finance in frontier and emerging markets. Moreover, it uniquely contributes to literature by supporting with empirical evidence that all nations striving to achieve inclusive development should attempt to financially include the participation by all sections of the society in the financial system i.e. all groups must contribute to the creation of opportunities, share the benefits of development, and participate in decision-making. Besides, the study contributes differently to the body of knowledge uniquely by modeling and controlling for modern technological innovations, governance, macroeconomic and other developmental parameters such as mobile usage, internet usage; governance effectiveness, corruption control and regulatory quality; inflation; income level, financial literacy, and employment status, and will tremendously aid future research in this area.

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6.5.4 Policy Recommendations

It highlights significant policy recommendations, which include the need to promote more developmental inclusiveness through financial and technological innovations, adopt more suitable financial products and services to satisfy the needs of marginalized, deprived, vulnerable and excluded people, groups, firms and sectors. Thus, financial providers must offer improved and better services through mobile, internet and other telecommunication platforms to make their services easily accessible, very attractive, faster and user-friendly, to deprived and excluded groups. Besides, there should be strong links, collaboration and consultations among financial service providers and users, potential customers and clients, supervisors, regulators and governments to ensure flexible, affordable and attractive rates on deposits and credit facilities to the poor, vulnerable enterprises, and excluded groups. Relaxing of conditions, terms and rigidities of having and operating bank accounts, acquiring debt instruments, issuing and acquiring shares, and reallocation of financial instruments to vulnerable and excluded firms. Additionally, quality education and lifelong learning is a necessity to inform particularly excluded potential customers and clients on the availability and importance of services being provided.

Moreover, there should be financial education, adverts, outreach progammes in local languages to inform marginalized, deprived, vulnerable and excluded people, groups, firms and sectors on the availability and importance of financial products and services being provided. Besides, there should be forging of linkages with various financial systems, civil societies, NGOs, clients and potential customers in the local communities and at national levels. Offer more ‘no frills accounts’, redesign or modify modern technological devices such as ATMs to permit funds to be deposited and make them suitable and user-friendly for the less educated, marginalized, deprived, vulnerable and excluded people, groups, firms and sectors. Furthermore, frontier and emerging markets’

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governments and policy-makers should likewise concentrate on the need and importance of moving towards a more market-based economies and accordingly “think outside the box”, promote inclusiveness via the capital market to mobilize and allocate more funds from and to excluded vulnerable groups, enterprises and firms thereby empowering and building their financing capacity. To ensure quality life for all citizens, equitable participation, empowerment and benefits from resources, outcomes and opportunities of economic progress, there should be detribalization of employment, educational and other prospects. The top-down, bottom-up, optimal and other participative approaches should be applied in the distribution of economic resources, outcomes and opportunities. In sum, if these measures and initiatives are well charted, they should aid in promoting both inclusive finance and inclusive development in frontier and emerging market nations.

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CHAPTER SEVEN

GENERAL SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This thesis has mainly examined how local initiatives such as financial inclusion (domestic resources mobilization and allocation) promote financial sector inclusiveness and progress, and inclusivity of developmental processes in frontier and emerging markets. The thesis consists of seven chapters, the first chapter outlines the general introduction to the entire study, the second chapter reviews theories, concepts, methodology and empirical literature upon which the entire study depends, followed by four chapters focusing on stand-alone empirical studies, while the last chapter presents the summary of findings, conclusions and policy recommendations. It also outlines the contributions to literature, limitations of the study, and future research avenues. This chapter provides the summary of findings from in particular the stand-alone empirical studies. In this chapter, section 7.2 summarizes the key findings, section 7.3 emphasizes the conclusions drawn, section 7.4 highlights the contributions to the body of knowledge, section 7.5 puts forward the limitations of the study, and section 7.6 provides insights to future research directions, while section 7.7 offers policy recommendations.

7.2 Summary of Findings

Even though the interlinkages among financial development, economic growth and development have been investigated by several researchers, both orthodox and contemporary researchers have not reached a consensus on the important role of financial inclusion in the above interlinkages. Also, many developing countries including frontier

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and emerging market nations are often confronted with persistent variations and challenges in their financial sector development, economic growth and development processes. The persistent variations and challenges are usually attributed to difficulty in mobilising enough funds for allocative purposes. Specifically, the analyses of literature indicate that mobilised and allocative funds are limited and hence they pose major challenges to the financial sector expansion, economic growth and developmental processes in the developing world in general. For developing countries, the problems associated with mobilised and allocative funds are multifold, but key amongst them are developmental challenges such as lack of income, employment, health (long and healthy life), and education (knowledge acquisition).

Against such insights, the first empirical study investigates whether the level of economic development of frontier nations triggers financial inclusion, and whether that in turn fosters the process of development. It applies the human development index as "economic development indicator" and employs financial inclusion indicators for each of the three segments of the financial sector - bank, bond and stock markets- explored. It examined the level of economic development and other key determinants on the level of financial inclusion. The dynamic panel *generalized methods of moments* (System-GMM) methodology is employed for the analysis. The data spans from 2005 to 2014 for twenty (20) frontier markets by Standard and Poor's (S & P, 2014) indices. The study establishes evidence that the degree of economic development is a catalyst for promoting financial inclusion, which in turn augments the development process. The finding shows that income level, financial literacy and health lives are positive and statistically significant with the level of financial inclusion for the banking sector, bond and stock markets. Likewise, financial inclusion by the banking sector, bond and stock markets all had positive and highly significant values with economic development for all the trials

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conducted, while countries with medium and low HDI had negative and statistically significant values when compared to very high HDI countries. In addition, other financial inclusion factors such as modern technological devices in the form of mobile telephony and internet estimated show they are influential predictors for safe, swift and efficient scaling up of financial inclusion.

The second empirical study examines financial sector development i.e. banking sector and capital market development by incorporating the role of financial inclusion in their models with evidence from frontier markets. This study examines how financial inclusion fosters financial sector development and whether that in turn promotes higher financial inclusion in frontier markets' context. It argues that financial inclusion ameliorates banks, bond and stock markets development, and contends that a well-functioning banking sector, and well-developed bond and stock markets promote increased financial inclusion. The dynamic panel *generalized methods of moments* (System-GMM) is employed to analyze data across the time span from 2005 to 2014 for twenty (20) frontier markets by Standard and Poor's (S & P, 2014) Indices. The study finds that financial inclusion fosters the depth, breadth, efficiency, and the overall advancement of financial sector in frontier markets. Bank account penetration- adults who have and use savings accounts- is positive and statistically significant for the depth of the banking sector, while it is positive and statistically insignificant for the breadth and efficiency of the banking sector. Borrowers' penetration- adults who take and use credit facilities- is positive and statistically significant for only the breadth of the banking sector, but it is negative and significant for the efficiency of the banking sector. ATM penetration- how easy economic agents use mainstream banking system via technological innovation to save, deposit, insure or make payments- is positive and significant at different significance levels for the depth and breadth of the banking sector.

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Moreover, credit to private firms is significantly positive for the depth and breadth of the bond market, but it is negatively significant for the efficiency of the bond market. Financial intermediation is positive and highly significant for the depth and breadth of the bond market, but it is negative and significant for the efficiency of the bond market. Stock market penetration is positive and significant for the depth of the stock market. Companies listed on the local stock market is positive and statistically significant for the depth and breadth of the stock market. Similarly, it observes that a developed financial sector promotes more financial inclusion in frontier markets' context. Further, it establishes a mere uni-directional linkage between banks and stock market development, and confirms a mere bi-directional linkage between banks and bond market development.

The third empirical study conducts an inter-market analysis of banks and capital market incorporating financial inclusion as a catalyst for the nexus between banks and capital market in emerging markets. This study verifies whether banks and capital markets in emerging markets are substitutes or complements by modelling financial inclusion as a catalyst for the nexus. Financial inclusion has gained much importance since the aftermath of the 2007/8 global financial crisis. Yet, the debates on the linkage between banks with greater financial inclusion and capital markets development and vice versa remain a critical policy concern among academics, development agencies and policy-makers. This study therefore, examines whether inclusive banking sector and capital market development; and inclusive capital market and banking sector development nexus complement or compete each other in the context of emerging markets. It proposes and argues that banks and capital markets impact each other only in the presence of greater financial inclusion. The dynamic panel *Generalized Methods of Moment*s (system-GMM), and the panel granger causality test were employed to analyze data spanning from 2005 to 2014 for fifteen (15) emerging markets by Standard and Poor's (2014) indices. The study

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establishes that inclusive banking sector accelerates capital market development, similarly, inclusive capital market drives the development of the banking sector. Furthermore, the panel granger causality test finds a uni-causal linkage between banks and stock markets via greater financial inclusion. It also confirms a bi-causal linkage between banks and bond markets via greater greater financial inclusion which facilitate each other in the provision of both short and long term finance to the productive sector to foster economic growth and development.

The fourth and final empirical study investigates whether financial inclusion is a precondition for inclusive development and whether the latter in turn promotes the former in the contexts of frontier and emerging markets. Economic development is a much researched area of scholarship worldwide. Yet few, if any, have focused attention on the catalytic role of financial inclusion in the process of development and its implication on inclusive developmental processes, therefore, this study seeks to address this lacuna in literature. The research models for the study are verified with data across a time span from 2010 to 2014 for thirty (30) frontier and emerging markets by Standard and Poor's (2014) indices, and are analyzed applying the dynamic panel *generalized methods of moments (*system-GMM). The study finds that as more and more marginalized, disadvantaged and excluded people, groups and firms are empowered via bank accounts opening, bank credit facilities and digital innovations, the more they have the ability to pay for their basic healthcare, basic education and engage in some economic activities to earn basic incomes.

Also, the study finds that effective financial system intermediation and long-term credit to private investors empower deprived, vulnerable and excluded groups and firms to afford basic healthcare, basic education, and earn basic incomes, but that is not so in the case of the credit to private investors impacting on inclusive education. Further, it documents that

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financially empowering more and more marginalized, vulnerable and/or excluded groups or firms via local stock market penetration offers excluded firms or groups the capacity to effectively participate in basic healthcare, basic education, and engage in economic activities to earn basic incomes. But merely enlisting on the stock market hinders inclusive health and inclusive education. Besides, it establishes a positive bi-directional ordinary linkage between financial inclusion and inclusive development for the banking sector, but uni-directional ordinary linkage between financial inclusion and inclusive development for the bond and stock markets.

7.3 Contributions to Knowledge

The present study is new and innovative and it contributes differently from prior studies as it investigates whether the level of economic development is a fundamental driver of financial inclusion. Also, it examines how financial inclusion may improve the financial sector inclusiveness and development, and promote inclusive development in frontier and emerging markets. It contributes uniquely to the present body of literature on particularly financial inclusion, inclusive financial sector and inclusive development by applying the dynamic panel *generalized methods of moments* approaches, which have many advantages over pure time-series or cross-country approaches. The analysis has controlled for the potential endogeneity of all explanatory variables and unobserved country-specific effects, therefore, the results obtained are consistent and free from possible biases.

The first study originally contributes to the limited body of knowledge on finance-development, as it deepens intuitions and debates on economic development and financial inclusion mainly on frontier markets. The findings may provide a different direction to the current debates on financial inclusion-economic development, as it establishes evidence that the degree of economic development activates financial inclusion. Also, increased

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financial inclusion in the different segments of the financial sector do foster higher level of development in the context of frontier markets. The study therefore, contributes significantly to the attainment of the sustainable development goals.

The original contributions of the second study to the finance literature and practice, are the study broadens academics and professionals understanding that increased financial inclusion expands and improves the financial sector from its size, access and efficiency dimensions, and also its overall segments. This study therefore, contributes uniquely to the on-going debates and to the body of knowledge in the following ways; unlike most previous studies which used only depth indicators as a measure for financial system development, the study analyzes the breadth and efficiency indicators as well. Also, unlike most prior studies which often explore banks, and a few times the stock markets, while the bond market segment of the financial system which has been probed, remains a neglected area of investigation. Additionally, it explores the overall effects of financial inclusion on the overall development of banks, bond and stock markets. Therefore, the study is among the first to establish that scaling-up financial inclusion promotes the different dimensions of the financial sector in terms of its depth, breadth and efficiency, and also comprehensive development of the financial sector. Moreover, it contributes uniquely that greater financial inclusion makes more funds available to all the major segments of the financial sector to trade and intermediate effectively, while economic agents can invest or raise their preferred capital, diversify portofolios and reduce risks.

The third study contributes originally to literature on financial development by empirically reinforcing the study's claim that greater financial inclusion is a catalyst for banks and capital markets development nexus in emerging markets. Unlike most prior studies, it incorporates financial inclusion in the nexus between banks and capital market

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development it therefore, contributes uniquely to literature on banks and capital market causalities. Also, the study contributes exclusively to financial inclusion-financial development literature as it positions inclusive capital market in the debate. Consequently, the original contributions of the study to finance literature and practice are that the study widens the perspicacity of scholars and practitioners that greater financial inclusion is indubitably a catalyst for banks and capital markets development nexus in the context of emerging markets.

The fourth and final empirical study originally contributes to the limited body of knowledge on inclusive finance and inclusive development, as it deepens existing intuitions and positions capital market inclusiveness in the financial inclusion-inclusive development debates, and thereby contributes differently to the accomplishment of the sustainable development goals. This study therefore, contributes exclusively to the on-going debates and literature in the following ways; unlike most previous studies which often surveyed inclusive development literature, while ignoring empirical investigations, this study does both. Also, unlike most present studies which analyzed only the IHDI as a measure for inclusive development, this study analyzes the individual IHDI components-inclusive income, inclusive health and inclusive education as well. Additionally, it contributes originally to literature and on-going debates by empirically reinforcing the study's assertion that financial inclusion is sine qua non for promoting inclusive development in frontier and emerging markets. Likewise, it contributes uniquely to the body of knowledge by confirming the study's claim that inclusive development is a catalyst for furthering inclusive finance in frontier and emerging markets. Therefore, it uniquely contributes to literature, by supporting with empirical evidence that all must contribute to the creation of opportunities, share the benefits of development, and participate in decision-making via financial inclusion initiatives.

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In addition, the entire study contributes uniquely to the body of knowledge by modeling modern technological innovations like mobile telephony, telephone and internet as financial inclusion parameters. It documents that modern technology offers swift, safe and efficient means of saving monies, making payments and allocating credit facilities. It also offers swift, safe and efficient means of trading, investing, managing and monitoring wide array of financial assets. Besides, the entire study contributes differently to the body of knowledge by modeling and controlling for governance, macroeconomic and other developmental parameters such as regulatory quality, corruption control, rule of law and governance effectiveness; interest rate, inflation; and income level, financial literacy, and employment status respectively, which will tremendously aid future research in this area.

7.4 Conclusions of the Study

The study has investigated whether the level of economic development underlies financial inclusion, and how financial inclusion promote the different constituents of the financial systems, and inclusive development. The key conclusions from the study are as follows. First, it establishes that more develop economy promotes greater financial inclusion and likewise more financial inclusion tend to augment greater level of economic development. Second, the findings suggest that both human development indicators (particularly income, health and education) and modern technology (principally mobile telephone and internet) may certainly promote financial inclusion in the different segments of the financial system. The findings shows that the linkage between economic development and financial inclusion increases as economies grow.

The various parameters of financial inclusion on depth, breadth and efficiency dimensions of the three key financial system- banks, bond and stock markets- were also analysed. The conclusion that emerged from this study suggests that inclusive financial systems can

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mobilize, channel and provide efficiently the financial resources required for productive activities of the frontiers market. Besides, a more inclusive financial sector attracts economic agents to access and use financial products and services. The study further contends that the banking sector and capital market development cannot independently impact each other without the presence of greater financial inclusion. It establishes complementarities between banking sector development and capital market development via greater financial inclusion. The empirical evidence from this study shows that greater financial inclusion plays an important role in contributing to banking sector and bond market in furthering each other's development. Closely related to the above, the study noted that conversely, inclusive banking sector and stock market development is uni-casual because stock market penetration is only important for the development of stock market depth alone.

The study also came to the conclusion that as more and more marginalised, vulnerable and/or excluded people, groups, firms or sectors have the opportunity to use mainstream banking products and services, it empowers them to effectively participate in the basic education, basic healthcare and engage in economic activities to earn basic incomes, and hence enjoy complete freedom and wellbeing endeavours. In the same vein, the study show that economic agents with good healthcare, quality education, decent income, economic freedom and wellbeing in turn have and use more mainstream banking products and services which help in promoting more bank financial inclusiveness, but that is not the case for the capital market. In conclusion the thesis suggests that financial inclusion is a sine qua non to inclusive development and vice versa in the context of frontier and emerging markets.

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7.5 Policy Implications

The entire study suggests that modern telecommunication in particular, mobile telephony and internet are a necessity for scaling-up financial inclusion, and also, for fostering financial sector development and inclusive development within the contexts of fronter and emerging markets. The findings of empirical study one signify that lack of basic health, education and income lead to inability to have or use mainstream financial products and services. Thus, it denotes that more healthy and literate economic agents with improved living standards are needed for promoting greater financial inclusion. On the other hand, increased financial inclusion is also required to drive further economic development by alleviating ill-health, illiteracy, income inequality and poverty, and thereby improve living standards and human wellbeing.

The findings of empirical study two imply that first, more accounts opening (bank penetration), more credit facilities accessed (borrowers penetration), and more ATM usage (ATM penetration) with banks; second, more credit to private firms and effective financial intermediation by the bond market; and third, more stock market listing relative to a specified population (stock market penetration) are very important to the comprehensive development of financial sector. Equally, a more inclusive developed financial sector will promote more financial inclusion. The finding of study three means that through greater financial inclusion banks and capital market foster each other's development. The findings of the last empirical infer that financially empowered people or groups who hitherto were exluded from development process, may enjoy basic healthcare, education and income, as well as freedom and wellbeng. Similarly, such resourced economic agents may in turn have the capability or capacity to save more, access more credit facilities and/ or use formal financial products and services better.

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7.6 Policy Recommendations

In the light of the above stated policy implications, promoting financial inclusion is a shared responsibility by all stakeholders; potential customers, financial services providers, regulators and supervisors, the government and development agencies. For frontier and emerging markets to attain appreciable financial inclusion targets, all stakeholders should play important roles. Particularly, policy-makers and developmental agencies should aim at a holist approach to development instead of targeting sections of developmental challenges. Developmental policies, measures, and actions such as basic healthcare, income and education provision which will either equip or empower individuals, households and firms to become financially included should be carried out. Likewise, financial regulations, systems, strategies and incentives that will help financial systems to embark on greater financial inclusion to foster inclusive development should be promoted. Also, government and development agencies should focus particularly on rural communities' development by providing basic physical infrastructure and facilities such as paved roads, transportation, reliable electricity, schools, hospitals, improved and modern telecommunication gadgets.

Besides, the financial systems should not operate only in segments of the formal sector and virtually ignore the large local population, smallholder farmers, small/medium and enterprises usually engaged in the informal sector. Moreover, the adoption of new pay-in (deposits) methods through modern technological devices need to be embraced, implemented, customized, encouraged, and used by all to promote greater financial inclusion. Thus, although, there are the platforms to use mobile phones and other means to pay bills, send money, and receive money, there should be innovative and technological means to deposit money and mobilise savings. Therefore, in view of the incredible interest to find new ways of increasing financial inclusion in the developing world, service

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providers including financial systems, mobile network operators, and policy-makers should be keen on improving mobile and internet services rapidly, in order to facilitate mobile financial services, internet banking and on-line trading which are now of utmost importance. Moreover, the inclusive finance gap is a niche for service providers and policy makers, whilst at the same time they achieve improvement in inclusivity of financial services. Subsequently, financial systems should promote more financial inclusion by providing more ATMs and branchless avenues to aid customers to deposit and access monies 24/7 with reliable and secured services. Also, provision of on-line trading facilities and automating the stock exchanges will go a long way to attract firms to enlist and use the services of the stock exchanges and monitor their investments with ease. Additionally, host governments should include in their laws and regulatory requirements a compulsory listing on the local stock exchanges, raising funds from the local bond and stock markets, and utilizing the local banking systems as packages offered to foreign investors.

In addition, policies that promote increased financial inclusion and inclusive financial system are essential. Some of such policies include relaxing conditions, terms and rigidities of having, using and operating bank accounts; providing flexible, affordable and attractive rates on deposits and credit facilities; providing customized, improved and better financial products and services through far-reaching automation- mobile phones, internet- to ensure innovative, convenient and fast services; varying the provision of financial instruments, products and services, and taking them to the doorstep of potential customers and users; building a strong and modernize law enforcement and supervisory institutions; relaxing rules and regulations on foreign funds inflows; and above all educating potential customers and clients on the importance and availability of financial products and services being offered. There is also, the need to design innovative insured products- insurance of deposited funds- and innovative delivery channels- online services- to attract more people

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to save and as well reach out to the millions of un- or under- served people in the rural and informal sector. Furthermore, encouraging insurance of deposited funds, will not only attract savings to generate internal funds for banks and capital markets but they will also provide savers or investors a feeling of safety and security in terms of the insurance embodied with the products and services. Primarily, developing countries, especially frontier and emerging markets' policy makers, should focus on the importance of moving toward a more market-oriented economy and thereby develop the financial market infrastructure to mobilize funds from both the private and public sectors as well as local and foreign sources. For instance governments in frontier and emerging market economies should focus on the importance of developing a sound and sustainable domestic local currency bond markets as it pertains in the developed world.

Also, there is the need to adapt products to suit and attract the patronage of local customers who are usually poor and illiterates. Moreover, financial education particularly in local languages is essential to inform potential customers and clients on the availability and importance of financial products and services being provided. In addition, trading activities on capital markets need to be enhanced via promotions to attract medium firms and business entities to desire to raise long term capital through the bond and stock markets instead of short loans through the banks to finance long term projects. Financial regulators should put strategic and innovative measures to enable private and/ or medium scale firms float public shares to raise equity capital, they must offer more alternative innovative products and varied intermediation services. Also, public shares offer economic agents with surplus or idle funds the opportunity to become part owners of private or medium scale firms and as well such potential shareholders can earn attractive dividend income. Similarly bond markets with innovative products and varied services will attract economic agents with surplus funds who may have invested it in short-term debts instruments such

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as treasury bills and continuously roll-over, to instead invest in long term products by the bond market with attractive interest income, thereby promoting the inclusiveness of bond and stock markets. Moreover, there should be a strong linkage and collaboration between banks and capital market activities especially that of the stock markets.

Likewise, there is the need to promote more developmental inclusiveness through financial and technological innovations, adopt more suitable financial products and services to satisfy the needs of marginalized, deprived, vulnerable and excluded people, groups, firms and sectors. Besides, there should be strong links, collaboration and consultations among financial service providers and users, potential customers and clients, supervisors, regulators and governments to ensure flexible, affordable and attractive rates on deposits and credit facilities to vulnerable and excluded groups. There should be relaxing of conditions, terms and rigidities of having and operating bank accounts, acquiring debt instruments, issuing and acquiring shares, diversifying and reallocation of financial instruments to vulnerable and excluded firms. Additionally, there should be financial literacy, adverts, promotions, outreach and advice in local languages to inform marginalized, deprived, vulnerable and excluded people, groups, firms and sectors on the availability and importance of financial products and services being provided. Additionally, financial products should be designed or customized to meet the needs of the marginalized, deprived, vulnerable, excluded people and groups, lower income groups, people who reside in rural areas, and businesses and firms in the informal sectors in terms of convenience, flexibility, affordability (cost) and suitability of financial products and services provided. Besides, to enable auxiliary institutions play their role effectively, governments should modernize and strengthen supervisory, regulatory, and law enforcement bodies to extend financial products and services via all the financial systems to marginalized, deprived, vulnerable and excluded people, groups, firms and sectors.

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Furthermore, frontier and emerging markets' governments and policy-makers should concentrate on the need and importance of moving towards a more market-based economies and accordingly "think out of the box" to promote inclusiveness via the capital market to mobilize and allocate more funds from and to excluded vulnerable groups, enterprises and firms, thereby empowering and building their financing capacity.

So, thinking ahead for frontier and emerging market economies, there is the need to look at lessons and experiences of the developed economies, in order to adopt the measures, strategies and policies they used in promoting higher financial inclusion which facilitated their financial sector inclusiveness and growth. Ultimately, massive financial inclusion should be embarked upon by all the segments of the financial system to meet the different preferences of potential customers and foster an inclusive financial sector. In sum, if these measures, initiatives and strategies are well charted, they should aid in promoting inclusive financial sector and inclusive development in frontier and emerging markets. The findings should therefore, serve as a policy document to help identify the most appropriate policy response required in addressing particularly, the relatively low financial inclusion, underdeveloped capital markets and the absence of development by inclusion in frontier and emerging markets. Also it should serve a basis for further research as the area explored has not been well-documented in the literature.

7.7 Limitations of the Study

The major drawback of the study is the lack of adequate data especially as both financial inclusion and inclusive development are comparatively new concepts or developmental agendas. The data on the financial inclusion variables are reliably available from 2005 to 2014. Accordingly, informing the choice of the time span from 2005 to 2014 for the larger portions of the study. Data was not available for inclusive development for stipulated time

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span of the present study. Available data for inclusive development was from 2010 to 2014, which is the time- 2010- from which inclusive development was introduced in the Human Development Reports. The implication of this on the results which would be a subject of future research is that the dataset would not be suitable for short-run and long-run analysis (panel co-integration).

Another critical poignant worth of mentioning is the lack of finance and other resources to have conducted a mixed method study analyzing both quantitative and qualitative approaches which would have given the study more insights into the lived experiences, exposures and practical feel of the issues explored such as how low financial inclusion and/ or lack of inclusion in the process of development is affecting the lives of the hitherto derived or how it is either hindering or facilitating financial sector progress and inclusive development. Besides, a minor setback of the study has to do with the fact that by-country analyses are not feasible because of the narrow time series of the data available.

7.8 Directions for Future Study

Future study will be conducted employing qualitative methods to investigate how financial inclusion is impacting the lives of the marginalized, vulnerable and excluded people, households, groups and firms within the West African Monetary Zone (WAMZ). Similarly, another study will be conducted to qualitatively examine whether the identified key developmental constraints do really obstruct financial inclusion scale up and participation in development processes within the African frontier markets. Further, a useful extension of this study will be to empirically examine modern technological devices exclusively on inclusive financial sector and its spillover effects on inclusive development in the developing world utilizing both quantitative and qualitative methods. As there is the need to have and use more modernized technological devices and financial innovation

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strategies such as mobile telephony, internet, ATMs and other branchless platforms for financial opportunities to spread equitably particularly in local communities of the developing world.

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APPENDICES

APPENDIX A

Note:
Frontier Markets
The term "frontier market" is used for developing countries with slower economies than "emerging market".

Emerging Markets
The term "emerging market" is used for developing countries with slower economies than "advanced market". Taiwan, Mexico, Czech Republic, Russia, Philippines have been dropped due to data availability.

S&P Dow Jones Indices Country Classification Criteria	Frontier	Emerging	Developed
Initial Eligibility Criteria			
Full domestic market capitalization over $2.5B	Minimum of two V	V	V
Domestic annual turnover value over $1B		V	V
Exchange development ratio over 5%		V	V
Additional Criteria			
Full domestic market capitalization over $15B		V	V
Settlement period of T+3 or better		Minimum of three V	V
Sovereign Debt rating of BB+ or above			V
Non-occurrence of hyperinflation			V
No significant foreign ownership restrictions			V
Freely traded foreign currency			V
GDP Criteria			
GDP (PPP) per capita greater than $15K			V

V - Required criterion

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Criteria for determining Frontier and Emerging Markets:

1. **Standard and Poors' (S&P) Dow Jones Indices Country Classification Requirements:**

   Source: Standard and Poors' Dow Jones Indices (2016)

2. **Also according to Investment Frontier (2015) to label an economy as a frontier market, it must meet the following:**

i. **GDP per capita (on a PPP basis)** of at least $10,000 as a measure of economic wealth of a country;

ii. **Economic Complexity Index (ECI)** a measure of economic diversity or how sophisticated a country's economy is, it uses ***the levels of trade restrictions and restricted capital flows*** or otherwise for ECI- ECI of under zero generally is indicative of a frontier market;

iii. **Population Size** as measure of ready market large enough to attract bigger investors. A population of under three (3) million people qualify that country as a frontier market; and

iv. **Presence of a Local Stock Market** having small market size and with low liquidity.

Given the four criteria a country is a frontier market if it fulfills at least one of the first two criteria. However, a country that qualifies under either criteria three or four is automatically considered a frontier market.

List of Countries Explored: Geographical Classification of Sample Area (s)

Table 3a: List of Twenty (20) Frontier Markets Studied per Geographical Region:

Latin America-Caribbean	Europe-Mediterranean	Asia-Pacific	Africa	Middle East
Argentina[2]	Cyprus	Bangladesh	Botswana	Ecuador
Jamaica	Latvia	Pakistan[2]	Ghana	Kuwait
Panama		Sri Lanka	Kenya	Lebanon
			Mauritius	Qatar
			Namibia	Saudi Arabia[1]
			Nigeria[2]	
			Tunisia	

Source: Author's compilation based on Standard and Poor's (S&P) July 1, 2014 Indices.

Note: superscripts 1 and 2 indicate top five and bottom five ranking respectively by Bloomberg 2015.

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Table 4c: List of Fifteen (15) Emerging Markets Studied per Geographical Region:

Latin America	Europe	Asia	Africa/Middle East
Brazil	Hungary	China	Egypt
Chile	Poland	India	Morocco
Colombia	Turkey	Indonesia	South Africa
Peru		Malaysia	
		Thailand	

Source: Authors' compilation based on Standard and Poor's (S&P) July 1, 2014 Indices.

APPENDIX B

Panel Granger Causality Test Results

Table 4a: Inclusive Banking Sector on Capital Market Development (bond market)

Pairwise Granger Causality Tests
Date: 06/05/16 Time: 15:19
Sample: 2005 2014
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
BANKSD_INDEX does not Granger Cause BOND_MKT_INDX	79	0.18715	0.8297
BOND_MKT_INDX does not Granger Cause BANKSD_INDEX		0.88050	0.4189
BNK_FIN_INCL_INDX does not Granger Cause BOND_MKT_INDX	72	0.62113	0.5404
BOND_MKT_INDX does not Granger Cause BNK_FIN_INCL_INDX		0.57770	0.5640
INCLUSIVE_BANK does not Granger Cause BOND_MKT_INDX	**72**	**3.53914**	**0.0304**
BOND_MKT_INDX does not Granger Cause INCLUSIVE_BANK		**4.36722**	**0.0136**
INT_LOAN does not Granger Cause BOND_MKT_INDX	57	1.07657	0.3482
BOND_MKT_INDX does not Granger Cause INT_LOAN		2.14416	0.1274
GDPC_PPP does not Granger Cause BOND_MKT_INDX	71	2.01971	0.1408
BOND_MKT_INDX does not Granger Cause GDPC_PPP		5.25431	0.0076
POPN does not Granger Cause BOND_MKT_INDX	79	1.23637	0.2964
BOND_MKT_INDX does not Granger Cause POPN		0.28315	0.7542
INVEST_GCF does not Granger Cause BOND_MKT_INDX	76	1.11910	0.3323
BOND_MKT_INDX does not Granger Cause INVEST_GCF		2.35933	0.1019
INFLA does not Granger Cause BOND_MKT_INDX	79	0.00291	0.9971
BOND_MKT_INDX does not Granger Cause INFLA		2.83266	0.0653
CORRUPT_CTRL does not Granger Cause BOND_MKT_INDX	79	0.25266	0.7774
BOND_MKT_INDX does not Granger Cause CORRUPT_CTRL		0.38042	0.6849

Table 4b: Inclusive Bank sector on capital market (stock market)

Pairwise Granger Causality Tests
Date: 06/05/16 Time: 15:23
Sample: 2005 2014
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
BANKSD_INDEX does not Granger Cause STOCK_MKT_INDX	58	1.10812	0.3377
STOCK_MKT_INDX does not Granger Cause BANKSD_INDEX		1.99119	0.1466

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BNK_FIN_INCL_INDX does not Granger Cause STOCK_MKT_INDX	52	0.04040	0.9604
STOCK_MKT_INDX does not Granger Cause BNK_FIN_INCL_INDX		0.02188	0.9784
INCLUSIVE_BANK does not Granger Cause STOCK_MKT_INDX	**51**	**7.09936**	**0.0042**
STOCK_MKT_INDX does not Granger Cause INCLUSIVE_BANK		**0.19787**	**0.8212**
GDPC_PPP does not Granger Cause STOCK_MKT_INDX	51	1.15057	0.3254
STOCK_MKT_INDX does not Granger Cause GDPC_PPP		2.15495	0.1275
POPN does not Granger Cause STOCK_MKT_INDX	59	0.87604	0.4223
STOCK_MKT_INDX does not Granger Cause POPN		0.01002	0.9900
FIN_OPEN does not Granger Cause STOCK_MKT_INDX	54	0.59411	0.5560
STOCK_MKT_INDX does not Granger Cause FIN_OPEN		0.18997	0.8276
TRADE_OPEN does not Granger Cause STOCK_MKT_INDX	55	1.00406	0.3737
STOCK_MKT_INDX does not Granger Cause TRADE_OPEN		2.91510	0.0635
INVEST_FDI does not Granger Cause STOCK_MKT_INDX	59	0.03808	0.9627
STOCK_MKT_INDX does not Granger Cause INVEST_FDI		1.21023	0.3061
INFLA does not Granger Cause STOCK_MKT_INDX	59	0.25379	0.7768
STOCK_MKT_INDX does not Granger Cause INFLA		1.76387	0.1811
CORRUPT_CTRL does not Granger Cause STOCK_MKT_INDX	59	0.57892	0.5639
STOCK_MKT_INDX does not Granger Cause CORRUPT_CTRL		1.29393	0.2826

Table 5a: Inclusive Capital market (bond) on Banking Sector Development

Pairwise Granger Causality Tests
Date: 06/05/16 Time: 15:26
Sample: 2005 2014
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
BOND_MKT_INDX does not Granger Cause BANKSD_INDEX	79	0.88050	0.4189
BANKSD_INDEX does not Granger Cause BOND_MKT_INDX		0.18715	0.8297
BOND_INCLU_INDX does not Granger Cause BANKSD_INDEX	87	1.53769	0.2217
BANKSD_INDEX does not Granger Cause BOND_INCLU_INDX		2.17305	0.1203
INCLUSIVE_BOND does not Granger Cause BANKSD_INDEX	**79**	**11.1993**	**0.0000**
BANKSD_INDEX does not Granger Cause INCLUSIVE_BOND		**6.31415**	**0.0028**
CCBRATIO does not Granger Cause BANKSD_INDEX	79	0.41450	0.6622
BANKSD_INDEX does not Granger Cause CCBRATIO		0.78252	0.4610
BNKCOST_INCOME does not Granger Cause BANKSD_INDEX	87	6.63260	0.0021
BANKSD_INDEX does not Granger Cause BNKCOST_INCOME		3.76832	0.0272
GDPC_PPP does not Granger Cause BANKSD_INDEX	79	1.09729	0.3391
BANKSD_INDEX does not Granger Cause GDPC_PPP		2.08800	0.1312
FIN_OPEN does not Granger Cause BANKSD_INDEX	76	4.95006	0.0097
BANKSD_INDEX does not Granger Cause FIN_OPEN		1.47493	0.2357
TRADE_OPEN does not Granger Cause BANKSD_INDEX	84	1.79481	0.1729
BANKSD_INDEX does not Granger Cause TRADE_OPEN		1.18448	0.3113
INVEST_FDI does not Granger Cause BANKSD_INDEX	87	0.22964	0.7953
BANKSD_INDEX does not Granger Cause INVEST_FDI		2.76806	0.0687

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INFLA does not Granger Cause BANKSD_INDEX	87	3.14974	0.0475
BANKSD_INDEX does not Granger Cause INFLA		6.31415	0.0028
CORRUPT_CTRL does not Granger Cause BANKSD_INDEX	87	1.73396	0.1830
BANKSD_INDEX does not Granger Cause CORRUPT_CTRL		0.46095	0.6323

Table 5b: Inclusive Capital market (stock) on Banking Sector Development

Pairwise Granger Causality Tests
Date: 06/05/16 Time: 15:28
Sample: 2005 2014
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
STOCK_MKT_INDX does not Granger Cause BANKSD_INDEX	58	1.99119	0.1466
BANKSD_INDEX does not Granger Cause STOCK_MKT_INDX		1.10812	0.3377
STOCK_INCLU_INDX does not Granger Cause BANKSD_INDEX	77	1.35300	0.2650
BANKSD_INDEX does not Granger Cause STOCK_INCLU_INDX		0.89947	0.4113
INCLUSIVE_STOCK does not Granger Cause BANKSD_INDEX	**51**	**0.20147**	**0.8183**
BANKSD_INDEX does not Granger Cause INCLUSIVE_STOCK		**7.08173**	**0.0042**
CCBRATIO does not Granger Cause BANKSD_INDEX	79	0.41450	0.6622
BANKSD_INDEX does not Granger Cause CCBRATIO		0.78252	0.4610
BNKCOST_INCOME does not Granger Cause BANKSD_INDEX	87	6.63260	0.0021
BANKSD_INDEX does not Granger Cause BNKCOST_INCOME		3.76832	0.0272
GDPC_PPP does not Granger Cause BANKSD_INDEX	79	1.09729	0.3391
BANKSD_INDEX does not Granger Cause GDPC_PPP		2.08800	0.1312
FIN_OPEN does not Granger Cause BANKSD_INDEX	76	4.95006	0.0097
BANKSD_INDEX does not Granger Cause FIN_OPEN		1.47493	0.2357
TRADE_OPEN does not Granger Cause BANKSD_INDEX	84	1.79481	0.1729
BANKSD_INDEX does not Granger Cause TRADE_OPEN		1.18448	0.3113
INVEST_FDI does not Granger Cause BANKSD_INDEX	87	0.22964	0.7953
BANKSD_INDEX does not Granger Cause INVEST_FDI		2.76806	0.0687
INFLA does not Granger Cause BANKSD_INDEX	87	6.28000	0.0029
BANKSD_INDEX does not Granger Cause INFLA		6.31415	0.0028
CORRUPT_CTRL does not Granger Cause BANKSD_INDEX	87	1.73396	0.1830
BANKSD_INDEX does not Granger Cause CORRUPT_CTRL		0.46095	0.6323

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APPENDIX C

Definitions, Description and Sources of Terms and Variables Utilized

Financial Sector

Bank (Credit Market)	It is a credit market that provides short and medium term debt. It includes commercial and Central banks of a country (Kriek et al., 2008)
Bond Market (Capital Market)	It encompasses the debt (securities) market for medium to long term debt or financial instruments (Kriek et al., 2008).
Stock Market (Capital Market)	It encompasses the equity (shares) market for long term equity financing (Kriek et al., 2008)

Financial Inclusion

Bank Account Penetration: accounts per 1,000 adults	For each country calculated as: 1,000*reported number of depositors/adult population in the reporting country. It represent adults 15+ with an account at a bank account (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from GFD, 2015.
Borrower Penetration: Borrowers from commercial banks (per 1,000 adults)	Are the reported number of adults 15+ who obtained loans from commercial banks and other banks functioning as commercial banks (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from GFD and WDI, 2015.
ATM penetration: ATMs per 100,000 adults	Are Automated Teller Machines- computerized telecommunications devices that provide clients of a financial institution with access to financial transactions in a public place (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from GFD and WDI, 2015.
Financial Intermediation: Private Credit by entire financial sector to entire financial system deposits ratio	Private credit by deposit money banks and other financial systems to GDP (%) divided by Financial system deposits to GDP (%). Credit provided by the financial sector includes all credit to various sectors on a gross basis, while financial system deposits includes bank deposits and other financial systems' deposits (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from the WDI and GFD, 2015.
Credit to Private Firms: Loans from entire financial system to private sector (% GDP)	It is domestic credit to private sector provided by banks and other financial systems divided by GDP. Private credit include long-term financial bonds and notes, treasury bills, commercial paper and other short-term notes issued in the domestic markets divided by GDP (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from the WDI and GFD, 2015.
Stock market accessibility: Listed Domestic Companies, total	Are the domestically incorporated companies listed on the country's stock exchanges at the end of the year and it includes foreign companies which are exclusively listed (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Stock market penetration/ accessibility per adult: Listed companies per 1,000,000 people	No. of listed companies per 1,000,000 people; A positive relation is expected and is sourced from GFD and WDI, 2015 (GFD, 2015; WDI, 2015).

Financial Sector Development

Bank Depth (size): Money and quasi money (M2) % of GDP	It is liquid liabilities of the banking system (currency plus demand and interest-bearing liabilities of the financial intermediaries and nonbank financial intermediaries) divided by GDP (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from GFD and WDI, 2015.
Bank Breadth (access): Bank Intermediation ratio	It is domestic credit to the private sector provided by banks to total deposits of banks. Private credit by bank % of GDP divided by bank deposits % of GDP (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from GFD and WDI, 2015.
Bank Efficiency (liquidity): Interest rate spread	Is the interest rate charged by banks on loans to private sector customers minus the interest rate paid by commercial or similar banks for demand, time, or savings deposits (GFD, 2015; WDI, 2015). Lending interest rate minus deposits interest rate. A negative relation is expected and is sourced from GFD and WDI, 2015.

Bond Market

Depth: Debt Market Capitalization	Outstanding domestic private and public debt securities to GDP (%). It is the ratio of the bond market capitalization over GDP and measures the relative size of the bond market and more specifically the depth of bond market (IFS, 2015; WDI, 2015). A positive relation is expected and is sourced from IFS and WDI, 2015.
Breadth: Private Debt Ratio	Private credit by deposit money banks and other financial institutions to GDP / total domestic debt to GDP. Private non-guaranteed debt which represent external and internal debt accruing to the private sector as a percentage of GDP (IFS, 2015; WDI, 2015). A positive relation is expected and is sourced from IFS and WDI, 2015.

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Efficiency: Public debt to GDP-Credit to government and state owned enterprises (% of GDP).	It refers to financial resources provided to the public sector, through loans, purchases of non-equity securities, bonds and bills that establish a claim for repayment (IFS, 2015; WDI, 2015). A positive relation is expected and is sourced from IFS and WDI, 2015.
Stock Market	
Depth: Stock Market Capitalization	Is the share price times the number of shares outstanding for listed domestic companies; total value of listed shares to GDP ratio thus market capitalization % of GDP. It measures the relative size of the stock market and more specifically the depth of stock market (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from GFD and WDI, 2015.
Breadth: Total Value of Shares traded % of GDP	Is the total number of shares traded both domestic and foreign, multiplied by their respective matching prices (% of GDP) (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from GFD and WDI, 2015.
Efficiency: Stock Market Turnover Ratio	Is the value of domestic shares traded divided by its market capitalization; total Value of Shares Traded to Market Capitalization and reflects the stock market liquidity (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from GFD and WDI, 2015.
Domestic credit provided by financial sector (% of GDP)	It refers to financial resources provided by financial systems, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. It includes all credit to various sectors on a gross basis, with the exception of credit to the central government. The financial sector includes monetary authorities, deposit money banks, and other financial corporations (IFS, 2015; WDI, 2015). A positive relation is expected and is sourced from IFS and WDI, 2015.
Domestic credit to private sector by banks (% of GDP)	It refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks (IFS, 2015; WDI, 2015). A positive relation is expected and is sourced from IFS and WDI, 2015.
Financial system deposits to GDP (%)	Demand, time and saving deposits in deposit money banks and other financial institutions as a share of GDP (GFD, 2015; WDI, 2015). A positive relation is expected and is sourced from GFD and WDI, 2015.
Modern Technology	
Mobile penetration: Mobile cellular subscriptions (per 100 people)	It refers to mobile telephone services that provide access to voice communication using cellular technology, per 100 people (WDI, 2015). A positive relation is expected and is sourced WDI, 2015.
Fixed telephone subscriptions (per 100 people)	It refers to the sum of active number of analogue fixed telephone lines, voice-over-IP (VoIP) subscriptions, fixed wireless local loop (WLL) subscriptions, ISDN voice-channel equivalents and fixed public payphones (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Telephone Penetration:	Fixed telephone plus Mobile phone subscriptions per 100 people. A positive relation is expected and is sourced from WDI, 2015.
Internet penetration: Internet users (per 100 people)	Are individuals who have used the Internet (from any location) in the last 12 months, per 100 people (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Telecommunication	Telephone plus internet usage per 100 people
Governance	
Rule of Law	It captures perceptions of the extent to which agents have confidence in and abide by the rules of society. The estimate range from -2.5 to 2.5 with higher values indicating favourable outcomes (WGI, 2015). A positive relation is expected and is sourced from World Governance Indicators (WGI), 2015.
Regulatory Quality	It captures perceptions of the ability of the government to formulate and implement sound policies and regulations. The estimate range from -2.5 to 2.5 with higher values indicating favourable outcomes (WGI, 2015). A positive relation is expected and is sourced from WGI, 2015.
Corruption Control	It captures ability to curb the extent to which public power is exercised for private gain. The estimate range from -2.5 to 2.5 with higher values indicating favourable outcomes (WGI, 2015). A positive relation is expected and is sourced from World Governance Indicators (WGI), 2015.
Government Effectiveness	It captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The estimate range from -2.5 to 2.5 with higher values indicating favourable outcomes (WGI, 2015). A positive relation is expected and is sourced from World Governance Indicators (WGI), 2015.
Economic	
Economic Growth: GDP growth per capita (constant 2005 US$)	Is percentage growth rate of gross domestic product (GDP) divided by midyear population at constant 2005 U.S. dollars. It is the increases in the sum of gross value added by all resident producers in the economy plus any product taxes, minus any subsidies not

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	included in the value of the products (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Economy size: GDP per capita, PPP (constant 2011 international $)	Is gross domestic product converted to international dollars using purchasing power parity (PPP) rates. It is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Data are in constant 2011 international dollars. This variable is used to control for the size of the economy (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Financial openness: Gross savings (% of GDP)	Are calculated as gross national income less total consumption, plus net transfers (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Natural Openness: Exports of goods and services (% of GDP)	It represents the value of all goods and other market services such as financial, information provided to the rest of the world (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Trade openness: Trade (% of GDP)	Is the sum of exports and imports of goods and services measured as a share of gross domestic product (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Savings: Gross domestic savings (% of GDP)	Are calculated as gross domestic product (GDP) less final consumption expenditure i.e. total consumption (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Foreign direct investment, net inflows (% of GDP)	Are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It shows new investment inflows less disinvestment in the reporting economy from foreign investors, and is divided by GDP (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Domestic private investment: Gross capital formation (% of GDP)	It covers gross outlays by the private sector (including private nonprofit agencies) on additions to its fixed domestic assets plus net changes in the level of inventories (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Employment status: Employment to population ratio, 15+, total (%)	Is the proportion of a country's population that is employed. Ages 15 and older are generally considered the working-age population (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Employment status: Unemployment, total (% of total labor force)	It refers to the share of the labor force that is without work but available for and seeking employment (WDI, 2015). A negative relation is expected and is sourced from WDI, 2015.
Financial literacy/ Education: proxy -Primary completion rate	Is the number of new entrants in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Health: Life expectancy at birth, total (years)	It indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. A positive relation is expected and is sourced from WDI, 2015.
Income level: Gross national income per capita growth (constant 2005 US$)	It is gross national income divided by midyear population. It is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. Data are in constant 2005 U.S. dollars. A positive relation is expected and is sourced from WDI, 2015.
Human Developmen/ Education: School enrollment, secondary (% net)	Is the ratio of children of official school age who are enrolled in secondary school to the population of the corresponding official school age. It aims at laying the foundations for lifelong learning and human development (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Market Size: Population, total	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Population growth (annual %)	Annual population growth rate for year t is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Rural population (% of total population)	Rural population refers to people living in rural areas as defined by national statistical offices. It is calculated as the difference between total population and urban population (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Urban population (% of total population)	Urban population refers to people living in urban areas as defined by national statistical offices (WDI, 2015). A positive relation is expected and is sourced from WDI, 2015.
Financial services costs: Lending interest rate (%)	Is the bank rate that usually meets the short- and medium- term financing needs of the private sector. This rate is normally differentiated according to creditworthiness of

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	borrowers and objectives of financing. A too high real interest rate can hamper banks' lending activities, creating an imbalance between credit and deposit activities and excess banks' liquidity (WDI, 2015). A negative relation is expected and is sourced from WDI, 2015.
Inflation: Inflation, GDP deflator (annual %)	It is as measured by the annual growth rate of the GDP implicit deflator, it shows the rate of price change in the economy as a whole (WDI, 2015). A negative relation is expected and is sourced from WDI, 2015.

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APPENDIX D

Taxonomy of Selected Recent Studies Reviewed from 2005-2015

Table 2: Selected Economic Development, Financial Inclusion, Financial Development and Inclusive Development Review

Author (s) / Year	Focus	Study Area (s)	Key Findings/ Contribution	Gaps Identified	Work Situated
Peet and Hartwick (2009)	Economic Development	World-wide	Development denotes better life for all; Better life for all entails satisfying basic needs, Cheap services obtainable by all, Being treated with dignity and respect.	A theoretical study; Not empirically analyzed.	Empirical investigation was required Using recent data, rigorous methods and imminent nations
Sarma and Pais (2011) Bihari (2011) Cull et al. (2014)	Development and Financial Inclusion	Developed and /or developing countries	Levels of development and financial inclusion are closely related Income, inequality, literacy; telephone, and road network are very important for enhancing financial inclusion	Only the banking sector was explored; Cross-sectional studies; Used limited data; Few studies have investigated issue	Financial inclusion by Banks and capital markets investigated; Conducted panel analysis; Used a more comprehensive and standard data set; Employed rigorous methods and upcoming nations
Čihák *et al*. (2013)	Financial Development Constructed improved measures for measuring dimensions and segments of the financial systems (i.e. financial institutions and markets)	205 Economies around the World	Researchers have largely relied on banking sector size indicators as proxies for measuring financial development (Ardic *et al*., 2011; Allen & carletti, 2008; Beck *et al*., 2008); But, banking sector size is not a measure of accessibility (breadth), efficiency (liquidity), or stability (soundness); Banking sector is only one component of the entire financial system; Also, they constructed financial inclusion measures for the banking sector, bond & stock markets	A theoretical study/ developmental report; Not empirically tested; A benchmark to empirically test features and segments of financial systems; Prior studies focused on micro-financial institutions and banking sector (in few studies) promoting financial inclusion; They neglected the bond (debt) and stock (equity) markets promoting more financial inclusion.	Empirical investigation was required; Using recent data, modern methods, and promising nations
Demirgüç-Kunt *et al*. (2008; 2013)	Financial Inclusion fostering Financial Development	Developing regions	Financial inclusion is required to promote mainstream financial services and products patronage; Financial inclusion fosters the expansion and improvement of the financial sector	A developmental report; Not empirically analyzed.	Require empirical investigation Using recent data, rigorous methods and promising nations

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Ardic *et al*. (2011) Allen et al. (2014)	Access to Financial Services and the Financial Inclusion Agenda Financial Inclusion and Financial Development	Global Study Africa	World wide – 56% adults are unbanked; 64% of adults unbanked in developing world; 17% of adults unbanked in developed world. Recent innovations, mobile banking has improve financial inclusion and development.	Cross-Country Analysis Bi-directional not considered; limited empirical studies	Need for panel analysis; Employing recent data, modern methods, in exploring building inclusive financial systems
Sustainable Development Goals (SDGs of UNDP, 2015) Consultative Group to Assist the Poor (2010)	Inclusive Development (development by inclusion); *Poor, Vulnerable or the Excluded Inclusion in Development Processes*	World wide	Development cannot *effectively reduce poverty* and hence *inequality, unless all groups contribute to the creation of opportunities, share the benefits of developmental opportunities, outcomes and progress achieved and, participate in decision-making.*	Developmental Reports; Not empirically tested	Require empirical testing; Using modern, rigorous methods and promising nations;
Asongu and Nwachukwu (2015) *Raumyar and Kanbur (2010)* *Vegelin (2016)*	*Finance and Inclusive Development*	Developing nations	Inclusive finance aids the vulnerable to insure themselves against: *income shocks; equip them* meet emergencies like *illness, death, loss of employment or investment.* *Financially empowered obtain basic income, healthcare and education.*	Theoretical / empirical reviews, Model building Not empirically analyzed Limited empirical studies on this area	Fills identified gaps. The data, nature, context, time, method for this present study is different, and hence original study.

Source: Author's own compilations

Table 1: Selected Financial Sector Development and Economic Progress Papers

Author (s) / Year	**Topic/ Purpose**	**Data Span/ Source Variables Utilized/**	**Methodology / Geographical Region (s)**	**Core Findings**	**Gaps Identified/ Research Situated**
Samargandi et al (2015)	Is the relationship between FD and EG monotonic?: Evidence from a sample of Middle income countries	1980-2008 World Bank Financial Structure dataset EG: growth rate of real GDP FD –BSD M3/GDP Credit to private sector, Ratio of comm. bank assets/ total comm. + central bank assets	Dynamic panel threshold / model 52 middle income countries 23 Upper 29 Lower	Too much finance can exert negative influence on growth in LR but the relation is insignificant	To incorporate bond and stock markets

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Kaserer and Rapp (2014)	Capital Markets and Economic Growth: Long-term trends and policy challenges	1999-2008 Financial Development and Structure World Bank/ World scope/ Thomson / Reurers / BIS	Comparative data analysis/ simple regressions Europe	Identified a significant and long-term trend of capital markets growth and convergence between market-based and bank-based financial systems. Provide new evidence that increased capital market size positively impacts economic growth.	Limited to one geographic region
Jedidia et al (2014)	FD and EG: New evidence from Tunisia	2000-2008 FD: Private credit Value traded Bank's securities EG: real GDP per capita	ARDL method Tunisia	FD as driver of EG in the Long-Run Bi-directional causality between private credit and EG. But neither the value traded nor the intervention of banks had robust and positive effect on EG.	One country only Time series alone Relatively remote data span Cover four regions of EMs. To conduct both times series and cross section FD via FI and EG
Demirguc-Kunt et al (2013)	FD in 205 economies	1960-2010 Financial Depth, Access, Efficiency and Stability variables	Comparative Analysis 205 Economies of the world	Global databased was built up Improved measures financial system predictors	Adopt the measure of FD in terms of Depth, Access and Efficiency.
Uddin et al (2013)	The causal nexus between FD and EG in Kenya	1971-2011 WDI BSD: Bank credit / GDP Private credit / GDP M2/M1 EG: real GDP per capita	ARDL approach Kenya	FD has positive influence on EG	Only time series and one country BSD variables only Cover four regions of EMs. To conduct both times series and cross section analyzes. BSD, SMD and BMD variables. FD via FI and EG
Zhang et al (2012)	Financial Development and Economic Growth: Recent evidence from China	2001-2006 China city statistical yearbook (various issues) FD: Private credit/GDP Bank deposits/GDP Hld deposits/GDP Corporate deposits/ total deposits	Cross-sectional method Panel method Difference GMM System GMM 286 Chinese Cities	FD is positively associated with EG in China Contrary to state ruled banking sector hindering EG	Limited to one country Neglected capital market component of FD
Ang (2011)	Savings Mobilization, FD and Liberalization: The case of Malaysia-identified the key factors behind	1960-2007 WDI, IFS, Bank of Malaysia Private credit/GDP M2/GDP Value of Stock traded/ GDP	ARDL, ECM (OLS) Malaysia	Financial deepening and increased banking density tend to encourage private savings. Insurance, market development and financial system	Restricted to one country and employed time series alone

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	Malaysia's remarkable saving performance	No. of bank branches/ million population Insurance assets/GDP Financial libzn (1960= 100)		liberalization dampen private savings.	
Andrianairo and Amo Yartey (2010)	Understanding the Growth of African Financial Markets; examined the determinants of FMD in Africa emphasizing on banks and stock market.	1990-2006 BSD Private credit / GDP Comm. Bank assets/ banking sector assets Domestic savings SMD SM liquidity SM Capzn. / GDP Income level Political risks	System GMM, FE, instrumental variable (IV) technique 53 African countries	Income level will facilitate domestic savings which will intend stimulate FSD	Limited geographical region Ignored bond market indicators
Adelegan and Radzenicz-Bak (2009)	What determines Bond Market in SSA?; Highlight on the key of determinants of domestic BMD in SSA	1990-2008 BMD Domestic debt/GDP Government bond Corporate bond Explanatory GDP at PPP Export/ GDP Bank size Interest rate Exchange rate	GLS, FE, RE	Savings as key constraints to bond market development Bond market in SSA is influenced by size of the Banking sector	Limited to SSA Neglected Stock market indicators To use dynamic panel method
Odhiambo (2008)	Financial depth, savings and EG in Kenya: A dynamic causal linkage	1969-2005 FD M2/GDP Private credit/GDP M1/GDP EG: real GDP growth rate	Co-integration and error-correction technique Kenya	Uni-directional causal flow from EG to FD EG granger causes Savings Savings granger cause FD	Limited to one country and time series analysis
Eichen-Green et al (2006)	A Tale of Two Markets: BMD in East Asia and Latin America (LAC); it provides a comparism of bond market development in the two regions		Comparative Analysis Tables Graphs Facts compilations	Especially for corporate bond markets it progress remains slow Asian BMs are larger, better capitalized and have longer tenor. LAC market are more liquid and compete for foreign investor participation, standardized and easily traded	Incorporate Banks and Stock Market indicators and empirically test within EMs' context.
Al-Yousif (2002)		1970-1990 30 developing	Granger causality test	Bi-directional causality; but finance-growth link could not be generalized across countries	
Aretis et al, (2001)		5 developing economies	Times series methods	Banks and stock market promote economic growth but banks are more important	
Lensink and Morrisey (2001)		1970-1998 Developing and developed economies	Cross-country growth regression	The impact of policy uncertainty on economic depends on the development	

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				of the financial sector	
Luitel and Khan (2002)		10 countries	VAR	Bi-directional between FD and EG	
Rajan and Zingales (1998)	Which Capitalism? Lessons from the East Asian Crisis	1980-1990 Developed and developing economies	Cross-sectional regression	Financial development has a strong effect on economic growth.	
Levine and Zervos (1998)	International analysis	1976-93 Developed economies	Cross-sectional regression	Both liquid stock markets and banking sector have a positive effect on growth developing, capital accumulation and production. Capital stock market dimension is not correctly related to international integration and volatility.	
Demirgüç-Kunt and Maksimoviç (1998)	Law, Finance, and Firm Growth	International study for 30 developed and developing	Cross-sectional regression	Real capital stock market and well growth system make a firm easy to develop.	Limited a year study period
Levine (1997)			Horizontal cross analysis	There is a positive relationship between financial development and economic growth.	
Levine and Zervos (1996)			Horizontal cross analysis using with 3 growth rate as dependent	There is a meaningful relationship between financial deepening and growth.	
Benecivega (1995)	Theoretical study			There is a strong relationship between equity markets liquidities, growth rate, increments in production and capital accumulation.	
Obsfield (1994)	Theoretical study			There is a positive relation between liquid stock markets and economic growth, but neither liquidity nor integration with international capital market are related to private sector deposits.	
King and Levine (1993)		1960-1980 International study comprises of 80 countries		All indicators of financial growth are related to the next growth rate and increments in economic efficiency.	
Benecivenga and Smith (1991)	Theoretical study			Model estimates that developments in finance affect real growth rate.	

Source: Author's own compilations

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APPENDIX E

Descriptive Statistics of Variables Used

Chapter Three

Variable	Obs	Mean	Std. Dev.	Min	Max
hdi	200	0.690271	0.118107	0.433981	0.852421
income	145	8.24711	1.310558	6.179694	10.94496
Education	153	0.765363	0.233297	0.240981	1.228988
Health	200	4.239293	0.124637	3.873816	4.383636
BankFinInc~x	186	30.39448	21.02683	0.124928	73.39551
BondFinInc~x	190	-0.25859	1.052016	-1.5235	3.803405
StckFinInc~x	180	18.49319	30.61432	1.137213	146.6795
Employ_rate	200	0.57204	0.098512	0.386	0.865
Mobile_usage	200	4.16906	0.773479	0.677757	5.270496
internet_u~e	200	2.790751	1.105527	-1.61427	4.446175
Popn	200	16.04055	1.657125	13.50367	19.01507
Tel_usage	200	2.105128	1.282446	-1.57183	3.718073
rule_of_law	200	0.483306	0.225058	0.066986	0.870192
Telecomm	200	-0.16213	1.464605	-6.71888	1.985045
cost_finserv	147	0.117362	0.04448	0.045613	0.218742
GDPpc	200	8.322667	1.331436	6.137297	11.03712
Nat_res	196	0.407769	0.181659	0.14324	0.84056
FDI	200	0.040726	0.043512	-0.04377	0.309953
corrupt_ctrl	200	0.480385	0.23603	0.029268	0.923445
rural_rate	200	0.413373	0.236209	0.00939	0.81703
urban_rate	200	0.586627	0.236209	0.18297	0.99061
Employ_rate	200	0.57204	0.098512	0.386	0.865
regul_qual~y	200	0.511706	0.202362	0.066986	0.909091

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Chapter Four

Variable	Obs	Mean	Std. Dev.	Min	Max
M2	192	0.624074	0.512972	0.177322	2.580331
Bank_intme~n	195	0.909281	0.366826	0.298466	2.784112
Int_spread	200	0.046516	0.024178	0.006437	0.167636
Debt_mkt_cap	200	0.103238	0.185099	0	0.870067
Priv_debt_~o	107	18.81573	29.23723	0.376035	138.1484
Public_deb~p	172	0.901226	0.099061	0.594111	0.999974
Stck_mkt_cap	137	0.306117	0.265442	0.009344	1.283699
stck_value~e	87	0.057467	0.13433	0.000752	0.780964
stck_turn	59	0.168968	0.237871	0.011449	1.435394
Acct_Adlt	139	6.184286	0.648545	4.562032	7.309061
Borrow_Adult	137	4.783743	0.885457	2.956293	5.961698
ATM	186	2.944722	1.25779	-2.08002	4.295863
fin_intmed~o	190	1.141667	0.510376	-0.46507	2.777067
Crdt_priv	200	0.541814	0.540375	0.087661	3.050869
Listcomp_ per1M	180	1.935636	1.339237	0.128581	4.98825
listeddome~k	138	130.0145	156.02	6	639
GDPc_ppp	190	9.367049	1.082701	7.520135	11.80647
Fin_open	188	0.250945	0.134552	0.043382	0.64716
Trade_open	196	0.830103	0.303012	0.268582	1.583469
Invest_FDI	200	0.037787	0.035919	-0.04377	0.171343
Popn	200	16.04055	1.657125	13.50367	19.01507
savings	196	0.231513	0.179118	-0.05341	0.746132
Nat_res	196	0.407769	0.181659	0.14324	0.84056
invest_GCF	192	0.229804	0.061124	0.05459	0.460166
income	145	88.10348	134.5544	4.828441	566.6777
fin_literacy	181	14.24414	1.709245	11.59999	17.23701
Employ_rate	200	0.57204	0.098512	0.386	0.865
rural_ popn _rate	200	0.413373	0.236209	0.00939	0.81703
urban_popn_rate	200	0.586627	0.236209	0.18297	0.99061
costfinserv	147	0.117362	0.04448	0.045613	0.218742
int_loan	147	0.117362	0.04448	0.045613	0.218742
Infla	200	0.089536	0.111882	-0.24218	1.038228
Mobile_usage	200	4.16906	0.773479	0.677757	5.270496
telephone	200	94.05693	48.9347	2.5578	211.2014
internet	200	2.790751	1.105527	-1.61427	4.446175
rule_of_law	200	0.483306	0.225058	0.066986	0.870192
regul_qual~y	200	0.511706	0.202362	0.066986	0.909091

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Chapter Five

Variable	Obs	Mean	Std. Dev.	Min	Max
M2	140	0.778118	0.355928	0.262745	1.794043
Bank_intme~n	130	1.114161	0.523935	0.429197	2.857519
Int_Spread	140	0.046074	0.027859	0.005797	0.146361
Debt_mkt_cap	140	0.263067	0.20556	0	0.683855
Priv_debt_~o	128	9.174598	20.16942	1.011184	153.2424
Public_deb~p	127	0.948259	0.073532	0.627228	1
Stck_mkt_cap	132	0.753282	0.586614	0.117543	2.766008
stck_value~e	130	0.38115	0.326195	0.018759	1.789747
stck_turn	129	0.633857	0.531023	0.042694	2.926334
Acct_Adlt	65	6.131266	1.54649	1.874701	7.665359
Borrow_Adult	89	5.37451	0.701119	3.664818	6.774276
ATM	134	3.415815	0.888632	0.836915	4.873178
fin_intmed~o	140	1.678489	0.800737	0.641134	3.598751
Crdt_priv	140	0.709435	0.391846	0.172785	1.601249
Listcomp_ per1M	126	1.655517	0.87389	0.061922	3.6755
listeddome~k	147	752.0884	1232.332	39	5294
inclusive~nk	124	0.780841	4.420798	-10.9044	12.44815
inclusive_~d	127	0.791909	1.17199	-0.93438	4.962813
inclusive~ck	118	1.493138	1.644887	0.010969	6.141517
GDPc_ppp	140	9.378853	0.49745	8.001965	10.06222
Fin_open	140	0.24553	0.096068	0.128909	0.519211
Trade_open	140	0.763824	0.444627	0.221383	2.103738
Invest_FDI	140	0.040844	0.062082	-0.16091	0.507847
Popn	140	18.02996	1.384144	16.10735	21.02882
savings	140	0.259848	0.096002	0.074545	0.51464
Nat_res	140	0.485434	0.260579	0.111465	1.153731
invest_GCF	140	0.241429	0.067104	0.137804	0.457597
income	131	46.36067	28.34977	6.729993	111.5297
fin_literacy	134	16.25496	1.323347	14.03803	19.37241
Employ_rate	140	0.548479	0.106788	0.386	0.734
rural_rate	140	0.376637	0.163865	0.10825	0.71097
urban_rate	140	0.623363	0.163865	0.28903	0.89175
costfinserv	115	0.133261	0.109365	0.046125	0.553833
int_loan	115	0.133261	0.109365	0.046125	0.553833
Infla	140	0.052865	0.032533	-0.05992	0.128097
Mobile_usage	140	4.289257	0.605482	1.547957	5.004473
telephone	140	99.88702	36.98752	8.86149	163.4112
internet	140	3.276216	0.752391	0.681144	4.285569
rule_of_law	140	0.562477	0.163889	0.25	0.894737
regul_qual~y	140	0.614981	0.153731	0.277512	0.933014

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Chapter Six

Variable	Obs	Mean	Std. Dev.	Min	Max
incl_income	153	0.455346	0.13046	0	0.727
incl_health	175	0.681017	0.160378	0	0.901
incl_edu	155	0.489516	0.175145	0	0.854
ihdi	152	0.523322	0.143364	0	0.769
Acct_Adlt	108	5.993	1.725634	-0.66385	7.665359
Borrow_Adult	127	5.241736	0.821146	3.150201	6.774276
ATM	171	3.47274	0.84827	0.719679	4.861774
Bnk_fin_in~x	171	3.47274	0.84827	0.719679	4.861774
fin_intmed~o	159	1.411439	0.659125	0.194219	3.598058
Crdt_priv	175	0.642335	0.483761	0.116452	2.53563
Bond_inclu~x	159	-1.17E-09	1.145271	-1.84565	3.234355
list_comp	167	1.739899	1.163536	0.057607	4.601826
valuetrade~p	149	475.6846	998.9518	6	5541
Stock_Fin_incl~x	167	1.739899	1.163536	0.057607	4.601826
Mobile_usage	175	4.682064	0.297402	3.805448	5.386467
telephone	175	126.5786	36.1385	45.79285	232.6283
internet	175	3.51723	0.69642	1.308333	4.51623
telecommun~n	175	4.09E-09	1.448107	-4.73069	2.258214
GDPcap	175	0.030818	0.0307	-0.08055	0.120493
Fin_open	155	0.245092	0.12653	0.043382	0.606566
Trade_open	169	0.791238	0.366732	0.225117	1.712419
Invest_FDI	175	0.029104	0.02996	-0.16091	0.132117
Popn	175	16.98721	1.838022	13.91082	21.05974
invest_GCF	164	0.240386	0.06378	0.108236	0.457597
Employ_rate	175	0.567971	0.103048	0.386	0.865
costfinserv	129	0.112775	0.066503	0.042685	0.438833
Infla	175	0.065934	0.090628	-0.04171	1.038228
gov_effect~e	175	0.558285	0.182575	0.105263	0.924171
regul_qual~y	175	0.548549	0.192761	0.110048	0.933014
rule_of_law	175	0.514952	0.204796	0.104265	0.882629
corrupt_ctrl	175	0.497451	0.211121	0.072115	0.914286

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APPENDIX F

Principal Component Analysis (PCA)

Telephone

Principal components/correlation
Number of obs = 350
Number of comp. = 2
Trace = 2
Rotation: (unrotated = principal)
Rho = 1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.78756	1.57512	0.8938	0.8938
Comp2	0.21244	.	0.1062	1

Principal components (eigenvectors)

Variable	Comp1	Comp2	Unexplained
Mobile_usage	0.7071	0.7071	0
Fixed_u~e	0.7071	-0.7071	0

. estat kmo

Kaiser-Meyer-Olkin measure of sampling adequacy

Variable	kmo
Mobile_usage	0.5
Fixed_u~e	0.5
Overall	0.5

. predict Telephone
(score assumed)
(1 components skipped)
Scoring coefficients
sum of squares(column-loading) = 1

Variable	Comp1	Comp2
Mobile_usage	0.7071	
Fixed_u~e	0.7071	-0.7071

Telecommunication

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.09701	1.62218	0.699	0.699
Comp2	0.474838	0.04669	0.1583	0.8573
Comp3	0.428148	.	0.1427	1

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Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Unexplained
Mobile_usage	0.5719	0.746	0.3412	0
Fixed_phone	0.5852	-0.0796	-0.807	0
internet	0.5748	-0.6612	0.4821	0

. estat kmo

Kaiser-Meyer-Olkin measure of sampling adequacy

Variable	kmo
Mobile_usage	0.7162
Fixed_phone	0.6882
internet	0.7096
Overall	0.7041

. predict telecommunication
(score assumed)
(2 components skipped)

Scoring coefficients
sum of squares(column-loading) = 1

Bond Market Financial Inclusion Index

. pca fin_intmedratio Crdt_priv
Principal components/correlation

Number of obs = 159
Number of comp. = 2
Trace = 2
Rotation: (unrotated = principal)
Rho = 1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.31165	0.623293	0.6558	0.6558
Comp2	0.688354	.	0.3442	1

Principal components (eigenvectors)

Variable	Comp1	Comp2	Unexplained
fin_intmed~o	0.7071	0.7071	0
Crdt_priv	0.7071	-0.7071	0

. estat kmo

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Kaiser-Meyer-Olkin measure of sampling adequacy

Variable	kmo
fin_intmed~o	0.7162
Crdt_priv	0.5
Overall	0.5

. predict Bond_inclu_Indx
(score assumed)

(1 components skipped)

Scoring coefficients
sum of squares(column-loading) = 1

Variable	Comp1	Comp2
fin_intmed~o	0.7071	
Crdt_priv	0.7071	-0.7071

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Appendix G

Correlation Matrix of Dependent and Independent Variables

Chapter three

Economic Development and Financial Inclusion Variables

	hdi	income	Educat~n	Health	BnkFin~x	BondFi~x	StckFi~x
hdi	1						
income	0.8776	1					
Education	0.8491	0.7859	1				
Health	0.7736	0.5158	0.4996	1			
BnkFinIncn	0.6504	0.6554	0.6712	0.4086	1		
BondFinIncn	0.3546	0.3727	0.3907	0.1756	0.4214	1	
StckFinIncn	0.4385	0.5123	0.3439	0.2838	0.3046	0.3627	1

Economic Development and Modern Technology Variables

hdi	1							
income	0.8776	1						
Educat~n	0.8491	0.7859	1					
Health	0.7736	0.5158	0.4996	1				
Mobile~e	0.6276	0.575	0.6298	0.3975	1			
intern~e	0.7254	0.6371	0.6614	0.5408	0.7876	1		
Tel_us~e	0.8579	0.771	0.779	0.7062	0.4713	0.606	1	
Tele~com	0.7156	0.6421	0.6781	0.4963	0.9454	0.9454	0.5697	1

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Economic Development and Governance Variables

	hdi	income	Educat~n	Health	rule_o~w	regul_~y	corrup~l
hdi	1						
income	0.8776	1					
Education	0.8491	0.7859	1				
Health	0.7736	0.5158	0.4996	1			
rule_of_law	0.6188	0.6972	0.5822	0.3518	1		
regul_qual~y	0.5955	0.6786	0.6105	0.3027	0.8464	1	
corrupt_ctrl	0.6402	0.788	0.6479	0.3008	0.9132	0.8404	1

Economic Development and Macro-Economic Variables

	hdi	income	Educat~n	Health	Employ~e	Popn	Nat_res	FDI	rural_~e	urban_~e	cost_f~v
Hdi	1										
Income	0.8776	1									
Education	0.8491	0.7859	1								
Health	0.7736	0.5158	0.4996	1							
Employ_rate	0.0768	0.1222	-0.0395	0.1609	1						
Popn	-0.4794	-0.6686	-0.4493	-0.2302	-0.0059	1					
Nat_res	-0.1665	-0.0422	-0.0484	-0.164	-0.0926	0.0313	1				
FDI	-0.034	-0.081	-0.0191	-0.0316	0.0471	0.0183	0.2287	1			
rural_rate	-0.6997	-0.808	-0.5812	-0.5007	-0.1104	0.3479	0.1629	0.1012	1		
urban_rate	0.6997	0.808	0.5812	0.5007	0.1104	-0.3479	-0.1629	-0.1012	-1	1	
cost_finserv	-0.2129	-0.1974	-0.2057	-0.1585	0.055	0.2193	-0.1887	-0.0234	-0.0012	0.0012	1

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Chapter Four (Frontier market data)

Financial Inclusion and Financial Sector Development

	M2	Bank_intm	Int-sp	D_mkt_cap	Priv_deb	Pub_deb	S_mkt_cap	stck_value	stck_turn	Acct_Adlt	B_Adlt	ATM	fin_int	Crdt_priv	list_comp	C~list	
M2	1																
Bank_intme~n	-0.0186	1															
Int_spread	-0.3377	-0.205	1														
Debt_mkt_cap	0.6937	-0.09	-0.2365	1													
Priv_debt_~o	-0.2107	0.2361	0.163	-0.463	1												
Public_deb~p	0.1558	0.4699	-0.4056	-0.167	0.2519	1											
Stck_mkt_cap	0.1365	-0.038	-0.2436	0.0422	-0.1652	0.208	1										
stck_value~e	0.0186	0.231	-0.2045	0.0398	-0.1635	0.089	0.47	1									
stck_turn	-0.1088	0.0901	-0.1252	-0.072	-0.1535	0.054	0.335	0.97	1								
Acct_Adlt	0.2684	0.1694	-0.4803	0.0508	0.1348	0.07	0.228	0.1	-2265	1							
Borrow_Adult	0.2634	0.0449	-0.5099	0.1075	-0.4289	0.163	0.187	-0.22	-0.6116	0.763	1						
ATM	0.34	0.228	-0.3944	0.1662	-0.0605	0.171	0.162	0.28	0.1244	0.73	0.69	1					
fin_intmed~o	-0.1315	0.6589	-0.0606	0.0068	0.0281	-0.113	0.081	0.47	0.3319	0.007	-0.27	0.055	1				
Crdt_priv	0.8567	0.2541	-0.33	0.4198	-0.0763	0.263	0.09	0.01	-0.1135	0.526	0.387	0.391	0.034	1			
list_comp	0.4972	0.1961	-0.5126	0.1611	-0.0936	0.407	0.414	0.03	-0.0898	0.543	0.507	0.578	0.023	0.622	1		
Comp~list	-0.1901	-0.056	-0.0388	0.1247	-0.0179	-0.157	-0.005	0.16	0.2359	-0.28	-0.39	-0.542	0.101	-0.18	-0.03	1	

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Financial Inclusion and Modern Technology Variables

	Acct_Adlt	Borrow_Adult	ATM	fin_intmed~o	Crdt_priv	list_comp	valuetrade~p	Mobile_usage	telephone	internet
Acct_Adlt	1									
Borrow_Adult	0.7627	1								
ATM	0.7296	0.6903	1							
fin_intmed~o	0.0067	-0.2683	0.0548	1						
Crdt_priv	0.5263	0.3874	0.3906	0.0343	1					
list_comp	0.5429	0.5069	0.5775	0.023	0.6216	1				
valuetrade~p	-0.2755	-0.3938	-0.5422	0.101	-0.1769	-0.0287	1			
Mobile_usage	0.6562	0.5658	0.7772	0.0761	0.1978	0.3767	-0.2324	1		
telephone	0.6716	0.6509	0.758	0.1046	0.2752	0.4652	-0.2216	0.8945	1	
internet	0.7696	0.5917	0.8302	0.1676	0.3874	0.4672	-0.2374	0.8006	0.7905	1

Financial Inclusion and Governance Variables

	Acct_A~t	Borrow~t	ATM	fin_in~o	Crdt_p~v	list_c~p	valuet~p	rule_o~w	regul_~y
Acct_Adlt	1								
Borrow_Adult	0.7627	1							
ATM	0.7296	0.6903	1						
fin_intmed~o	0.0067	-0.2683	0.0548	1					
Crdt_priv	0.5263	0.3874	0.3906	0.0343	1				
list_comp	0.5429	0.5069	0.5775	0.023	0.6216	1			
valuetrade~p	-0.2755	-0.3938	-0.5422	0.101	-0.1769	-0.0287	1		
rule_of_law	0.3881	0.3632	0.6025	0.1159	0.5212	0.7929	-0.3552	1	
regul_qual~y	0.3429	0.2458	0.5951	0.1207	0.5852	0.7299	-0.4677	0.8775	1

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Chapter Five (Emerging market data)

Financial Sector Development and Financial Inclusion Variables

	M2	Bank_intme~n	Int_sprea	D_mkt_cap	Priv_deb	Pub_deb	S_mkt_cap	stck_value	stck_turn	Acct_Adlt	Bo_Adult	ATM	fin_int	Crdt_priv	list_comp	Comp_list
M2	1															
Bank_intme~n	0.3777	1														
Int_Spread	-0.639	-0.021	1													
Debt_mkt_cap	-0.0434	-0.007	-0.0085	1												
Priv_debt_~o	0.0629	-0.239	-0.174	-0.449	1											
Public_deb~p	0.0526	0.3715	0.1127	0.0862	-0.5918	1										
Stck_mkt_cap	0.2414	0.0103	-0.2037	0.1425	-0.1056	0.188	1									
stck_value~e	0.5295	0.2605	-0.3659	0.0531	-0.1023	0.114	0.524	1								
stck_turn	0.3809	0.3223	-0.1403	0.0422	-0.1011	0.022	-0.216	0.63	1							
Acct_Adlt	-0.6675	-0.681	0.3292	0.1512	-0.0245	-0.009	0.129	-0.58	-0.5564	1						
Borrow_Adult	0.1686	0.1984	0.1037	0.4685	-0.4022	0.559	0.137	0.36	0.5328	0.365	1					
ATM	-0.0333	0.2148	0.1487	0.6758	-0.3857	0.273	0.053	-0.11	-0.0565	0.298	0.649	1				
fin_intmed~o	-0.0036	0.695	0.1504	0.1707	-0.1313	0.218	0.333	0.19	-0.0011	-0.24	0.079	0.325	1			
Crdt_priv	0.6989	0.4537	-0.4885	0.2	-0.1695	0.353	0.66	0.61	0.1586	-0.35	0.36	0.322	0.407	1		
list_comp_1M	0.0544	-0.327	-0.1438	0.1482	-0.0481	0.142	0.419	-0.1	-0.4054	0.635	0.221	0.137	-0.277	0.258	1	
Comp_list	0.2184	0.0221	-0.2761	-0.216	0.0052	0.02	0.042	0.36	0.2766	-0.33	0.121	-0.517	-0.272	0.027	-0.07	1

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Financial Sector Development and Modern Technology Variables

	M2	Bank_intme~n	Net_int_ma~n	Debt_mkt_cap	Priv_debt_~o	Public_deb~p	Stck_mkt_cap	stck_value~e	stck_turn	Mobile_usage	telephone	internet
M2	1											
Bank_intme~n	0.3777	1										
Net_int_ma~n	-0.639	-0.0213	1									
Debt_mkt_cap	-0.0434	-0.0066	-0.0085	1								
Priv_debt_~o	0.0629	-0.2389	-0.174	-0.4487	1							
Public_deb~p	0.0526	0.3715	0.1127	0.0862	-0.5918	1						
Stck_mkt_cap	0.2414	0.0103	-0.2037	0.1425	-0.1056	0.1878	1					
stck_value~e	0.5295	0.2605	-0.3659	0.0531	-0.1023	0.1144	0.5239	1				
stck_turn	0.3809	0.3223	-0.1403	0.0422	-0.1011	0.0224	-0.2155	0.631	1			
Mobile_usage	0.0256	0.0729	0.0422	0.3814	-0.017	0.2401	0.0868	-0.1799	-0.226	1		
Telephone	-0.0034	0.0985	0.0076	0.4474	-0.0244	0.2162	0.0013	-0.232	-0.1834	0.9248	1	
Internet	0.0564	0.1046	0.0942	0.3786	-0.1055	0.133	-0.1468	-0.3482	-0.1829	0.7855	0.8215	1

Financial Sector Development and Governance Variables

	M2	Bank_intme~n	Net_int_ma~n	Debt_mkt_cap	Priv_debt_~o	Public_deb~p	Stck_mkt_cap	stck_value~e	stck_turn	rule_of_law	regul_qual~y
M2	1										
Bank_intme~n	0.3777	1									
Net_int_ma~n	-0.639	-0.0213	1								
Debt_mkt_cap	-0.0434	-0.0066	-0.0085	1							
Priv_debt_~o	0.0629	-0.2389	-0.174	-0.4487	1						
Public_deb~p	0.0526	0.3715	0.1127	0.0862	-0.5918	1					
Stck_mkt_cap	0.2414	0.0103	-0.2037	0.1425	-0.1056	0.1878	1				
stck_value~e	0.5295	0.2605	-0.3659	0.0531	-0.1023	0.1144	0.5239	1			
stck_turn	0.3809	0.3223	-0.1403	0.0422	-0.1011	0.0224	-0.2155	0.631	1		
rule_of_law	-0.0206	-0.0293	-0.156	0.224	-0.1108	0.2053	0.1549	-0.0849	-0.0981	1	
regul_qual~y	-0.2743	0.136	0.2253	0.3381	-0.351	0.4308	0.1417	-0.2972	-0.3151	0.7355	1

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Chapter Six

Inclusive Development and Financial Inclusion Variables

	incl_income	incl_health	incl_edu	ihdi	Acct_A~t	Borrow~t	ATM	fin_in~o	Crdt_p~v	Bond_i~x	list_c~p	Stock_~x
incl_i~e	1											
incl_h~h	0.6776	1										
incl_edu	0.6240	0.6441	1									
Ihdi	0.8633	0.8403	0.9042	1								
Acct_A~t	0.1117	-0.0911	0.2547	0.195	1							
Borrow~t	0.4211	0.6288	0.6379	0.6578	0.1257	1						
ATM Bnk_	0.3591	0.5433	0.633	0.5861	0.0961	0.7754	1					
fin_in~o	0.1042	0.1054	0.1992	0.1785	0.0497	0.0961	0.2249	1				
Crdt_p~v	0.3491	0.3239	0.2968	0.3761	-0.158	0.5066	0.4672	0.3116	1			
Bond_i~x	0.2633	0.2522	0.2900	0.3297	-0.0559	0.338	0.4296	0.8098	0.8098	1		
list_c~p	0.4427	0.5140	0.4957	0.5200	-0.339	0.2975	0.4028	-0.1269	0.4823	0.2184	1	
Stock_~x	0.4427	0.514	0.4957	0.52	-0.339	0.2975	0.4028	-0.1269	0.4823	0.2184	0.0729	1

Inclusive Development and Modern Technology Variables

	incl_ income	incl_ health	incl_edu	ihdi	Mobile~e	teleph~e	internet	telecommun~n
incl_i~e	1							
incl_h~h	0.6776	1						
incl_edu	0.624	0.6441	1					
Ihdi	0.8633	0.8403	0.9042	1				
Mobile~e	0.3299	0.4823	0.5676	0.5318	1			
teleph~e	0.4016	0.5452	0.6434	0.6121	0.9727	1		
Internet	0.5319	0.5734	0.5986	0.6213	0.5256	0.5806	1	
telecommun~n	0.5449	0.7159	0.7138	0.7358	0.8282	0.8708	0.8324	1

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Inclusive Development and Governance Variables

	incl_ income	incl_ health	incl_edu	ihdi	gov_ef~e	regul_~y	rule_o~w	corrup~l
incl_i~e	1							
incl_h~h	0.6776	1						
incl_edu	0.624	0.6441	1					
ihdi	0.8633	0.8403	0.9042	1				
gov_ef~e	0.3886	0.5266	0.6452	0.592	1			
regul_~y	0.2946	0.3829	0.5406	0.4655	0.878	1		
rule_o~w	0.3563	0.4416	0.4858	0.4659	0.8938	0.8484	1	
corrup~l	0.3073	0.464	0.5372	0.4854	0.8848	0.8181	0.931	1