PERFORMANCE DETERMINANTS OF LOCAL CURRENCY BOND MARKETS IN AFRICAN EMERGING ECONOMIES

By

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Dedicated to my dad and mom.

DECLARATION

This dissertation is the result of my own work and includes nothing, which is the outcome of work done in collaboration except where specifically indicated in the text. It has not been previously submitted, in part or whole, to any university or institution for any degree, diploma, or other qualification.

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ABSTRACT

Generating sufficient domestic revenues to finance economic growth has been a critical hurdle for many African countries and, for decades, foreign capital has complemented domestically generated resources to finance growth. However, global financial crises over the past few decades tend to curtail, if not dry up the flow of capital to African governments. The unreliability of foreign capital with its attendant strings and sudden stops in the event of economic and political crisis has spurred the need for alternative sources of financing development. Despite the realisation that bond markets provide a viable source of funds for the African continent, the literature on the importance of bond market development and its interaction with other sources of funding remains underexplored. Moreover, the sparse empirical literature about bond market development in Africa is vague and largely overlooked. At the same time, knowledge of African bond markets is vital for channelling funds not only to efficient agents in particular, but also for fostering transparency and the flow of information within the continent's capital markets. This thesis endeavours to address the vacuum apparent in extant literature and proposes a theoretical framework through a thorough assessment of the determinants of bond market development in African emerging market economies. The thesis examines four critical pillars of bond market development: (a) the environment for the creation of bond markets; (b) the relative performance and characteristics of bond markets across and within developing and developed economies; (c) the modelling of bond markets and (c) the institutional factors that underpin the efficient functioning of bond markets. Using macroeconomic, social, institutional and historical data on local currency bond markets from 26 African economies and 49 listed firms, this thesis extends previous studies on bond market determinants through tighter robustness measures by accounting for downside risk in a generalized methods of moments (GMM) and a feasible generalized least squares estimator (FGLSE) framework. Further, differential analysis of government and corporate bond markets are carried out, given their different investment horizons and issuance. The results suggest that from a macroeconomic perspective, inflation, central government debt, GDP, external debt, GDP per capita and fiscal balance are important drivers of local currency bond market development in African economies. Moreover, political unrest, governance, religion, former colonial ties and culture are institutional factors that exert statistically significant effects on local currency bond market performance in Africa. From a demand viewpoint, the study finds that firm level factors that influence bond market performance are firm risk, size, profitability and age. The results from this study are of importance to capital market participants, investors, regulators and policy makers who seek to address the perennial constraints to development occasioned by lack of capital. A number of policy measures for boosting bond market performance such as stable macroeconomic environments, reform of capital market rules and cross listing are discussed in the final chapter.

JEL CLASSIFICATION: International Economics; Financial Economics; Economic Development; Innovation; Technological Change; and Growth.

KEYWORDS: Africa; Emerging economy; Bond market; Institutions; Local Currency Bond Market; Performance; Development.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACCA	-	Association of Chartered Certified Accountants
ADF	-	Autoregressive Dickey-Fuller
ADI	-	African Development Indicators
AFDB	-	African Development Bank
AFMI	-	African Financial Market Initiative
AIC	-	Alkaike Information Criterion
AMH	-	Adaptive Markets Hypothesis
APE	-	Average Partial Effects
AU	-	African Union
AVR	-	Auto Vector Regressive
BIS	-	Bank of International Settlements
BQMLE	-	Bernoulli Quasi-Maximum Likelihood Estimator
BRVM	-	Bourse Regionale Des Valeurs Mobiliers Stock Exchange
CAPM	-	Capital Asset Pricing Model
CAR	-	Central African Republic
CCI	-	Certificate of Capital Importation
CMA	-	Capital Markets Authority
CRA	-	Credit Rating Agency
CREPMF	-	Regional Council for Public Savings and Financial Markets
CSD	-	Central Securities Depository
D-CAPM	-	Downside Risk Capital Asset-Pricing Model
DSE	-	Douala Stock Exchange
DTSM	-	Dynamic Term Structure Models
EBRD	-	European Bank for Reconstruction and Development
ECB	-	European Central Bank
EDAR	-	Economic Development in Africa Report
EDI	-	Exchange Data International

EIB	-	European Investment Bank
EMH	-	Efficient Market Hypothesis
FDI	-	Foreign Direct Investment
FE	-	Fixed Effects
FGLSE	-	Feasible Generalized Least Squares
G-20	-	Group of 20 (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, México, Russia, Saudi Arabia, South Africa, Korea, Turkey, the United Kingdom, United States and European Union)
G-8	-	Group of Eight Highly Industrialized Nations (France, Germany, Italy, United Kingdom, Japan, the United States, Canada, and Russia)
GATT	-	General Agreement on Tariffs on Trade
GDP	-	Gross Domestic Product
GDP, PPP	-	Gross Domestic Product Per Capita based on Purchasing Power Parity
GFD		Global Financial Development
GLM	-	Generalized Least Moments
GLS	-	General Least Squares
GMM	-	General Method of Moments
GNP	-	Gross National Product
GSE	-	Ghana Stock Exchange
HIPC	-	Highly Indebted Poor Countries
ICMA	-	International Capital Market Association
IFC	-	International Finance Corporation
IFI	-	International Financial Institutions
IFRS	-	International Financial Reporting Standards
IMF	-	International Monetary Fund
IPO	-	Initial Public Offering
M0	-	Reserve Money
M1	-	Narrow Money
M2	-	M2= M1 + Demand Accounts

M3	-	Broad Money (Aggregate of Currency and Deposits in the Central Bank)
MFWA	-	Making Finance Work for Africa
MLE	-	Maximum Likelihood Estimates
MSD	-	Mean Semi-Variance Behaviour
MVB	-	Mean Variance Behaviour
NASDAQ OMX	-	National Association of Securities Dealers Automated Quotations Options Market Exchange
NIE	-	New Institutional Economics
OECD	-	Organization for Co-operation and Development
OLS	-	Ordinary Least Squares
OTC	-	Over-The-Counter
POLS	-	Pooled Ordinary Least Squares
RE	-	Random Effects
RTG	-	Real Time Gross (Settlement System)
S & P	-	Standard and Poor's
SAS	-	Statistical Analysis System
SC	-	Schwarz Criterion
SLS	-	Squared Least Squares
TI	-	Transparency International
UNCITRAL	-	United Nations Commission on International Trade Law
UNDP	-	United Nations Developments Program
US	-	United States
WB	-	World Bank
WDI	-	World Bank Development Indicators
WIPO	-	World Intellectual Property Organization
WTO	-	World Trade Organization

CHAPTER 1: INTRODUCTION

Section 1: Background of the Study

1.0 Introduction

Domestic bond markets should, in theory, offer a means for African countries to acquire long-term debt in their local currency to finance developmental requirements (Ndi, 2010). Saidi, Scacciavillani, Prasad, Rajan and Subramanian (2009), identify domestic debt markets as 'cornerstones for development strategy' and affirm the numerous benefits that accompany these markets. The long-term debt accessed through domestic bond markets is of utmost importance as economies that are unable to access international capital markets, inevitably, will receive less aid from foreign parties, particularly in light of the 2008 sub-prime crisis as industrialized countries grapple to deal with the aftershocks (Gozzi, Levine, Peria and Schmukler, 2012). Besides addressing the burden of 'original sin' by narrowing the mismatch between domestic and foreign currency debt held by a country, thus easing the ability to roll over short-term debt, domestic bond markets lessen global bank uncertainties in countries (Kim, 2000; Maana, Owino and Mutai, 2008). Domestic bond markets are also a good conduit to link capital fund providers (savers) and those in need of capital funds (International Monetary Fund (IMF), 2013).

The ability of bond markets to impact economic growth in Africa is, arguably, greater than that of stock markets because fixed securities are issued by corporations and governments whereas stocks are issued only by corporations. Thus, the audience of bond markets may be greater than that of stock markets. Furthermore, traditionally, bond markets tend to supply longer term and less volatile funds than stock markets which is crucial for Africa to meet its long term financing needs (Harvey, 1989). Furthermore, bond markets foster transparency which is more favourable for the development of African economies in comparison to the rent-seeking activities typically exercised by banks (Bokpin and Isshaq, 2008).

Africa's need for long-term capital to finance its development is a common theme in the literature; however, regardless of the continent's pressing need for money, Africa is a net capital exporter (Lanchovichina and Gable, 2012). Capital savers and capital users are linked

by bond markets but the reason for Africa's net exportation of capital is the lack of valuable and efficient intermediary networks and vehicles to absorb this capital (Mu, Phelps and Stotsky, 2013). Domestic bond markets can assist in increasing the depth and breadth of Africa's financial system (Pillay and Ojah, 2009). In this way, the inclusion of bond markets in the financial system offers a wider and more useful set of tools for monetary and fiscal policy (Mu *et al,* 2013). Bokpin and Isshaq (2008) are in agreement with Pillay and Ojah (2009) and strongly endorse bond market development because of the reduced funding cost it offers entrepreneurs relative to traditional loans from banks. Bokpin and Isshaq (2008) and Pillay and Ojah (2009) concur also on the value of information disclosure regarding the firm and how this affords issuers access to public funds. Further, an efficient bond market may bring about a more proficient economy that is less vulnerable to financial contagion (Bokpin and Isshaq, 2008; Eichengreen, 2010).

The Asian financial crisis and 2008-subprime crisis have increased policy-makers' understanding of the need for alternative forms of funding and how bond markets can fulfil such a role (Adelegan and Radzewicz-Bak, 2009). Apart from providing an alternative source of finance for governments, domestic bond markets improve capital allocation by channelling savings towards economic activities with the highest relative returns, enhance financial stability and facilitate risk management by spreading risk over many actors (Dahou Omar, Pfister, 2009; Nhamo, 2011; Goswami and Sharma, 2011). More specifically, a better developed corporate bond market can relieve a credit crunch during episodes of financial distress in the banking sector such as the 2008 sub-prime mortgage crisis (Turner, 2003). African countries can share these benefits of efficient domestic bond markets; however, most of their markets are in their infancy and there is, therefore, a pressing need to foster their development (Mu *et al*, 2013; IMF, 2013).

Development of African emerging capital markets has appeared promising in the last decade, particularly since the recent upsurge in capital inflows to emerging market domestic currency bonds (World Bank (WB), 2013). This rising interest of foreign investors in debt products of emerging markets may indicate the scarcity of global safe and/or high return

investment assets (Caballero, Farhi and Gourinchas, 2008; Gourinchas and Jeanne, 2012). Notably, since the beginning of the 2008 sub-prime mortgage crisis, there has been a correlation in the movements of emerging market domestic government bond returns and the returns of safe haven assets. Simultaneously, global interest rates remain particularly subdued in the midst of remarkable transient monetary easing in advanced economies, thus making emerging economy assets relatively more attractive (WB, 2013). This presents African emerging economies with a real opportunity to raise much needed capital.

Initiatives to raise capital through local bond markets were attempted in North Africa prior to the 2010 Arab Spring. Egypt, Morocco and Tunisia are the strongest economies of North Africa but their bond markets are characterized by low liquidity, low volumes and a tendency to 'buy' and 'hold' (African Financial Market Initiative (AFMI), 2013). West African Bond markets are slowly gaining traction but remain thin and very illiquid, while the capital markets of Central African countries are small and embryonic (AFMI, 2013).

The embryonic and underdeveloped nature of many African bond markets is not entirely true for the East African region as it has gained the most traction, in recent years, towards the development of its bond market and the issuance of public debt (AFMI, 2013). While the shift toward domestic debt has been favourable for the long-term economic health of the region, this process has encountered a significant rise in domestic interest payments, which poses a considerable drain on the budget (Maana *et al,* 2008). The bond market in the southernmost region of the continent, South Africa, has been gaining momentum since the political and economic uncertainty surrounding apartheid ended in 1994. Corporate bond market capitalization has increased from 15% of GDP in 1994 to over 31% of GDP in 2012 (IMF, 2013). Overall, many countries in Africa have nascent bond markets although a few are beginning to show some movement towards growth.

1.1 Problem statement

Three themes form the basis of the problem statement in harmony with the disjuncture recognised in the empirical literature: *Poor performance of African bond markets; African*

specific bond performance framework; and factors contributing to and/ or hindering their development. Each identified problem is discussed.

a) Poor performance of African bond markets. As a sizeable potential contributor to the economic growth and development of African emerging economies, bond market development is critical. Specifically, corporate bonds are an excellent source of finance for companies whilst government bonds are pivotal to the establishment of a yield curve which African emerging economies need to appropriately price securities (International Capital Market Association (ICMA), 2013; Mizen and Tsoukas, 2013). Many authors, however, including Pillay and Ojah (2009) and Mu *et al* (2013) observe that bond markets in Africa are at a nascent stage of growth. Contemporary studies confirm that most domestic bond markets in Africa are indeed embryonic and hardly contribute to improved economic and financial performance in African countries (Maana *et al,* 2008; AFMI, 2013). Studies of bond markets in Africa show that investors of emerging market bonds prefer to hold the bonds in the market for relatively brief periods (Mezi, 2012). As a result, many African emerging economies lack an effective source of local debt capital. These market practices may have contributed to the current development finance vacuum (Chen and Imam, 2012). This situation has wide ranging repercussions for African economies. First, it means that African countries have to find other means, other than bonds, of funding government deficits (WB, 2006). In this case, capital that may be better utilised in infrastructure and other developmental practices are used to finance government deficits. According to the IFC (2011), a major limitation on the growth of small and medium businesses in sub-Saharan Africa is the development finance void, which extends to constrain economic growth, employment and the social progress of the continent. In the presence of a poorly developed corporate bond market, market forces are left unable to assert themselves because of the relative lack of funding sources. As a result, systemic risk and the likelihood of crisis are increased (Hakansson, 1999). Lack of transparency and inefficient corporate organization is characteristic of such

environments (Hakansson, 1999). This thesis addresses the exclusive concerns of African emerging economy bond markets such as the short-lived holding patterns of investors and the need for the economies to tackle budget deficits. One way of tackling this is through the addition of external debt and other variables that designate the deficit tendency.

b) **African specific bond market performance framework**: Bond markets in Africa are subject to appraisal, review and approval criteria akin to those used in developed economies (Burger, Warnock and Warnock, 2012). This occurs despite remarkable differences between the African environment and that of developed countries in such areas as corporate governance practices, investor protection and legal rights of investors, and other institutional and regulatory considerations (Mezi, 2012). These differences, frequently, are not attended to by authorities of African countries from local governments to higher tiers of governments. Thus, the unique character of African markets, that take into account its institutions and culture among other factors are lost (Nunn, 2009; Welter, 2011). Consequently, these differences are not acknowledged by international financial institutions and similar parties dealing with African countries (Bank of International Settlements (BIS), 2007; Baliño and Sundararajan, 2008). The application of standard bond market frameworks from developed economies to emerging economies is, therefore, a serious misfit (Baliño and Sundararajan, 2008).

Developed markets are usually more liquid and efficient relative to emerging markets (Andjelic, Djcikovic and Radisic, 2010). Further, in comparison to developed markets, emerging markets are known to adopt financial market reforms, experience recurrent external and internal financial shocks, make frequent credit rating changes, face high levels of country risk, engage in an increased incidence of insider trading and suffer fluctuations of foreign currency exchange rate (Bekaert and Harvey, 1997). As a result, domestic bond markets in

African emerging economies have been denied the development attention they deserve and many countries remain burdened with unsustainable debt and surging capital needs as they struggle to raise capital required for development (Davies, 2012). This thesis attempts to address the conventional 'cookie cutter' approach to bond market framework construction by systematically appraising the relevant literature to establish variables most applicable to bond markets in African emerging economies. Methodologies that take into account the idiosyncrasies of the African context are selected to test the selected variables for their relevance.

c) Factors that contribute to and/ or hinder bond market development in Africa:

Fiscal balance, interest rate spread, GDP per capita at purchasing power parity, volatility of exchange rate and banking sector concentration are all macro-economic variables that are found to be negative and significant determinants of government bond market performance (Eichengreen and Luengnaruemitchai, 2004; Claessens, Klingebiel and Schmukler, 2007; Bhattacharyay, 2013). On the other hand, an open capital account, a positive investment profile, GDP at purchasing power parity, distance from the equator, exports, English origin and banking sector concentration are found to be positive and significant for government bonds (Essers, Blommestein, Cassimon and Flores, 2014).

Rent seeking activity, a typical characteristic of banks, is notorious in developing countries and limits growth of African bond markets (Pillay and Ojah, 2009; Iqbal and Daly, 2014). According to North (1990) institutional framework is crucial and often delivers an environment conducive to rent seeking behaviour particularly in developing countries with weak institutions. Thus, for rent seeking activity to be minimized in a market, laws and regulations must be implemented and enforced. Stix (2013) suggests weak institutions and poor legal enforcement as viable deterrents, for households in developing and transition economies, from engaging with bond markets. The elimination of such obstacles, therefore, would

benefit intermediation levels in developing and transition economies and facilitate bond market development (Zhang, Lin and Li, 2012; Giofre, 2013).

Formal, well considered contracts and agreements foster good governance, and are valuable tools for reducing inefficiencies and promoting quality institutions, including bond markets (Claessens and Yurtoglu, 2013; Mu *et al* 2013). The International Monetary Fund (IMF) (2014), for example, recommends collective action clauses for smoother management of bond contracts. Furthermore, under this frame of reason, political leaders mould the quality of governments in harmony with a society's constitutional rule (Claessens and Yurtoglu, 2013). Parrenas and Waller (2006) advise that the development of bond markets need proficient direction from government agencies first and foremost, and then public-private sector partnerships. Thus, the audience for this thesis is not merely investors, academics or those in positions to issue bonds, but also policy makers positioned in the leadership of an economy. This thesis explicitly conveys practices and strategies that inform government agencies about the need to consolidate institutional quality and the resulting bond market performance outcomes.

1.2 Research questions

The following are specific relevant questions that emanate from the above articulated problems about bond markets in African countries.

i) To what extent do bond markets in African emerging countries supply much needed funds to their economies particularly in comparison with other emerging and developed countries?

ii) What framework would be more appropriate in reflecting the unique characteristics of African emerging economies in order to increase the breadth and depth of domestic bond markets?

iii) What factors hinder and/ or boost bond market development and performance in African emerging economies?

1.3 Objectives of the research

Given that the contexts of bond markets in developed and emerging countries are remarkably different, the determinants of their performance are unlikely to be the same. Given also the need to promote the development of local currency bond markets in Africa in order to maximize their contribution to economic growth and development, the objectives of the study are the following:

i. To examine the factors underlying the development of bond markets in Africa and identify the characteristics of their capital markets and those of other developing and emerging regions. This comparison sets a point of reference for assessing the relative performance of each African bond market.

ii. To analyse the underlying factors behind the development of these markets and examine the link between those factors in relation to bond market performance and each other. This holds merit for the thesis, in deciphering which factors, and interactions, to include in the subsequent framework.

iii. To assess the identified characteristics of African bond markets and examine their interaction with the identified underlying factors behind bond market development in the region and base the impending framework on it. There is great pertinence in this step as emanating from the relationships identified; a concise framework is thereby developed.

1.4 Justification for, and significance of the study

Domestic bond market development positively contributes to the breadth, depth and ultimately the growth of a country's financial sector. Thus, development of financial markets positively influences the level and intensity of Africa's per capita income growth (Schumpeter, 1911; King and Levine, 1993; Rajan and Zingales, 1998). This is significant since average annual gross domestic product (GDP) growth rates in Africa continue to fall short of the 6–7 % mark which is usually needed to reduce poverty (Cilliers and Shünemann, 2013).

This study stands out from previous work on bond markets in many ways. First, the stance of Estrada (2002, 2007) is taken by adopting a measure of risk by the semi variance of

returns as opposed to the variance of returns. This generates a new downside beta, which is applied to the standard Eichengreen and Luengnaruemitchai (2004) baseline econometric model. The outcome is an econometric model that is clearly tailored to the emerging market situation.

Unlike previous studies that use relatively rigid diagnostic frameworks, this thesis establishes key issues and elements unique to African emerging economies, that, when combined with existing bond market frameworks improve the process of bond market development. The role of history, as far back as the sixteenth century, in influencing African emerging economies and thus bond market performance in the countries are also acknowledged. A new and more suitable methodology for measuring bond market performance that considers systemic volatility in emerging markets is introduced. It is an extension of Eichengreen and Luengnaruemitchai (2004) and Estrada (2007).

The study assists existing and future domestic bond market investors to understand better the dynamics of the bond markets in African emerging economies by offering a framework to form their investment strategies. This is particularly critical since African bond markets are becoming a popular source of diversification for foreign investors (Mminele, 2013). Furthermore, the study assists entrepreneurs to appreciate the value of their debt financing decisions and enlighten them about the value of investing in domestic debt as opposed to other sources.

Bond market determinant studies in the past have focused on unilevel modelling- where only macroeconomic variables are explored. Explanatory variables, in this study, are viewed from several levels, with emphasis on situations where first level units are intertwined with those of the second level (Coldwell and Herbst, 2004). Further, multilevel analysis used in this study encourages theorizing beyond the typical framework to arrive at robust and creative recommendations (Coldwell and Herbst, 2004). Finally, the study contributes to the literature on bond markets in Africa because the lack of investigation of domestic bond

market performance criteria in African emerging economies presents a notable void in the debt market literature.

1.5 Organization of the thesis

The remaining thesis is structured as follows:

Chapter Two: A thematic overview of the bond market literature is reflected here. Key theoretical underpinnings of factors relating to bond market performance and development including African financial systems and components of financial systems is discussed in the chapter. Theories such as the Adaptive Market Hypothesis, Theory of Rent Seeking, theories behind banks and bond markets, the Yield Curve and other concepts concerning the intricate nature of bond market strategy and operations are examined. Bond market performance studies and their findings are also examined in the chapter. The inclusion of colonialism in bond market determinant studies is suggested, previous initiatives are appraised together with their implications for the African situation.

Chapter three: This chapter presents a synopsis of African financial systems between 2005 and 2013 particularly, in comparison with selected emerging and developed countries to provide a barometer of the continent's standing among global markets. The microstructure of bond markets is the concluding part of this chapter.

Chapter four: Objectives of the thesis and the key research questions are addressed from a methodological stance with regard to the applicable data. Econometric models that answer the research questions posed are developed with close attention to validity and reliability of the estimation tests and techniques used.

Chapter five: Analysis of the empirical findings of the previous chapter is covered here. Findings are weighed against expectations and reasons for the outcomes explored. Particularly, the chapter analyses how and why the macroeconomic, historical, institutional, structural and firm level variables impact the development of bond markets.

Chapter six: Interpretation of the results from the empirical analysis of the data is given. Implications from the interpretations and the resulting recommendations from the findings are explained in the sixth chapter.

Chapter seven: Conclusions of the research are summarised. The thesis closes with a conclusion derived from previous empirical literature, theory, and findings of the current thesis. Policy recommendations based on theory and empirics derived from the study are specified and new research agendas that have developed as a result of this study are outlined.

CHAPTER 2: LITERATURE REVIEW

Section 1: Concepts and theories

"...I used to think if there was reincarnation, I wanted to come back as the President or the Pope or a .400 baseball hitter. But now I want to come back as the bond market. You can intimidate everyone..."

James Carville (Campaign advisor to President Clinton, Wall Street Journal, February 25, 1993, p. 1).

2.0 Introduction

The comprehension of bond market theories is a critical foundation for empirical tests of bond market performance determinants of African emerging economies. As Mu *et al* (2013) highlights "…bond markets in these countries are at a nascent stage of development and there is a strong need to promote their development…." Given that the aim of this research is to study the performance determinants of bond markets, it is crucial that relevant theories are reviewed to form the basis of the proposition of the study (Aguinis and Edwards, 2014).

The complexity encompassing bond markets, bond market performance measures, bond markets in Africa and bond markets in African emerging economies is evident in the desire to investigate this topic. Such intricacy cannot be explained from a sequential review of theoretical literature surrounding bond market performance themes. Instead, this beckons an analytical way of thinking that accounts for several variables and externalities that do not clash but rather complement each other, to form a web of theories that can be applied to empirics and used to explain phenomena (Nhamo, 2011). Thus, this study does not subscribe to a particular theory but, rather scrutinizes the theories with no predisposition toward a cluster of theories either completely or in part (Nhamo, 2011). An approach such as this is helpful for the study because it permits the researcher methods and processes to analyse, explain and critique data and develop grounded policy recommendations and suggestions (Nhamo, 2011).

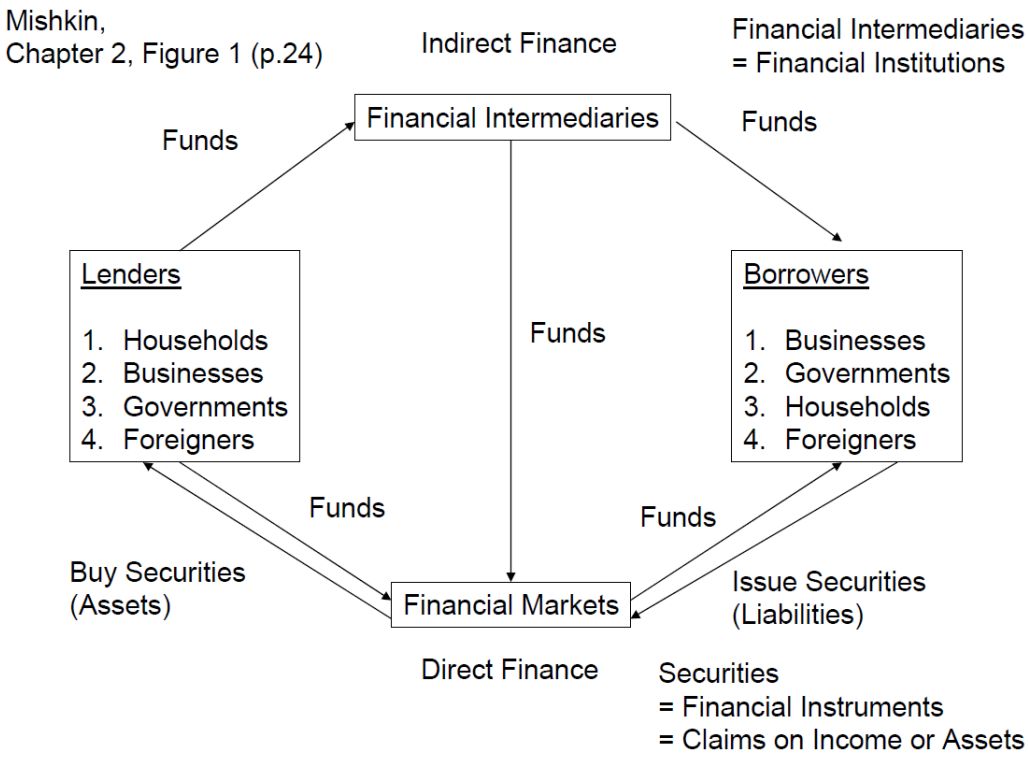
Section 1 probes financial market theory, the theoretical and empirical literature on African emerging economy bond performance and surrounding themes. Concepts and theories that enrich one's understanding of bond markets are discussed. The study delves into macroeconomic factors and theories of bond market development in African emerging economies. Matters relating to the enhancement of savings intermediation such as domestic savings, adverse selection and rent-seeking behaviour, among other factors comprise part of the section. The efficient market hypothesis and its applicability to bond markets is also examined

An evaluation of the dynamic link between the bond and stock markets forms part of the first section of this chapter. The section further examines the role of institutions and the key notions of corruption, governance, transparency, legal framework and culture within the context of financial and economic development in Africa. In addition, the section explores the concept of colonialism and its importance in assessing financial market development. Key studies on the determinants of bond market performance, taking into account the merits and weaknesses of bond debt against other types of debt are analysed in Section 2. The concluding section (3) evaluates past bond market development initiatives, and critiques their applicability to the African context.

2.1 Financial systems

Financial systems comprise of institutional units and markets that interact, usually in an intricate manner, with the intention of mobilizing funds for investment and making facilities available, including payment systems, to finance commercial activity (IMF, 2006). Thus, financial systems are the larger system, including financial markets. These two terms are examined separately in this thesis, never referring to them with analogous explanation.

Figure 2.1: Typical financial system structure



Source: Mishkin, (2012)

Capital markets, the banking system and non-bank financial institutions comprise the financial system (Ncube, 2009; Vinals, Fiechter, Pazarbasioglu, Kodres, Narain and Moretti, 2010). The financial system pools together capital from smaller savers, allots capital to the most appropriate users and oversees the capital to ensure its proper use (Vinals *et al* 2010). In tandem, the financial system decreases risk, boosts liquidity and reveals relevant information to the public (Stiglitz, 1998; Aggarwal and Goodwell, 2014). According to Hawkins (2005), financial systems are made up of closely interrelated components. A disturbance in any of its components can negatively affect the stability of the whole system (Hawkins, 2005). Crockett (2011) explains that the financial system is more than merely a consortium of institutions that expedite payments and extend credit. Rather, Crockett (2011) prefers financial systems to be viewed as embodying all the activities that direct real resources to their most beneficial ends. Beck, Colciago and Pfajfar (2014) find; however, that increased financial system development may not always be desired. Built on a sample of seventy-seven countries over seventeen years, the authors suggest that financial sector

growth, other than through intermediary development, has no long-run effect on the economic outcomes of the real sector (Beck *et al* 2014). Financial system development is also found to increase volatility, albeit in higher-income countries, which typically does not describe Africa (Adrianaivo and Yartey, 2010; Beck *et al* 2014). Such a proposition is an antithesis of major theoretical and empirical evidence about the growth-finance-innovation nexus including seminal works by Robinson (1952), Schumpeter (1911) and more recently Rajan and Zingales (1998) and Beck *et al* (2014). According to Hartzenberg (2011) the African paradigm, which observes the requirements of linear integration of financial systems where successive and advancing integration of goods, labour and capital markets occur and eventually fiscal and monetary integration, is deficient. The deficiency stems from largely neglected supply side constraints such as competition policy, investment and services. Mckinnon and Pill (1999), Collins and Biekpe (2003),Das (2003), Andersen and Moreno (2005), Irving (2005), Lugangwa (2006), Hartzenburg (2011) and Odera (2012) highlight the problems involved in integration of financial systems such as increased vulnerability to global risk, while authors including De Bondt (2000), Claessens, Djankov, Fan and Lang (2002), Okhealaham (2005) and Buchanan (2011) affirm the value of integration and formal synchronization of African emerging market financial systems as a means to prevail over its shortcomings and develop into a stable, fit system.

Schumpeter (1911) in a seminal contribution sets the groundwork for the finance-led growth hypothesis. According to Schumpeter (1911), a well-functioning financial system builds efficient resource allocation from unproductive to productive sectors, thus stimulating technological innovations. There appears a consensus favouring innovation in a financial system (Bravo-Biosca, 2007; Ayyagari, Demirguc-Kunt and Maksimovic, 2011; Nanda and Nicholas, 2011; Po-Hsuan, Xuan and Yan, 2013). Logical reasoning would suggest that bond markets strengthen African financial systems, at least in part, by spurring innovation. In concurrence with Schumpeter (1911), bond markets in Africa spur innovation by virtue of their novelty and the new ways of doing things that need to be developed for their existence (Levine, 1997; Coccia, 2014). Furthermore, as an added source of finance,

bond markets support financial systems by increasing the array of financial instruments available to governments and corporations (Bae, 2012; Mu *et al* 2013).

The widely used 'bigger is better' view of financial systems has been reviewed in light of the 2008 sub-prime crisis (Gertler and Kiyotoki, 2010; Beck *et al,* 2014). Turner (2010) and Trichet (2010) attribute this renewed interest to severe declines in output produced by the crisis. Cahuc and Challe (2012) speculate that an outsized financial sector may lead to a misallocation of resources and financial instability. Therefore, it is imperative that financial systems are meticulously managed and regulated particularly in highly indebted countries where large amounts of debt are often serviced. Thumrongvit, Kim and Pyun (2013) suggest a reinforcement of intermediation as a means to economic growth and aiding debt service. A critical element of a strong, vigorous and dynamic financial system is precise and timely reporting and public disclosure (Viñals *et al* 2010). It must be transparent to rely on the accurate pricing of risk, particularly systemic risk because most of the evidence required for identifying the accumulation of systemic risk is inaccessible to those who manage financial stability (Viñals *et al* 2010; Bouvard, Chaigneau and de Motta, 2012).

2.2 Financial markets

Financial markets are described in distinct ways by varying disciplines. Some authors including Jollah (2009) portray markets as systems where buyers and sellers exchange goods and services using a commonly accepted exchange medium. According to Kizito (2012), financial markets are specialized markets that control the direction of financial resources form surplus units to deficit units to perform some form of economic activity. Di Giorgio, Di Noia and Piatti (2000) similarly, refer to financial markets as economic spaces where various types of operators offer financial securities and services. The reference to a financial market as a tangible tacit space of convergence is also suggested by Chami, Fullenkamp and Sharma (2010) by portraying markets as an 'arena' where potential borrowers and lenders converge and reach consensus about the terms of respective contracts. Gambarcorta, Yang and Tsatsaronis (2014) also recognize financial markets as forums thus suggesting the notion of place as many authors have done (Giorgio *et al* 2000; Chami *et al* 2010). However, the

authors contend that savers and investors are kept apart by markets as opposed to being joined. This relatively neutral conceptualisation of financial markets is not the view of all parties.

Literature about financial markets suggests that one of their most essential functions is to surpass adverse selection and moral hazard problems, thus decreasing a firm's cost of external capital (Po-Hsuan *et al,* 2013). According to Dahou *et al* (2009), channelling existing resources to appropriate sectors will spur productivity and generate employment. Chami *et al* (2010) add that when developed financial markets function correctly, they facilitate the transfer of resources from savers to investors thus, contributing to the robustness of the economy by stifling possible shocks through enabling appropriate allocation of risks. Seminal work by Allen and Gale (2000) supports the view that influences of financial market activities become more pertinent with the growth of an economy whereas that of banks become less important.

A series of negative fluctuations in a financial market may lead to disturbance in the financial system and potentially, a financial crisis (Gharsellaoui, 2013). Further evidence suggests that financial market development positively contributes to the most under-privileged members of a community because it reduces inequality of incomes (Chami *et al,* 2010). Similarly, Beck and Levine (2004) and Honohan (2004) suggest a negative correlation between financial market deepening and poverty. According to Panchenko and Wu (2009) and Underwood (2009), several trading strategies assign assets to equity and riskless bond market securities. Thus, a financial system that contains both stocks and bonds accommodates more investors than without. Financial markets offer policy makers and broader stakeholders the ability to obtain important information about investors, investor beliefs and risk preferences (Underwood, 2009; Chami *et al,* 2010; Christophera, Kimb and Wuc, 2012).

Some authors argue that the market is a tool employed by influential economic agents to acquire monopoly rents (Casson and Lee, 2011). According to this view, the powerful agents

may be substantial corporations or dominant trade unions that negotiate for a portion of business proceeds for their members (Casson and Lee, 2011). Such typologies suggest that the link between finance and politics involves wider national economic systems (Davis, 2011). The broader influence of politics on financial markets is recognized by several authors including Classens, Djankov and Lang (2000), Morck, Yeung and Yu (2000),Barca and Becht (2001), Faccio and Lang (2002), Rajan and Zingales (2003), Morck and Yeung (2004) and Zussman, Zussman and Orregaard-Nielse (2008).

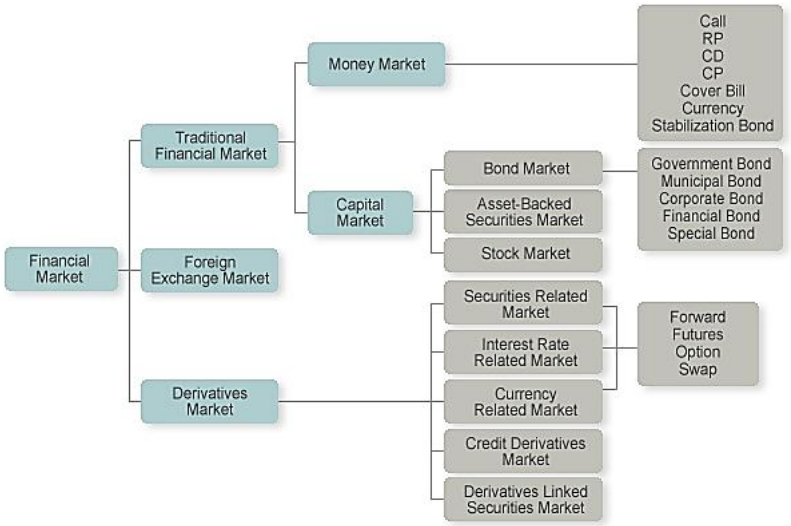
Keynes (1963), in a metaphor, describes markets as a 'beauty contest', and adds that traders frequently conduct themselves in a comparable manner. Most remarkably, Shiller (1984) considers market speculation as a social activity, as investors occupy a large portion of their leisure time reviewing and debating about investments. Therefore, market prices are often driven by rumours, speculation and investors' expectation rather than facts and fundamentals (Fenzl, Brudermann, Malik and Pelzmann, 2013). According to Shiller (2014), such speculative markets are prone to strange types of trends or social epidemics termed speculative bubbles. The author attributes social psychology, flawed news and inefficient information paths to speculative bubbles.

2.2.1 Building blocks of financial markets

Two components separate financial markets namely, the money market and the capital market (Kizito, 2012). The distinction between money markets and capital markets lies in the extent of liquidity of their instruments (Kizito, 2012). While the money market operates with short-term funds, the capital market manages extended term funds (Kizito, 2012). Dodd (2008) classifies four main elements of capital markets namely securities markets, where bonds and equity shares are traded, the banking industry where loans are issued and settlement and payment services are provided, institutional investors such as insurance and pension funds as they deliver future income and collateral for lending, and derivatives markets offering risk management and price discovery. Thus, both money and capital markets are opportunities for households, firms and the government to mobilize financial resources through buying and selling financial securities (Kizito 2012; Andriansyah and

Messinis, 2014). The capital market may be separated into the primary market and the secondary market (Arvai and Heenan, 2008).

Figure 2.2: Typical financial market structure



Adapted from: Arvai and Heenan, (2008)

Initial securities offered to investors by a firm, Initial Public Offering (IPO), are sold on the primary market whilst securities already owned by the public are traded on the secondary market (Kizito 2012; Andriansyah and Messinis, 2014). Whereas the issuing house for primary markets are typically brokerage firms, investment bankers and underwriters and stock exchanges are usually the platform for purchasing and selling secondary market securities (Nguimeya, 2014). The IPO introduces firms' securities to the public and the funds raised are directly allocated to the issuing firm to support its operations (Bateni, Roodposhti and Poorzamani, 2014; Nguimeya, 2014). When a firm's securities are held by the public, liquidity of the financial security may be enhanced through trading in the secondary market. Institutional quality, governance and transparency are recurring variables that contribute to the functioning of both primary and secondary markets (Ritter, 1987; Beunaventura and Ross, 2013).

2.3 The coupled dynamic of bond and stock markets

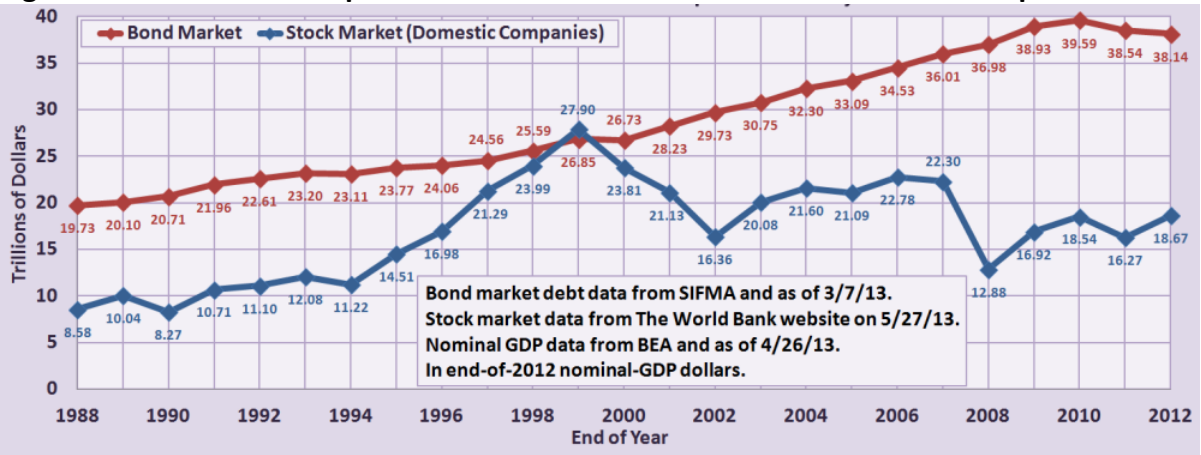
Recent studies, including those by Gueye and Sy (2010), Du Preez and Mare (2013) and Kousmanen and Vataja (2014) simultaneously analyse the forecast ability of stock and bond markets; however, a more dated study of Resnick and Shoesmith (2002) forecasts economic activity separately. Resnick and Shoesmith (2002) has conducted such an analysis by replacing the yield-curve spread of the U.S. as the explanatory variable thus extending the probit model that forecasts economic recession. The yield curve spread as the explanatory variable then forecasts bearish stock markets and, based on the model market timing strategies are tested (Resnick and Shoesmith, 2002). Subsequent studies also find that bond yields possess significant data about the likelihood of a bearish stock market (Kim, Moshirian and Wu, 2006; Panchenko and Wu, 2009; VenkateShwarlu and Ramesh, 2011). These findings are considered as economically significant (Resnick and Shoesmith, 2002).

The most common theoretical models regarding the stock and bond market nexus suggest that stock and bond markets exhibit correlational behaviour because of their shared source of financial information (Kim *et al* 2006). Other models emphasize regional integration and financial market liberation as decisive elements that influence the stock-bond market link (Panchenko and Wu, 2009). The basis of such findings stems from earlier stock and bond market interrogation and resulting seminal findings of theorists such as Fama and Schwarts (1977), Fama and French (1989) and Schwert (1990). Most notable are the seminal findings of Harvey (1989) that establish that while both stock and bond markets provide important information about GNP growth, bond markets deliver more precise predictions of economic growth.

Stock and bond market movements are carefully scrutinized by participants of the financial markets (Panchenko and Wu, 2009). Therefore, it is imperative that the inter-linkages and relationship dynamics are understood to equip savers, investors and investors with information that positively affects financial markets (Chami *et al,* 2010; Newberry, 2013). Bond markets tend to be less noisy relative to equity markets because of stock markets' exposure to several miss-pricing (Gallegati and Ramsey, 2013). Christophera, Kimb and Wuc (2012) similarly, find that bond market performance better indicates the

creditworthiness of regions and of local bond users' ability and willingness to service debt payments.

Figure 2.3: The relationship between Bond and Stock markets- the U.S. example



Source: The Future Tense (2013)

Figure 2.3 shows the relationship between stock and bond markets. It also suggests that the bond market grew during 20 of the 22 years surveyed. Despite the erratic movement of the stock market, it grew at a similar pace as the bond market during the period. This demonstrates that information from financial markets can be obtained, among others, from bond and stock markets; thus, the markets cannot be viewed in isolation. The yield curve is a key source of information conferred by bond markets while equity markets are better reflectors of noise in markets. Bond and stock markets are useful tools for economic growth and, knowledge about one market may be beneficial in the assessment of another.

2.4 Emerging markets

Rapid economic growth is often associated with emerging market economies (Henry and Kannan, 2008). The concept was first used by Agtmall (1981) of the World Bank in his description of fast growing developing countries (Khanna and Palepu, 2011). Descriptions and definitions of emerging markets differ and despite the increasing relevance of these markets in global finance, there is no prudent interpretation of the constituents of an emerging market (Kehl, 2007; Kearney, 2012). Whilst Barry and Lockwood (1995) focus on

the volatility characteristics of emerging markets, Lagoarde-Segot and Lucey (2005) emphasize their potential for portfolio diversification. Kearney (2012) however, marginalizes volatility as a determinant of an emerging market and suggests properties of financial infrastructure and accounting systems as essential in determining if a market is emerging. This research adopts the stance of Ojah (2012) in his description of emerging markets as "… *countries where financial markets are emerging from the dominant role of government in funding production*…". The selected definition realizes the intricate role played by banks in the development of domestic bond markets in African emerging economies (Bhattacharyay, 2011; Allen, Otchere and Senbet, 2012).

2.5 Transparency

Transparency in markets is the ability of market participants to observe information about trading processes (Van den Berghe, 2001). It is the quantity and timeliness of the information made available to public investors about market conditions (Bessembinder and Maxwell, 2008; Gupta, 2010; Haufler 2010). Transparency is generally divided into two categories in bond markets (Buenaventura and Ross, 2013). Pre-trade transparency describes the dissemination of quotations or other signs of trading interest while post-trade transparency refers to the dissemination of information, in particular, price and volume, for completed trades (Bessembinder and Maxwell, 2008; Buenaventura and Ross, 2013). The primary and secondary markets require pre-trade transparency to notify market participants of the supply, demand and price settings of a particular financial instrument (Hanson, 2003; Bessembinder and Maxwell, 2008). Furthermore, processes that safeguard transparency and sound alignment of shareholder and management interests are crucial considerations in the decision to invest in a country (Ladekarl and Zervos, 2004). Buenaventura and Ross (2013) and Asgharian, Liu and Lundtofte (2014) explain that opaque markets typically hurt market confidence and, when investors suspect that market conditions are not adequately transparent their willingness to participate in the markets may diminish, thus lowering investor base and subsequently market liquidity.

Analysis of Pagano and Roell (1996) shows that increased transparency lowers the average costs of trading for liquidity traders. Similarly, Aggarwal and Wu (2006) use the OTC market in the U.S., to show that less transparent markets are more subject to market manipulation. According to Bouvard *et al* (2012), Asquith *et al* (2013) and Ellis, Haldane, Moshirian (2014) one of the responses to the 2008 sub-prime crisis has been appeals for increased transparency of financial institutions. Moreover, Mohtadi and Ruediger (2012), through Monte Carlo simulation of a financial herds model, empirically test a panel of 23 Organization for Co-operation and Development (OECD) and emerging markets over nine years and find an inverted "U" pattern, thus depicting the influence of market transparency on volatility. An increase in financial transparency increases market volatility initially then, subsequently decreases it, at higher levels of transparency. Asquith *et al* (2013) used the US corporate bond market to find that transparency drastically diminished price dispersion for all bonds and significantly increased trading activity for some groups of bonds. Also, post-trade price and volume transparency are found to precede large drops in trading activity and price dispersion (Asquith *et al* 2013).

Duffie (2012) explains that in a transparent market, dealers have the opportunity to lower inventory discrepancies that originate from big trades with less regard to their trade size or reservation price. Duffie (2012) explains that this occurrence, will then be positively used toward subsequent counterparties, while Bouvard *et al* (2011) attribute such findings in transparency to the quality of banks in the financial system. When normal quality is such that it is elevated enough for investors to be eager to roll over credits, not disclosing information is best, as transparency may expose a run to lower quality banks (Bouvard *et al* 2011). In contrast, when quality is appropriately low, transparency is rather chosen. If investors were aware of the low average quality of transparency but unaware of the specific banks with low quality, a run on the entire banking system would occur (Bouvard *et al* 2011).

2.6 Coasian view (1937) of local currency bond markets

The Coase theorem (1960) suggests that in the presence of fully allocated property rights, regulations need not be assigned as externalities will be corrected by parties who negotiate to establish solutions at the lowest cost. Implications of this theory are that markets are able to solve externalities except in situations where property rights are incomplete or negotiation costs are excessive. In essence, the Coase theorem purports that in the presence of unambiguously allocated property rights and likely negotiation, the market has the potential to solve externalities. Thus, externalities need not be terminated through regulations but rather be subject to property rights or assisted with negotiation and consultation so that participants concerned arrive at an economically efficient resolution (Autor, 2010). Many caveats of the Coase theorem exist including the challenge of failing negotiation in the presence of high transaction costs. Despite such issues, the theorem holds some explanatory value in bond markets.

General findings of the bond market literature are harmonious with the Coasian (1937) view that local currency bond markets are an alternative source of finance for an economy. For instance, Allen *et al* (2012) propose that environments with weak formal institutions, such as those in emerging economies, require additional sources of funding such as domestic local currency bond markets. Domestic bond markets as a means to finance budget deficits is, according to Turner (2003) the principal reason for their establishment in emerging economies. The author explains that during the highly regulated financial regimes that were widespread prior to the 1980's, governments of several emerging economies merely coerced central banks to print more money to meet their reserve requirements. Governments of many developing countries were, simultaneously, dependent on foreign aid to fund their fiscal deficits. According to Baudouin and Arindam (2010) the simplest channel for borrowing is the printing of money; however, such a method is highly inflationary and thus unsustainable for African emerging economies. Kaminsky and Schmukler (2003) and Jeanne and Guscina (2006) have noted that various emerging markets are increasingly using sovereign bonds to finance budget deficits.

Garcia-Kilroy and Silva (2011) and Saidi, Scacciavillani and Prasad *et al* (2009) support the Coasian (1937) view of government bond markets as the cornerstone of financial market development as they aid sustainable growth by securing stable government financing sources through various economic cycles. However, Qayyum *et al* (2014) note that funds alone are not adequate for an economy to run and develop. Corporate bonds are an alternate financing channel for large corporate and financial institutions that are transparent and trustworthy enough to entice the public on the market while ensuring their ability to pay the debt when due (Milos, 2004). According to Allen and Qian (2010) and Allen *et al* (2012) domestic bond markets do not rely heavily on legal systems and as a result, if operated efficiently, they gradually reduce the legal costs. Čihák, Demirguc-Kunt and Levine (2006) emphasize that the improved efficiency of fund allocation, transparency and governance generated by the alternative channel of funding presented by bond markets and their further contribution in preventing collected funds from being passed to politically-connected and wealthy individuals is a significant contribution of well-managed bond markets. Practices such as shifting collected funds to undeserving parties hinder economic growth and prevent latent entrepreneurs from realising their economic objectives (Čihák *et al* 2006; Barth *et al* 2012). Baudouin and Arindam (2010), on the other hand, highlight that domestic bond markets are particularly helpful in economies in their early stages of development to gain additional finance. However, the authors caution that emerging economies tend to experience numerous market distortions that increase the cost and risk of government borrowing (Baudouin and Arindam, 2010). Thus, borrowing from other means, such as banks, may be seen as a competitive debt option in some cases.

2.7 Rule of law

Current studies have echoed the proposition of Smith (1937), Okioga (2013) and Hearn (2014) that stricter rules and regulations in African financial systems will deepen intermediation and encourage economic growth. This is what Smith said:

"Though the principles of the banking trade may appear somewhat abstruse, the practice is capable of being reduced to strict rules. To depart upon any occasion from those rules, in

consequence of some flattering speculation of extraordinary gain, is almost always extremely dangerous, and frequently fatal to the banking company which attempts it." (Smith, 1937 p 3)

Since then, a plethora of academics and policy makers have supported this view in the expectation that the dominance of bank-based intermediation in Africa may be lessened by diversification of intermediation, strengthening confidence in regulations and supervision and implementing frameworks for financial systems in Africa (Goswami and Sharma, 2011).

There appears an irrefutable relationship between intermediation, rent seeking and the quality of legal and regulatory frameworks in a market. Dahou *et al* (2009); and Akitoby and Stratmann (2010) explain that quality institutions promote trust and facilitate exchange. Furthermore, Bearman (1997) suggests solidarity as a secondary effect in all exchange systems, as actors are entrenched by mutual obligation and debt. Such an engagement between agents and intermediaries entails the revelation of sensitive information by the borrower that may cause some embarrassment or unease (Chang, 2005). An ecology of weak institutions, poor borrower rights and low transparency may cause borrowers to avoid network integration and stifle intermediation.

McDonald and Schumacher (2007) empirically investigated creditor rights and information dissemination in Sub-Saharan African countries and found a progression of financial intermediation in the territories with sound, robust legal systems. The same study found that the countries with relatively weaker legal institutions remained at low levels of financial intermediation (McDonald and Schumacher, 2007). Thus, while a fundamental role of financial intermediaries is to serve as a conduit of funds from risk-averse economic agents to entrepreneurs, it is also a basic indicator of a country's prevailing level of financial development and may be stalled by the extent of rent seeking activity in an economy (Marcelin and Mathur, 2014).

2.8 Institutions

Institutions are the habitual set of ideas that are usually taken for granted, values and activities used within societies (Powell and DiMaggio 1991; Jennings, Greenwood, Lounsbury and Suddaby, 2013). According to Bruton, Ahlstrom and Li (2010) the foremost description of an institution is that given by Scott (2000) in the proposition that they are '*…social structures that have reached substantial resistance and hold cognitive, normative and regulatory components…'* (Jennings *et al,* 2013). These fertile links of formal and informal intuitions vary tremendously and mould the driving forces of economic actors and the manner in which markets function (Henrekson, 2014).

Formal and informal institutions exist in countries and provide participants of economic transactions with the "*…rules of the game…*" which largely dictate whether certain behaviour is appropriate and legitimate (North, 1990:3). Formal institutions are rules and processes that are conveyed and imposed through conduits that are generally acknowledged as official (Li and Zahra, 2012). According to North (1990) formal institutions are intended to provide rules and control the behaviour of actors.

The quality of formal institutions varies extensively among countries, particularly regarding the transparency of legal processes, degree of freedom involved in economic transactions, rule of law, political risks and supervision, and enforcement involving the protection of property rights (Lewellyn and Bao, 2014).For Licht, Goldschmidt and Schwartz (2007) silent and unwritten rules of conduct both constrain and motivate the development of formal institutions. These unwritten rules are known by each society and influence behaviour that is naturally accepted and even undervalued (Helmke and Levitsky, 2004; Licht *et al* 2007). It is within these informal institutions that morals and traditional norms are provoked (Abdi and Aulakh, 2012).

Theoretical and empirical evidence highlight the need to focus on institutional development due to the critical task of institutions in the development of financial systems (Chea, 2011). Amin (2013) simulates a growth accounting model and regressions with dummy variables, against panel data of 26 African countries from 1980-2011. The factors of production

(labour, capital, land) and variables such as bureaucratic efficiency, enforcement of property rights and law and order are run and institutional quality is found to critically impact a country's growth output. Acemoglu and Robinson (2010) and Qayyum, Din and Haider (2014) have conducted similar studies and found that institutional variations are the most valuable elements that generate per capita growth disparity across countries. The role of domestic institutions in economic development is vital as proposed in the approach taken by New Institutional Economics (NIE) (Desta and Hirsch, 2012; Ang, 2013). According to the NIE approach, the institutional settings in which the indigenous people exist will affect the country's economic behaviour because of the distinguished role of institutions in economic outcomes (Desta and Hirsch, 2012; Williamson, 2012; Ang, 2013; Gordon, 2013).

2.8.1 New Institutional Economics (NIE) and development theory

The NIE is not a substitute for liberal theory but, an extension or slight modification of prevailing theory to further clarify the novel set of concepts (Desta and Hirsch, 2012; Leite *et al* 2014). Institution, information asymmetries and the resulting transaction costs are recognized in the NIE approach (Ang, 2013; Kuncic, 2014).

Hodgson (2004) finds the NIE approach individualistic and is in direct opposition of the dual effect of Veblen's (1898) interpretation of neo economics. Neoclassical economists state that the costless stream of factors of production is facilitated by markets and prices then passed on to the greatest value possible between rationally thinking people. NIE proponents, however, argue that organizations and intermediaries would be unfounded if this was the case (Lawson, 2013; Coggan *et al* 2014). It appears that NIE analyses Africa's post-colonial situation more effectively than neo-liberal theory because NIE theory observes that the main assumptions of neo-liberal theory occur purely in rare cases (Desta and Hirsch, 2012; Leite *et al* 2014). Mkandawire (2014) suggests that while this novel view of economics, unlike neoclassical economic theory, appreciates the strain of market collapse in developing countries, it relies excessively on the state. Thus, critics of the NIE approach argue that it erodes the role of power and boosts transaction costs while neglecting additional features including geography.

Ample theories in development studies that extend over the fields of economics, sociology and political science exist (Kang, 2014). Such theories include Marxist, Keynesian and the more topical New Institutional theory (Ang, 2013; Bracarense, 2013; Basirat *et al* 2014). According to Kang (2014) there exists a tendency to consider development as a general and linear process of socio-economic growth and wealth. Such a concept, according to Guillen (2001), supports the false perception of a standard solution for all contexts. Reuschemeyer (2009) suggests context specifically as an instrument to acquire a better understanding of policies that may positively contribute to development. Middle-range theory, a term initially coined by Merton (1968), identifies the midpoint between grand theories and functional hypotheses that continually develop and progress in the course of routine research. Bracarense (2013) suggests that current development theories are inadequate and attributes this, partly, to a flawed understanding of historical change. Present development theories do not attend to historical events, which is very important particularly in previously colonized countries (Ang, 2013; Bracarense, 2013). The assessment of cultural, religious and moral influences have an enormous bearing on the construction of developmental theories and, provide more precise historical insight for theory construction than those that omit such factors (Woodberry, 2012). Therefore, in establishing a bond market development model, the approach should be specific to the African context rather than that of the west, which has unique context, history and experience.

2.9 Theory of rent seeking

Rent seeking activity, according to Tullock (1967) is the earning of income without being productive. Rent seeking activity, portrayed by Fischer (2006) is a typical indication of scarce resources to be used to gain falsely conceived rents and transfers that are not part of the intended income. While rent seeking activity is rife in developing countries, banks are notorious for such behaviour (Pillay and Ojah, 2009; Iqbal and Daly, 2014). Such manipulation by intermediaries may limit growth in newer emerging economies (Khwaja and Mian, 2005). Stated differently, rent seeking activity may hamper one of the key advantages of financial intermediation, deepening growth. Khanna and Sunder (1999) and Zhou and Mei (2003) find a prevalence of rent seeking behaviour within the financial

systems of China and India respectively. While equity markets were the setting of the above studies, rich insight of intermediary activity in emerging economies can be drawn. According to North (1990) institutional framework is crucial and often delivers an environment conducive to rent seeking behaviour particularly in developing countries with weak institutions. Thus, for rent seeking activity to be minimized in a market, laws and regulations must be implemented and enforced.

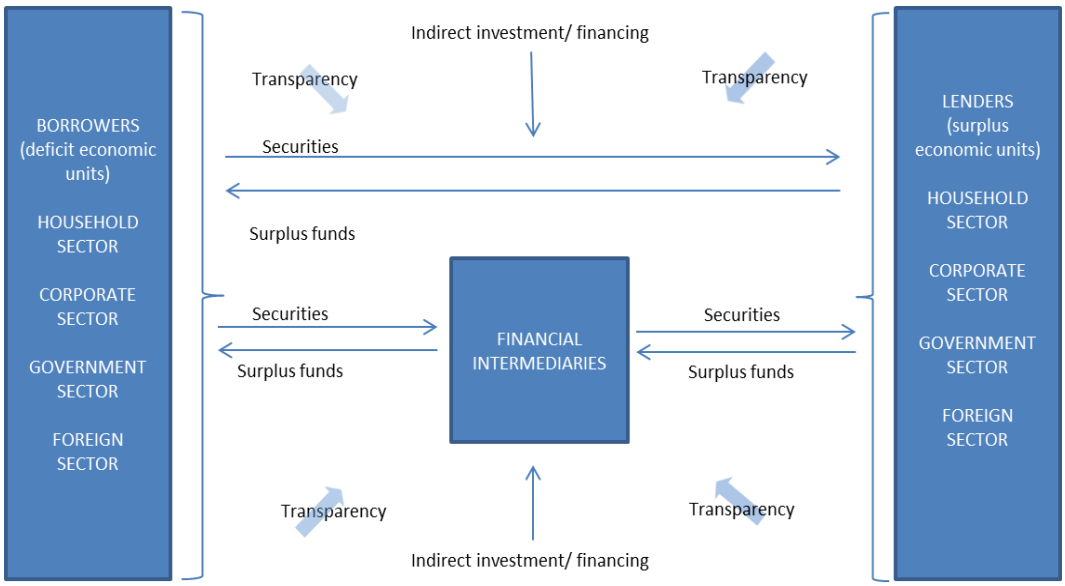
2.10 Intermediation theory

Merton and Bodie (1995) and Levin (1997) emphasize the role of financial intermediaries including contracts and margins, when evaluating potential investment opportunities and exercising corporate control. The same authors also recognize that financial intermediaries have a vital function in directing risk management and improving liquidity within a financial system.

2.10.1 Traditional intermediation theory

Crockett (2011) identifies an intermediary as a separate, independent component of the financial system that is essential for its proper function. Coggan, Buitelaar, Whitten and Bennett (2013) analyse intermediaries against probity hazards, transaction costs and imperfect information. Intermediaries, according to the authors, are parties in markets that cater for specific and strategic information to sellers to assist in their finalization of an exchange (Coggan *et al* 2013).

Figure 2.4: Financial intermediaries within sectors of lenders and borrowers



Source: Adapted from Faurie (2014)

Institutional investors and households comprise the primary intermediaries in financial systems with households being the ultimate investors (Moody, 2009). Figure 2.4 exhibits the various sectors, including households as the borrowers and lenders of funds and their interaction with financial intermediaries. Giofre (2013) finds bias towards domestic assets on the part of households whilst institutional investors are found to be less biased. Households that invest directly in the financial markets are affected to a greater extent by information matters than financial institutions (Giofre, 2013). Transparency, as shown in Figure 2.4, is present in the interactions between borrowers, lenders and financial intermediaries. Furthermore, the translation of savings from households into investment securities encompasses the role of financial intermediaries (Mahran, 2012). Stix (2013) suggests that weak institutions and poor legal enforcement deter households in developing and transition economies from engaging with financial institutions. Hence, the elimination of such obstacles would benefit intermediation in developing and transition economies (Zhang *et al* 2012; Giofre, 2013).

Kuznets (1971) found a considerable increase in intermediaries as per capita income increased. Later, King and Levine (1993) established a positive association between financial

intermediary size, stage of investment and velocity of new capita output. According to Kuznets (1971) the task of financial intermediaries increases with the development of an economy. Thus, as an economy develops, bond markets will be required since more intermediaries will be needed to deal with the expansion. King and Levin (1993) concur that expansion of the financial sector is a response to economic growth caused by increased intermediation. Cole (1995) responds to sceptics of the financial intermediary- growth nexus by acknowledging the initial sharp decline in output that follows the larger function of financial intermediaries. The author suggests that the output decline in transitional economies, in the short run, may be attributed to a negative productivity shock. Several views of financial intermediaries exist, however, a common feature among them is the cultural or geographical context in the formulation of intermediation frameworks (Swamy and Tulasimala, 2011; Lidia, 2014).

The traditional Arrow-Debreu (1954) model of resource allocation proposes that firms and households interact by means of markets without the necessity for financial intermediarieries (Gersbach, Halle and Konishi, 2013; Bierbrauer and Boyer, 2014). Another view, Pareto efficiency, is a condition where a market is complete and perfect, thus, there is no opportunity for financial intermediaries to improve the state of financial markets (Allen and Santomero, 1997). Still, the Modigliani-Miller theorem affirms the triviality of the structure of financial markets in value creation. According to the theorem, intermediation is not value creating because households are able to assemble portfolios that counterbalance any stance of an intermediary (Leland and Pyle, 1977; Dow and Han, 2014).

More traditional views of financial intermediaries argue that low levels of intermediation, financial disintermediation, lack of enforcement of legislation and poor institutions may increase the likelihood of bank runs by household savers should they encounter further liquidity problems or any threat to the recovery of their investments (Ladekarl and Zervos, 2004; Marcelin and Mathur, 2014). Thus, it is imperative that a more diverse range of intermediation is available to African emerging economies.

2.10.2 Contemporary intermediation theory

A novel approach to intermediation is that of Deng, Xin and Wei (2014) who views it as an entrepreneurial role that is crucial for entrepreneurial opportunities to be created. While Zhang *et al* (2012) acknowledge the above views of intermediaries, it is argued that informal intermediaries, in the form of network contracts, local money lenders, and even relatives, provide timely financial support to local residents on more flexible terms. Formal intermediaries can be cumbersome as they frequently require proof of ability to repay and collateral (Zhang *et al* 2012). However, informal intermediaries may extract rents from borrowers, with the knowledge that the borrowers have no other source to consult (Iqbal and Daly, 2014).

It is argued that poor or relatively modest entrepreneurs and families are less likely to obtain loans from formal intermediaries because they do not have the collateral or documentation required (Zhang *et al* 2012). Moreover, many formal intermediaries are seldom able to reach marginal communities because the costs associated with issuing a loan or granting a deposit outweigh the expected return (Zhang *et al* 2012; Gwatidzo and Ojah, 2014). The entrepreneurial approach of Deng *et al* (2014) is, arguably, consistent with the informal intermediary view. Both of the above studies are based on the premise of accessing untapped markets to serve the role of intermediary. The findings converge with the economic growth outcome of the intermediation type. Intuitive introspection deduces that new, unfamiliar means of intermediation may hold insight into economic growth. Such an inference is in harmony with Goldsmith (1969) but in sharp contrast to Robinson's (1952) proposal that the financial system does not stimulate economic growth.

Beck *et al* (2014) evaluate the relationship between the 'extent of intermediation' and 'financial system size'. Value added portion of GDP and GDP per capita growth are variables used to establish an association. A two-step methodology of implementing OLS, and regressing the two explanatory variables against growth and volatility was employed. Based on a sample of 77 emerging and developed countries over the 1980-2007 period, Beck *et al* (2014) observe that intensified intermediation activities increase growth and ease volatility.

However, in the shorter run increased intermediation increases volatility in high income countries.

Bijlsma and Dubovik (2014) explain that higher income countries have already reaped the benefits of easily attainable growth. Also, in larger financial sectors, such as those of higher income countries, added financial intermediaries may increase the risk of macroeconomic volatility or a banking crisis (Bijlsma and Dubovik, 2014). Low income countries, similarly experience volatility; however, volatility occurs in the medium run as opposed to the short run for high income countries (Beck *et al* 2014). This finding suggests a lag in responses and reactions in low income countries relative to high income countries. Further, it suggests that fundamental differences in the financial markets of high and low income countries exist (Bijlsma and Dubovik, 2014). These observations are valuable for a country's expectation of intermediation effects on financial volatility and cautions countries to make strategic plans for intermediation to coincide with their growth objectives as much as possible (Beck *et al* 2014).

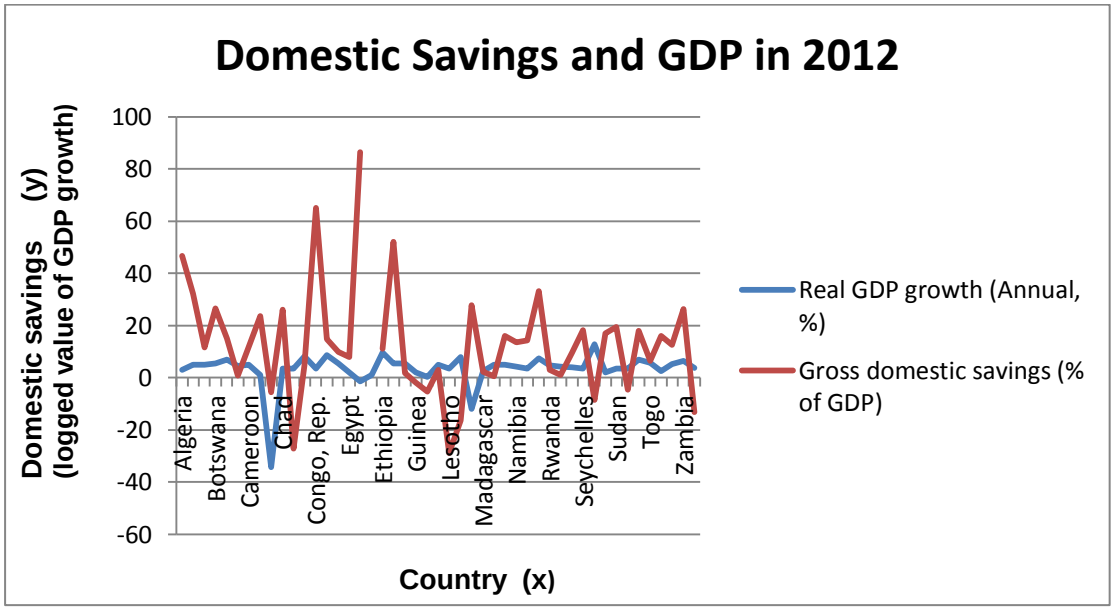
A major benefit of current financial intermediary theory is the huge risk management value it proposes; however, Scholtens and Wensveen (2003) argue that traditional intermediation theory barely offers any explanation of the reason for such an occurrence. Scholtens and Wensveen (2003) also maintain that the reduction of participation costs brought about by financial intermediaries, removes the costs of learning about efficiently participating and using markets daily. This loss, according to the authors, will ultimately be costly to an economy.

Despite the divergent opinions and interpretations about the role of financial intermediation in economic growth, there appears to be general consensus around its critical role in the diversification of investment risk and the mobilization of savings (Thumrongvit, 2013). The resulting high savings trigger a high degree of financial intermediation by banks (Adelegan and Radzewicz-Bak, 2009). Therefore, it is critical that African countries have relatively high savings levels to reap the benefits of intermediation.

2.11 Domestic savings

The theoretical position of Aghion, Bacchetta, Rancière and Rogoff (2009) on the role of domestic savings in enhancing investment and economic growth emphasizes the benefits of matching domestic savings with foreign capital. Domestic savings within this framework is handled as collateral to attract growth-enhancing foreign capital particularly in low-middle income countries. Furthermore, Ganioglu and Yalcin (2013) suggest that domestic savings and investment have a positive relationship in low-middle income countries despite recent empirical studies that refute this claim.

Figure 2.5: Increased domestic savings in low-middle income countries increases growth rate (2012).



Source: Data from World Development Indicators (WDI) Database (2014)

Aizenman, Pinto and Radziwill (2007) and Prasad *et al* (2007) agree that low-middle income countries that have higher domestic savings rates tend to grow faster than those with lower domestic savings. Thus according to Felman, Gray, Goswami, Jobst, Pradhan, Peiris and Seneviratne (2011) this is because the government bond market probably contributes most to the transformation of savings, dissemination of information and management of risk. A well-functioning financial system delivers and facilitates provision of savings, payments, credit and risk management products to those with diverse needs (Demirguc –Kant and

Klapper, 2012). Figure 2.5 shows the movement of real GDP growth and gross domestic savings of selected African countries and corroborates the above arguments. GDP growth and investment savings are closely linked in the diagram. The diagram shows further that in 2012, as the savings decreased so too did investment. Lesotho, for instance, experienced a drop in gross domestic savings as real GDP growth fell.

2.12 Banks and bond markets- friends or foes?

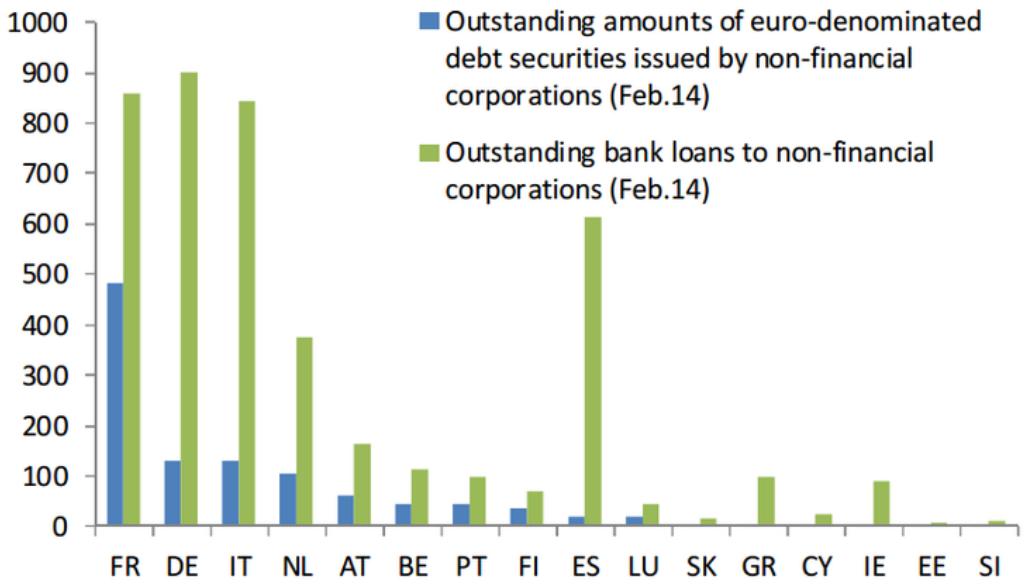
Fama (1980) explained the role of banks as twofold. First, banks provide accounting and transaction services, and second, they provide portfolio management services. According to Ncube (2009) African banks face competition while fulfilling the second function described by Fama (1980). One may deduce that the development and inclusion of domestic debt in African financial markets will greatly assist the continent's banks to pursue portfolio management services. This occurs because portfolio management services involve money market funds and mutual investment funds such as unit trusts, which open up opportunities for investment, increase the capacity of banks in Africa to diversify their portfolios and perhaps improve their efficiency (ACCA, 2012). Also, banks as the primary means of funding alter the strategic decisions of firms (Gwatidzo and Ojah, 2009).

A widely used simile by Greenspan (2000) is that bond markets behave 'like a spare tire,' replacing bank lending as a source of corporate funding when banks' balance sheets are fragile and when they are restricting credit. Hawkins (2005) suggests such a case in the US during the early 1900s and again in Hong Kong during the late 1990s when local banks assumed a conservative position to lending in the midst of a collapse of U.S. property prices. However, Braun and Briones (2006a) and Mu *et al* (2013) disagree with Greenspan (2000) and suggest a complementary association between banks and the bond markets. Furthermore, empirical investigation by Jiang, Tang and Law (2001) establish a positive correlation between bond issuance and bank lending in both developed and emerging economies.

Many benefits exist in using banks as a source of finance such as the ability of firms to negotiate debt roll-over during tough times; however, there are a number of factors that can dissuade the use of bank debt over non-bank debt (Gwatidzo and Ojah, 2014). Banks are able to expropriate rents from firms' investments since they possess information about the firm that other lenders are probably unable to access. Further, the banks are aware that firms may not be able to access other debts at favourable terms and within good time. Thus, the firm bears a hold-up cost in the process. Therefore, in the absence of a corporate debt market, a firm with a potentially lucrative investment is more than likely to rely on other private lenders for financing, which may be less costly than banks (Ojah and Manrique, 2005). Non-bank private lenders, to a large extent, perform functions similar to banks and thus are also able to expropriate rents from a firm's investments (Ojah and Manrique, 2005).

Turner (2003) argues that the notion that increased bond market development and bond issuance robs banks of profitable business is oversimplified at best. The author explains that banks may lose good business if their regulatory framework is not enhanced and consequently cause good business to migrate to other sources of funds if banks are compelled to hold a lot of capital against loans to low-risk borrowers. A migration of sound borrowers from banks to bond markets may occur and give rise to systemic hazard because of the concentration of poorer risks on banks.

Figure 2.6: The complementary nature of bond and bank funds- A European case.



Source: Claeys (2014)

A good example of the typically complementary relationship between bond market debt and bank debt is revealed in Figure 2.6. Capital seekers may prefer bank debt over debt market funding for a number of reasons. Firms in most African countries are not able to issue corporate bonds on security exchanges as the majority of them are not listed, thus finding themselves in challenging circumstances in the pursuit of external finance, (Gwatidzo and Ojah, 2014). Banks may also be a more attractive option for some firms because of the positive signals they send to other potential lenders about a firm's ability to lend from a bank as opposed to other lenders (Gwatidzo and Ojah,2014). The comparative advantage and sufficient resources of banks enable them to assess borrowers; thus, borrowers granted bank loans are viewed as relatively credible (Gwatidzo and Ojah, 2014). However, bonds may also be viewed as a more attractive debt choice for a variety of reasons. Larger firms may prefer bond markets due to their lower costs of borrowing compared to interest rate premiums demanded by banks (Pessarossi and Weill, 2013; Gwatidzo and Ojah, 2014). The initial floating costs associated with listing a corporate bond may be relatively high; however, over the long run, the transaction costs associated with bond markets are less than those of bank loans (Pessarossi and Weill, 2013).

Turner (2003) explains that in a situation where bond markets are small or non-existent, firms may be forced to secure long- term assets through short-term debt. Thus, their investment policies may favour a short-term project which invariably detracts their entrepreneurial expression. If firms decide to compensate for the lack of a domestic bond market at the expense of banks by borrowing from international bond markets, they may subject themselves to high foreign exchange risk.

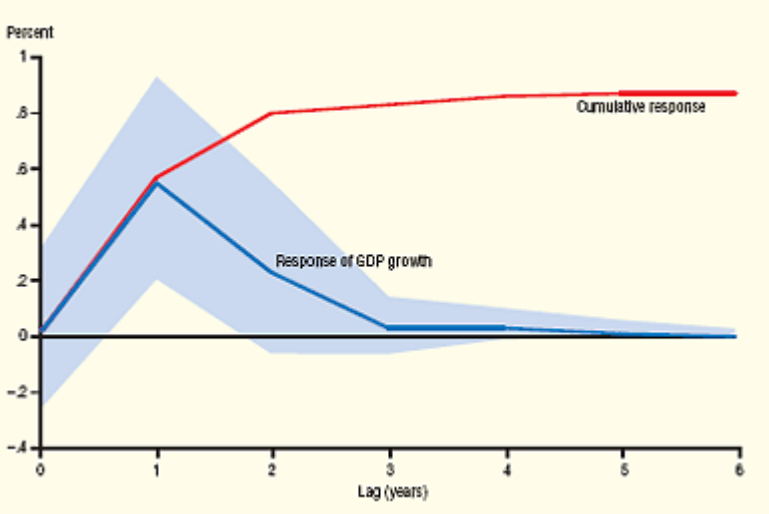
2.13 Theories of economic growth

Economic growth, according to Lipsey (1986) is the positive trend of an economy's total output over a protracted time period. Early studies including Schumpeter (1911) and Robinson (1952) attempt to identify a link between economic growth and financial systems. Further, numerous studies, including Herring and Chtusripitak (2000), Braun and Briones (2006a), Fink, Haiss, Kirchner and Moser (2006) and Thumrongvit *et al* (2013) assess the link between bond markets and economic growth and find a positive relationship between the two variables. Bencivenga and Smith (1991) and Jappelli and Pogano (1994) also establish a positive relationship; however, it is only in terms of the quantity of savings offered to financial investments, whereas Greenwood and Javanovic (1990) find that financial markets are relevant only with respect to investment productivity increases.

Rajan and Zingales (2003), Ergungor (2008), Shin and Oh (2008) and Jalil, Feridun and Ma (2010) refute the idea of a positive relationship between financial market development and economic growth. According to this view an association between financial development and economic growth may be due to omitted variables challenges. Guevara and Maudos (2011) suggest that financial development is reliant on a country's ability to save, and according to key theories of growth, a primary determinant of economic growth is the saving rate. Therefore, the apparent positive link between economic growth and financial development, observed in time series for a single economy or cross-country regressions may be a manifestation of the savings rate and not a growth-financial development relation. While Hassan, Sanchez and Yu (2011) accede to the presence of a relationship between economic

growth and financial markets, their advice about the neoclassical view of the economy's real sector being more important than financial markets, is feeble. This view has been largely superseded by general consensus in the literature that financial markets promote economic growth. Such a *market-based view* implicitly highlights the positive growth effects of government bond markets on economic growth (Levine, 2002). Findings of Baudouin and Arindam (2010) are consistent with proponents of the *market-based view.* However, this research adopts the stance of Ojah and Pillay (2009) who urge emerging market policymakers to recognise that deepening their debt markets may be a productive feature of their financial market development strategy.

Figure 2.7: Foreign direct investment flows into developing countries spur economic growth.



Source: Kumar (2007)

NOTE: Shaded area represents 95% confidence band

Figure 2.7 supports the theory that financial markets spur economic growth. A percentage increase in the FDI/ GDP ratio affects the performance of emerging economies as seen in the diagram. Figure 2.7 shows also, that though FDI may not increase economic growth immediately, beneficial effects are delivered by it in subsequent years. The response of GDP growth, in the diagram, began to decline after one lagged year of FDI; however, the cumulative response reached a peak after two years and continued to have a cumulative

growth effect on the economy. The cumulative effect of FDI is positive in the long run, even when the growth effect has dampened.

2.14 Theory of 'Original Sin'

Hausmann and Panizza (2010) explain 'original sin' as the result of severe currency mismatch. According to the authors ,original sin occurs when a country suffers from an inability to borrow abroad in its local currency and has serious implications for financial and economic stability. When the inability to borrow abroad in its local currency persists, a mismatch on the balance sheet occurs due to an accumulation of foreign currency denominated net debt to foreigners (Baek, 2013). A further dimension of currency mismatch is the maturity mismatch problem that occurs when short-term local currency instruments are used to fund long term investments (BIS, 2007; Thumrongvit *et al* 2013). Baek (2013) recognizes the divergent views on this subject in the literature. One view attributes currency mismatches to international factors such as transaction costs and network externalities whilst the other blames domestic factors, such as institutions, on currency mismatch. According to the Eichengreen (2003, 2005) school of thought, a close relation exists between currency-mismatch burdens and international influences, such as global market imperfections and transactions costs. The contrasting view of Goldstein and Turner (2004) argues that the primary causes of currency mismatches are domestic factors such as previous and current weaknesses in economic policies and institutional conditions.

The gravity of currency and maturity mismatch in emerging markets' debt structure is a conversation that cannot be taken lightly (Koeniger, Bussiere and Fratzscher, 2004). Such mismatches are important because they have the potential to magnify the effects of exogenous shocks, amplify the severity of crisis and stall the course of recovery subsequent to a crisis (Goldstein and Turner, 2004). Jeanneau and Tovar (2008) add that currency and maturity mismatches can cause the fear of floating hypothesis to occur by restricting the degree of exchange rate movements that the central government is prepared to accept. Seminal literature of Calvo and Reinhart (2002) conceives the term 'fear of floating' and

explains it as a situation where a country avoids swings in exchange rate in favour of a smarter exchange rate.

Large currency and maturity mismatches, also known as the 'twin peaks' or double mismatch problem were key contributors to the damaging financial crises in Mexico (1994), Asia (1997) and Thailand (2002) (Koenige *et al* 2004). According to Felman *et al* (2011) and Burger *et al* (2012) the failure of emerging economies to attract local currency bond market investment was pivotal to the currency mismatches and related currency crises. Local bond markets were severely underdeveloped in many emerging economies during the 1990s (Bae, 2012; Burger *et al* 2012). According to Caballero *et al* (2008) the underdevelopment of local debt markets, most probably, was related to the currency and maturity mismatch, which aggravated the emerging market crisis during the 1990s. Brazil, in the 1970s and 1980s, experienced a similar problem due to a relatively stunted maturity of public debt and its expansion (de Mendonca and Duarte Nunes 2011). Jefferis (2009) found that underdeveloped bond markets encourage governments and corporates to pursue reduced borrowing costs in foreign currency securities. Exchange rate changes and currency depreciation are likely to cause foreign currency repayments to be too high for borrowing governments and corporates, thus rendering them bankrupt (Global Financial Development Report, 2014). According to Maiyajima, Mohanty and Chan (2012) such movements in exchange rate operate in a non-linear style, suggesting a vulnerability to increased solvency risks for borrowers.

2.14.1 'Original sin' effects on financial and economic stability

Well-managed domestic and foreign currency bond markets reduce a financial system's susceptibility to 'original sin', 'twin peaks' and financial instability (Ncube, 2009; IMF, 2013). This is done primarily by increasing opportunities to utilize domestic savings and decreasing negative spill overs from banking sector deficiencies, which is wide-spread in Africa (Ncube, 2009). These developments enable the absorption of hefty and volatile capital flows thus supporting local and global financial stability (Ncube, 2009; IMF, 2013).

Jeanneau and Tovar (2008) and Bhattacharyay (2011) find that Latin American economies that have taken decisive steps to develop bond markets have reduced economic instability and currency mismatches. Consequently, several bond market development initiatives have been established by organizations and regional blocks on the premise of the stabilizing effects of domestic debt market development (Disley, Rubin, Scraggs, Burrowes and Culley, 2011).

Patel (2008), through a risk based approach, analyse government bond market development in Mexico and finds that macro-economic and financial stability rise with bond market development. Furthermore as stability increases, associated risk decreases (Patel, 2008). The findings are relevant particularly because Mexico is an emerging economy and possesses characteristics very similar to African emerging economies (Patel, 2008; Andrianaivo and Yartey 2010). However, institutions and legal rights in Mexico vary greatly from those in African emerging economies. Moreover, as was the case of Botswana, the relative lack of institutions in African emerging economies in comparison with Mexico may adversely affect macro-economic and fiscal development and emerge as a threat to stability (Jefferis, 2009).

Carriere-Swallow and Cespedes (2013) find that uncertainty shocks and economic volatility affect the well-being of emerging economies more severely and more persistently than developed economies. Economic stability and a decline in investment and private consumption are, according to the authors, decisive factors that contribute most to the decline of economic well-being of emerging economies (Carriere-Swallow and Cespedes, 2013). For example, a currency mismatch may occur when a country issues foreign currency denominated debt to fund local investments that generate local currency returns (Eichengreen and Luengnaruemitchai and 2004; Bhattacharyay, 2011). Unfavourable movements of the exchange rate may also exasperate the problem and severely affect a country's ability to make payments to the lender, thus distressing creditworthiness and undermining public confidence (Hawkins, 2005; Jeanneau and Tovar, 2007).

Economic and financial stability is important because it reduces a country's dependence on the banking industry (ICMA, 2013). Such a reduction is significant particularly since the sub-prime crisis of 2008 was triggered primarily by countries' over-reliance on the banking sector (Nunn and Trefler, 2013). Well developed and diligently implemented economic and financial policies, to a large extent, decrease a market's vulnerability to crisis and promote sustained growth (Ahmad, Sehgal and Bhanumurthy, 2013; IMF 2013). Massa and te Velde (2008) examine the effect of the 2008 sub-prime crisis on the financial markets of eight African emerging economies. The authors conclude that the extent of financial and economic turmoil effects was dependent on the economic and financial policies of each country and the manner in which the policies influence economic and financial stability of a country, suggesting a causal relationship between bond market development and economic and financial stability in an emerging economy (Massa and te Velde, 2008). Local currency bond markets contribute to financial stability by lowering currency mismatches and extending debt duration thus, decreasing solvency risk (ICMA, 2013). While solvency issues have received a lot of attention recently, governance issues have received the least scrutiny (Ellis *et al* (2014).

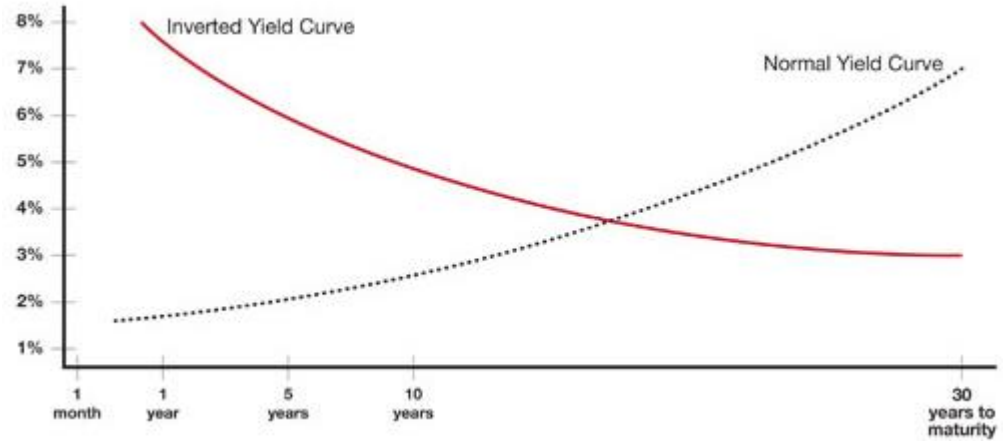
Collier (2014) and Ellis *et al* (2014) find that poor regulations and accounting systems may discourage foreign investors from purchasing domestic bonds. Baek (2013), in a study of 97 developing and emerging economies, ran unbalanced panel regressions for a data set spanning 1990-2004 and finds that improved institutional quality impairs the range of currency mismatching and thus, macro-economic and financial instability. A better strategy would be for the authors to use different weights of factors contribution to currency mismatch in the regression equations used. Such an approach would cater for the differences among countries with varying levels of debt sustainability (Arnott and Chaves, 2012). Furthermore, factor analysis would have been useful when selecting explanatory variables to insert into the regression equation (Wagenvoort, Ebner and Borys, 2011; Mwebi, 2013). The authors suggest that this finding is due to the deterioration of the net foreign-asset situation since markets with high institutional quality attract foreign capital (Baek, 2013). However, African countries, by virtue of their debt burdens, encourage the

inflow of foreign capital as a means to service their foreign loans. Ghana, for example, in 2014, actively prevented the outflow of United State dollars as a means to service the country's foreign debts, termed Brandy Bonds (Bax and Dontoh, 2014).

2.14.2 The yield curve

A yield curve is a measure of the return on fixed income securities and the performance of the secondary bond market (Nwiado and Deekor, 2013). It is a line graph that starts at the shortest rate to maturity-spot interest rate, and plots the relationship between yields to maturity and time to maturity for bonds of corresponding credit characters and asset classes (Millington, 2014). Furthermore, it is an essential yardstick that is used by financial institutions to make investment decisions and control interest rate risk (Chakroun and Abid, 2013). Du Preez and Marre (2013) describe yield curves as a plot portraying the spot rate of interest for a continuum of maturities, in certain time periods. A flat curve signals weak growth while, a steep curve suggests strong growth. The larger the difference between long and short term yields the steeper the yield curve (Millington, 2014).

Figure 2.8: Typical and inverted yield curve

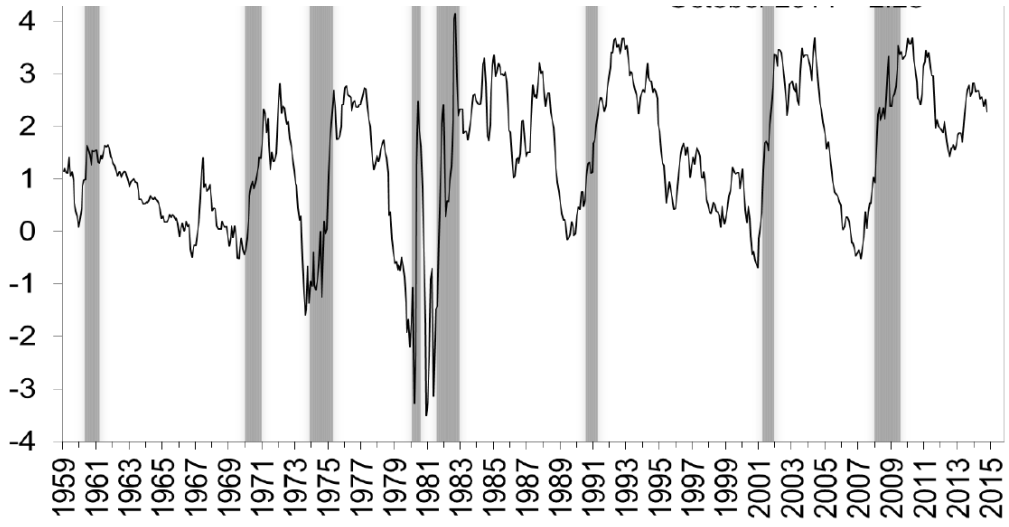


Source: Oppenheimer and Hollingsworth, 2013

Investors typically require higher yields for binding their money for an extended period of time than they would for bonds with shorter maturities. Figure 2.8 shows the association between bond maturities and bond yields in a normal yield curve. Further, in Figure 2.8, the

5 year bonds in the typical yield curve have a 2% yield whereas those with maturities up to 30 years have yields of 7%. The diagram also shows what occurs when a yield curve is inverted. It suggests that the rates for long term treasury bonds, in the case of inverted yield curves, fall below those of short term treasury bonds, thus signaling a change in long term expectations (Oppenheimer and Hollingsworth, 2013). Therefore, the establishment of a yield curve is a noteworthy benefit to the economic and financial stability of a country (Mehl, 2006). According to Chakroun and Abid (2013) yield curves are exceptionally valuable in the processes involved in pricing all fixed income securities. Sovereign yield curves can assist debit managers to gauge the risks and benefits of various sovereign borrowing strategies and are also very useful to corporations in approximating their cost of debt. Furthermore, the cost of capital markets can be bench-marked against other funding sources, such as non-concessional financing (Gueye and Sy, 2010). The yield curve possesses predictive power in the future behaviour of interest rates and inflation (Castellanos, 1998; Gueye and Sy, 2010). The U.S., as the most liquid and developed fixed income market is a fitting example of the predictive power of the yield curve.

Figure 2.9: U.S. Yield curve prior to, during and after the 2008 sub-prime crisis (monthly average percent)



Source: Federal Reserve Bank of New York, 15 October 2014

Figure 2.9 depicts the average monthly percentage of spread between 10 year bonds and three- month bills in the U.S. According to Haubrich and Millington (2014) the last seven

recessions were preceded by yield curve inversions, including the recent 2008 sub-prime crisis. The shaded area in Figure 2.9 to the far right shows the inversion of the U.S. yield curve immediately prior to the 2008 sub-prime crisis. A recession typically occurs a year after the inversion of a yield curve, as can be seen in the inversion of the yield curve in August 2006 and the start of the recession in December 2007 (Sangvinatsos, 2010; Haubrich and Millington, 2014). Thus, the ability to find the respective yield curves can signal a market's financial and economic stance and indicate potential spill overs (Mehl, 2006; Gueye and Sy 2010).

The rich value of yield curves, and their estimation in finance and economics, has been documented extensively by several authors including Angeletos (2002), Nazir, Alam and Nawaz (2010), Faraglia, Marcet and Scott (2010), Goswami and Sharma (2011) and Nwiado and Deekor (2013). The authors, however, caution that while yield curve estimation is beneficial, it can never take the place of an actual curve. While Endo (2013) acknowledges the value of domestic government bonds in price discovery and bench-marking a country's yield curve, the authors observe that this is not the case in most emerging markets because of their illiquidity.

Nwiado and Deekor (2013) have tested the theory that the mix of domestic and foreign participation in domestic debt markets generates liquidity and decreases the national yield curve. An auto vector regressive (AVR) model, among other tests, was applied to data from the Central Bank of Nigeria. The study found that contrary to the theory, foreign domestic bond market participation did not affect the national yield curve (Nwiado and Deekor, 2013). The authors however, caution, the results citing possible corruption of data. Furthermore, at the time of the study, Nigeria had instilled policies that prevented foreign investors from trading debt for a year after acquiring the instrument. The policy dictating such a stall, the Certificate of Capital Importation (CCI), has since been lifted.

2.15 Efficient Market Hypothesis

Deliberation regarding the character of market prices interested Fama (1970) throughout the infancy of his career. Under the supervision of Miller (1958) and Merton (1973) of the Modigliani-Miller Theorem and Black-Scholes-Merton model, Fama (1970) discovered that stock prices were not especially forecastable. Less than a decade later Fama (1970) propelled by his prior work, formalized the phenomenon by developing the efficient market hypothesis (EMH) (Sewelll, 2011; Kamal, 2014; Shiller, 2014). The assumption behind the EMH is that security markets reflect information about stocks in an efficient manner (Ayentimi, Mensah and Naa-Idar, 2013). According to Fama (1970) an efficient market is one in which prices, at any time, 'fully reflect all available information' (Fama, 1970, p 383). All the information accessible to investors is reflected by markets and market price fluctuations are not predictable (Zeren and Konuk, 2013). Further, in an efficient market, all investors have access to information at equal costs whilst operating costs are minimal to none (Alagidede and Panagiotidis, 2009; Sarac, 2013).

Bonjean and Simonet (2014) applied the Markov switching ADF unit route test and the recursive unit root test to 24 millet markets in Niger and observed speculative bubbles, albeit slight, in the data set. An absence of unit root in the Egyptian equity markets during the period immediately prior to and after the 25th January Revolution in 2011 is established by Kamal (2014). Kamal (2014) and Bonjean and Simonet (2014) also found evidence against the unit root hypothesis in Egyptian markets. Both studies, however, sample emerging economies and ample evidence supports the difference between the innate structure of frontier emerging and developed markets (Claessens *et al,* 1993; Karamera, Ojah and Cole, 1999; Kodongo and Ojah, 2011).

Harvey (1994) established, however, that emerging market returns are highly predictable and concluded that these markets are not efficient according to the EMH theory. Developed markets, conversely, have been largely found to reflect at least a weak form of the EMH (Klock and Bacon, 2014; Konak and Seker, 2014). One may infer, therefore, that the information asymmetry apparent in many emerging market economies is imbedded in the lack of unit roots within these economies since the EMH is about the quality and speed of

information in a financial market. Several recent findings also indicate anomalies in developed countries thus rejecting the EMH and raising the probability of a random walk (Schwert, 2003; Oran 2008). Zunino, Bariviera, Guercio and Martinez (2012) observe an absence of fixed income efficiency studies and attribute this disinterest to the typically larger trading figures of stock markets relative to bond markets. Notwithstanding these and other anomalies , the EMH is still the dominant paradigm regarding the rules of the market (Yalçın, 2010).

Anomalies, such as the January Effect, are documented in both stock and bond markets and are among many irregularities that give rise to doubts concerning the EMH (Schwert, 2003; Yalcin, 2010; Klock and Bacon, 2014). The turn of the month effect, turn of the year effect and the weekend effect are further observed deviations that have contributed to review of the EMH (Yalçın, 2010, Caporale, Gil-Alana, Plastun and Makarenko, 2014; Konak and Seker, 2014). Oran (2008) suggests the existence of other anomalies associated with human emotional state and geographic upsurge. Further controversies that have weakened the EMH range from simple enquiry about the validity of the hypothesis to the relevance of the proposition to contemporary financial markets (Lim and Brooks, 2011; Shiller, 2014). The EMHs proposition of a steady sate of market efficiency appears to be slowly evolving into a new paradigm of Adaptive Markets Hypothesis (AMH) (Mobareka and Fioranteba, 2014).

2.15.1 Adaptive Markets Hypothesis (AMH)

Lo (2004, 2005) formulated the adaptive markets hypothesis (AMH) under the assumption that the efficiency of the market may fluctuate from time to time due to altering market conditions. According to the novel hypothesis, efficiency is an attribute that continuously changes throughout markets and time rather than remaining static (Lim and Brooks, 2011). Indeed, it is very plausible that since the conception of the EMH in the 70s, financial markets and the world have greatly altered (Tapia, 2012). Many African countries were under colonial rule, globalization was not yet in motion and markets were not nearly as liberalized as they are today (Besley and Reynal-Querol, 2014). Additionally, the phrase 'emerging

markets' had not been coined yet and the intricacies of these unique markets were not fully appreciated (Khannan and Palepu, 2011).

A market's acceptance or rejection of EMH will guide the analysis applied to the market and the investment strategies used by its investors (Elze, 2010). Markets found to be efficient, in theory will have no arbitrage opportunities for investors and the more inefficient a market is seen to be, the more arbitrage opportunities are probable to investors (Bhattacharyay and O'Brien, 2014). For example, if the EMH were to hold true, the role of financial intermediaries would be negligible and markets would be self-supporting (Karemera *et al* (1999). According to Woolley (2010), the EMH does not attribute investor delegation to intermediaries with varying incentives and degrees of competence that cause mispricing and volatility. Fama (1970) accepts such variability in returns as rational, while Woolley (2010) and other behaviourists view them as irrational. Whether rational or irrational, the return variability is important as it affects all components of the financial market (ECB, 2014). Different modes of measurement may yield divergent results from the return variability of financial asset; it is therefore, imperative that the scale of measurement is appropriately selected for the attribute measured.

2.16 Term structure of interest rates

Dynamic term structure models (DTSMs), explain how yields of different maturities move over time, and the manner in which they relate to each other (Yung, 2014). A fundamental factor in delineating variances of interest rates on different securities in a market, according to economic theory, is the differences in their terms (Russell, 1992). Thus, differences in time till maturity are suggested as key to understanding why interest rates of various securities differ. No arbitrage opportunity is the main assumption of term interest rate models. Thus, investors are expected to receive the equivalent risk-adjusted compensation for bonds at varying maturities (Yung, 2014). The Pure Expectations Theory, Preferred Habitat Theory and Liquidity Preference Theory are three of the many theories of term structure.

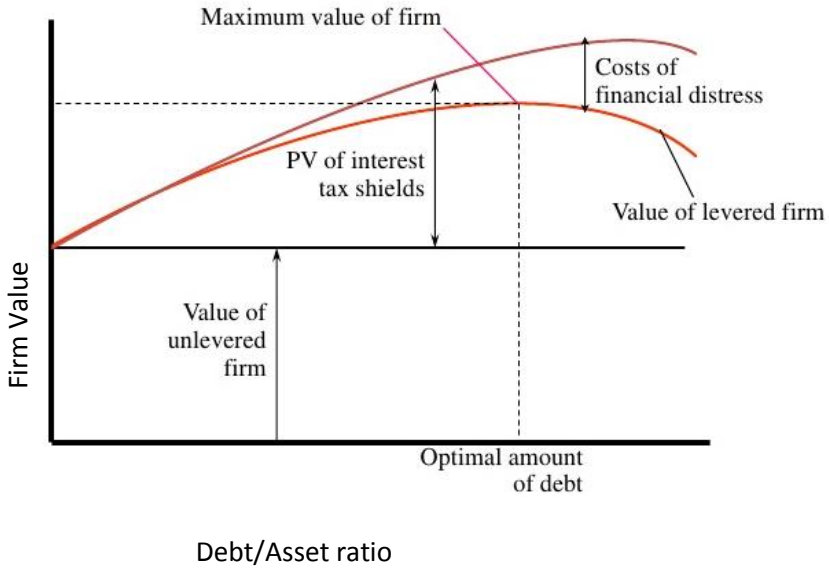
Pure Expectations Theory maintains that the slope of the yield curve is indicative only of the short-term interest rate expectations of investors. The upward slope of the typical yield curve is the outcome of investors' expectation of increased future interest rates (Irturk, 2006). A variation of the Pure Expectations Theory, the Preferred Habitat Theory, suggests unique investment horizons of investors as an added determinant of the yield curve slope (Greenwood and Vayanos, 2014). According to the theory, investors require compensation for purchasing bonds that are outside their distinct favoured maturity or habitat. Advocates of the Preferred Habitat Theory attribute higher long-term interest rates compared to short term interest rates to the greater predominance of short-term investors in bond markets (Greenwood and Vayanos, 2014; Wang, 2014). Longer term bonds thus, need to offer a higher premium to investors since it is outside the preferred habitat of prevalent short term investments. Liquidity Preference Theory, another derivative of Pure Expectations Theory, is similar to Pure Expectations Theory as it suggests the reflection of investor expectations from the yield curve. Much like the Preferred Habitat theory, Liquidity Preference Theory includes a term premium for investors of long-term bonds; however, the compensation is due to the risks attached to holding a security for an extended period of time. Similar to the Preferred Habitat Theory, this theory suggests that long term bonds have higher risk and higher premium than short term bond yields (Wang, 2014).

2.17 Pecking order theory

Modern capital structure theory commenced with the well-known Modigliani and Miller (1958) proposition of capital structure irrelevance. Subsequently, numerous theories explaining factors that drive the capital structure decisions of firms have emerged. The two most discussed are the Pecking Order theory and Trade-Off model. The underlying principle of the Trade-off model is that firms balance tax savings from debt against burdensome bankruptcy costs (Meyers, 1984). The Pecking Order theory explains a broader set of influencers of a firm's capital structure that other theories, including the Trade- off theory ignore. This model recognises reported and observed managerial decisions and describes the dynamics between market reactions to firm leverage which is lacking in the Trade-off theory.

The Pecking order theory sheds considerable light on the processes of making decisions about sources of finance (Meyers and Majluf, 1984). The theory postulates that a corporation will follow the path of least resistance when making capital funding decision. According to Myers and Majluf (1984), in the presence of information asymmetry investors will prefer to acquire funding through debt cause of the relatively lesser premium associated with debt financing. Thus, other funding sources available in Africa such as banks, are able to expropriate rents from fund seekers because of their knowledge that the seeker will not find substitute funding in a timely manner and terms (Ojah and Manrique, 2003; Ojah and Pillay, 2009). The fund seeker, usually a corporation bears a hold-up cost in the process (Ojah and Pillay, 2009).

Figure 2.10: Schematic view of payoff when firms issue debt.



Source: Adapted from Meyers (1984)

The firm level benefits of bond markets are expressed in Figure 2.10. It indicates that, in the presence of an additional source of debt, such as bond markets, more opportunities may arise to increase the value of firms than would be in the absence of debt. Logical application of the theory explains that more domestic bond markets offer more cost effective funding to more fund seekers and firms (Ebeke and Lu, 2014). Congruently, in the presence of bond markets, fund seekers are subject to less hold-up costs and rent seeking behaviour (Ojah and Manrique, 2005; Ojah and Pillay, 2009). This refines the allocation of resources mainly

by decreasing adverse selection and moral hazard (Ojah and Pillay, 2009). Prior to the execution of a loan, adverse selection occurs as the potential borrower holds superior information than the potential lender about the risks and expected returns of a venture (Chari, Shourideh, A. and Zetlin-Jones, 2013). Subsequent to a loan being taken, moral hazard may ensue should the interests of lenders and borrowers diverge (Crocket, 2011). However, Andrianova, Baltagi, Demetriades and Fielding (2011) argue that theoretically, the two terms are nearly identical and can be used to describe the same actions. A common denominator in the discussion about adverse selection and moral hazard is information and the reservation of information about one's actions, intent or knowledge thus fuelling information asymmetry (Fulghieri, Garcia, D. & Hackbarth, 2013).

Bharath *et al* (2009) present evidence on the relationship between debt preference and information asymmetry. Firms in the US are analysed over a 29 year period to establish support of the Pecking Order theory (Bharath *et al* 2009). The authors find, among other indications that in environments with informational asymmetry investors of bonds aimed to secure funds through debt. However, when information asymmetry reaches a certain threshold investors are forced to acquire funds through private means, which is more costly (Bharath *et al* 2009). Despite the developed market setting of the above mentioned study, one may deduce that a need exists for the development of domestic bond markets in African emerging economies, particularly since information asymmetry is rife in such settings (Bharath *et al* 2009; Gwatidzo and Ojah, 2014). The findings concur with those of Faulkender and Petersen (2006) in their proposition that domestic investors, able to access public debt, generally benefit from better debt capabilities than those who do not.

Opponents of the Pecking Order theory such as Frank and Goya (2003) and Fama and French (2005) find that small, fast growing firms rely on equity rather than debt. Leary and Roberts (2010) dismiss evidence of the Pecking Order theory as inconclusive. Fulghieri *et al* (2013) and Strebulaev, Zhuz and Zryumovx (2014) attribute, respectively, the maturity of a firm and the possibility of new growth opportunities for a firm on the choice in debt structure. While the findings above regarding debt and the Pecking Order theory are contradictory and stem

from western settings, many lessons can be learnt and applied to the African situation (Meyers 1984; Meyers and Majluf, 1984). Since institutions influence the capital structure of a firm, the large discrepancies of African institutions to those of the developed world will warrant caution to be practised (North, 1991). While the Pecking Order theory fails to explain the effects of agency costs, tax, and financial disturbances it is useful in explaining the link between firm level capital structure decisions and behaviour of the wider capital market, more specifically, bond market. The 2008 sub-prime crisis demonstrates the link between capital structure theories and bond market development. Information asymmetry and agency problems stemming from managerial choice of capital structure permeated into the larger financial system resulting in financial crisis.

2.19 Crowding-out theory

The capital structure decisions of firms have influential and far dated consequences for African financial systems. Domestic debt markets provide a further supply of capital that presents broader terms than those of non-bank private debt in comparison to bank debt (Ojah and Manrique, 2005; Ojah and Pillay, 2009). Domestic bond markets, by expanding investor prospects to use domestic savings and complementing bank financing, can decrease adverse consequences from vulnerabilities in the banking sector and the diffusion of global financial stress (IMF, 2013). However, according to Ismihan and Ozkan (2012), there is a high probability that, in countries where governments are the primary beneficiaries of bank loans, public debt may harm financial development. The possibility exists that the authority of government in an economy may crowd out private financial exchanges (Akitoby and Stratmann, 2008; Chami *et al* 2010; Miletkov and Wintoki, 2012) and also inhibit private market development.

2.20 Good governance: rule of law, accountability and transparency

Good governance is contingent on the basic values of transparency, accountability, fairness, equity and legal framework (Givens, 2013; Gilbert and Allen, 2014). However, Fayissa and Nsiah (2013) suggest that since the concept of good governance is evolving with time there is needed to constantly redefine its components. According to Rajan and Zingales (1998:498) governance is "… the complex set of constraints that shape the ex post

bargaining over the quasi rents generated by the firm…". The United Nations Developments Program (UNDP) (2002), from a more positive perspective, views good governance as an enduring attribute for accountability, efficiency, equity, the rule of law and strategic vision in transparency while maintaining strategic, economic and administrative authority. Most of the importance of good governance lies in the increase of information afforded by transparency (Kosack and Fung, 2013). For example, countries with high transparency have information available to the public. The increase in information gives the public more knowledge about laws and procedures of a country and to engage in or shun institutions with less information and lower transparency.

Schnackenberg (2010) and Schnackenberg and Tomlinson (2014) recognize the argument that transparency is dynamically created between institutions and individuals through the exchange of constructed information and interpretation. Thus, transparency is viewed as enacted and perceived institutional communications.

The converse view of Licht *et al* (2007) uses the phrase 'norms of governance' to explain democratic accountability, controlling corruption and the rule of law, and refers to them as pieces of a larger group of social norms. The apex of the governance and transparency relationship is institutions and these two concepts are very important in the analysis of markets and economic growth (Licht *et al* 2007). Law and Azman-Saini (2012) examined the task of governance and institutions in influencing financial development throughout developed and developing countries. Empirical results indicate that banking sector development is notably improved by institutions and governance. However, stock market development is found to have a "U" shaped relationship against institutional quality thus suggesting financial markets' varying responses to institutions and governance (Law and Axman-Saini, 2012). This suggests that while financial transparency has its advantages, costs may also accompany it.

Acemoglu and Robinson (2010), Ojah (2013) and Quayyum *et al* (2014) and similar authors suggest that good governance is not only beneficial for financial stability but, is a primary

factor contributing to the prosperity of a country. According to them, good governance acts as a conduit for economic and financial factors for a society's attainment of economic well-being (Acemoglu and Robinson, 2010; Kalj, 2013; Quayyum *et al* 2014). In fact, Tsamenyi, Enninful-Adu and Onumah (2007) suggest that increasing concerns about the corporate governance environment in Ghana may be linked to that country's poor economic performance.

Assorted definitions of transparency exist, as shown above; however, they all include the function of information accessibility (Albalate, 2012). Transparency is a necessary condition for accountability at all times, given that access to information establishes the initial stage in the accountability process (Baudouin and Arindam, 2010; Kosack and Fung, 2013; Truman, 2014). It is also a vital part of good governance and quality institutions, which in turn, enhance public welfare and benefit economic growth (Khalid and Rajaguru, 2010; IMF, 2013).

An intricate network of linkages among transparency, accountability, rule of law and economic growth exists, with an increase of the three variables supporting the growth of an economy (Claessens and Yurtoglu, 2012; IMF, 2014). Thus, as developed countries have demonstrated, it is essential for cost escalating behaviours to be limited. This includes the construction of explicit and enforceable property rights that delineate duties, obligations and privileges of individuals with respect to assets (Libecap, 1989).These comprise enforceable agreements, bonding of participants, brand names, formal contracts, guarantees and monitoring systems (North, 1987). Thus, formal, well-considered contracts and agreements foster good governance and are valuable tools to reduce inefficiencies of countries and the promotion of quality institutions (Claessens and Yurtoglu, 2012).Good governance and quality institutions are also associated with bond market development and economic growth (Mu *et al* 2013; IMF, 2014; Meyerson, 2014) .

A sound business environment spurred by good policies, policy implementation and accountability promotes a higher investment and growth. The IMF (2004), for example,

recommends collective action clauses for smoother management of bond contracts. Furthermore, under this frame of reason, political leaders mould the quality of government in harmony with a society's constitutional rule (Claessens and Yurtoglu, 2012). Parrenas and Waller (2004) advise that the development of bond markets need proficient direction from government agencies first and foremost, and then public-private sector partnerships. Therefore, political leaders with poor repute will have, by virtue of the intimate positive relationship between government quality and political stance, a negative influence on a government and its constitutional rule. According to Akitoby and Stratmann (2010) a situation like this will impede economic growth and hinder economic development. The weak transparency resulting from politicians of weak standing may obstruct economic activity within a country and parties opting to do business in the country thus rendering it not investable (Ladekarl and Zervos, 2004). Reform and review of the rule of law may assist in curtailing negative outcomes of weak transparency, lack of accountability, poor corporate governance and unguarded rules of law. The IFRS, for example, may reduce information asymmetry by making firms more transparent (Leung and Ilsever, 2013). The obligations invoked by the IFRS require stringent procedures that increase information dissemination and contribute to transparency and good governance, which are attractive attributes for investors.

Countries with relatively higher protection for creditors and investors will attract more domestic and foreign investors than those with weaker creditor rights (Ladekarl and Zervos, 2004; Leung and Ilsever, 2013). Claessens and Yurtoglu (2012) acknowledge that although one framework of governance cannot be applied to the contexts of emerging and developed countries, many aspects of governance apply to both types of economies. A country like Angola, for instance, has a codified legal system that guarantees uniform treatment of foreign and Angolan persons, adopts an arbitration law that is largely akin to that of the United

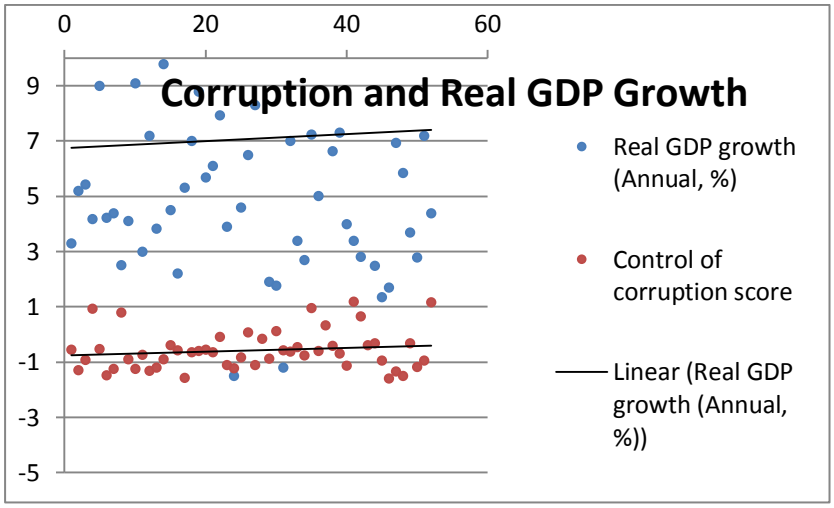
Nations Commission on International Trade Law (UNCITRAL) model and enforces intellectual property laws according to the WIPO (FBL Advogados, 2014). On the other hand, the legal

system in Egypt is based on a civil law system and Islamic Sharia centered on the French codified system (Nadoury and Nahas Law, 2014). One may therefore consider the Egyptian system as more friendly and accessible to investors who are familiar with Islamic Sharia and civil law system. Corruption is another hindrance to creditors and investors of a country partly because it ignores rules of law , rejects accountability and transparency and promotes personal gain and economic decay (Giapponi and Scheraga, 2008).

2.21 Corruption

Several authors including Lindstedt and Naurin (2010); Peisakhin and Pinto (2010) and Mensah (2014) have suggested an increase in transparency as a means to decrease corruption. Moreover, corrupted institutions and those with weak property rights have been found to retard economic growth which invariably also stunts the development of bond markets (Akitoby and Stratmann, 2010). Corruption, according to Licht *et al* (2007), is a social norm that agrees to the use of authority for a personal profit, in spite of any law or regulations. It is a disease of public power and reflects bad governance (Kostas, Salvati, Sioussiouras and Vavouras, 2013). Giapponi and Scheraga (2008) agree, suggesting that corrupt behaviour may not be inevitably viewed as problematic or morally incorrect in certain cultures. In fact, corrupt activities may be tolerated as a part of life in many societies (Licht *et al* 2007; Braguinsky and Mityakov, 2012). However, a more constructive view suggests that corruption may be valuable to economic growth by evading unnecessary bureaucratic procedures and more efficiently allocating resources (Looney, 2006; Batabyal and Yoo, 2007; Kutan, Douglas and Judge, 2009). The real cost of corruption, according to Nunn and Trefler (2013), is trust, as the pursuit of individual gain generates adverse selection and moral hazard and erodes transparency and ultimately trust. Mauro (1996) finds that corruption lowers public investment thus retarding economic growth whilst Ugur and Dasgupta (2011) express it as a symptom of institutional deficiency. According to Luna (2006) it is one of the greatest obstacles to prosperity, economic development, competitiveness, and political and social stability of countries.

Figure 2.11: The relationship between corruption and Real GDP growth in African countries

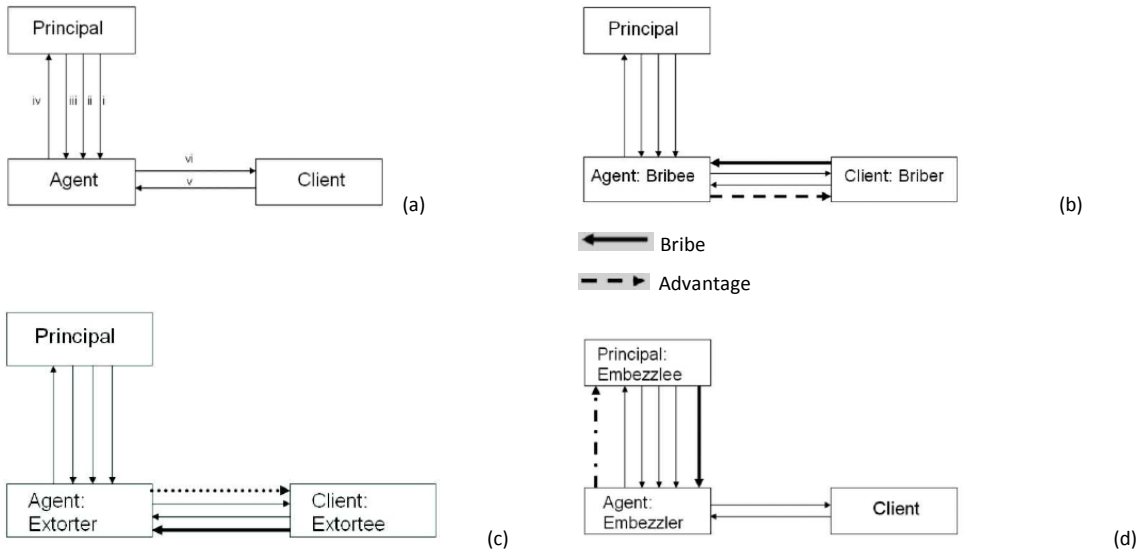


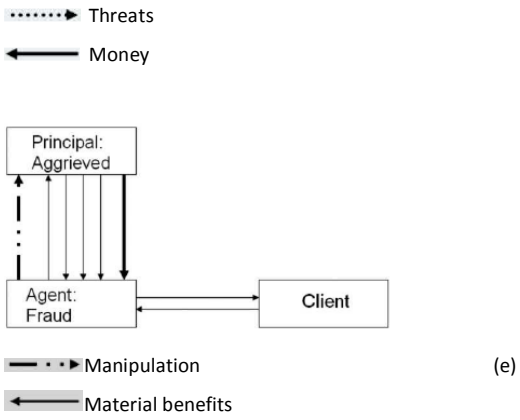
Data source: Worldwide Governance Indicators Database and World Development Database (2014)

Teorell and Hadenius (2006) and Mensah (2014) find a close relationship between poor governance and high corruption levels. The findings are supported by previous studies suggesting that a lower probability of corruption, driven by transparency, provides enhanced institutional frameworks for economic growth than would otherwise be the case (Albalate, 2012; Autore, Boulton, Smart and Zutter, 2014). The quality of institutions plays a big role in the outcomes of capital market activities (Autore *et al* 2014; Narayan, 2014). According to Akitoby and Stratmann (2010), default risk is decreased as institutions improve, inferring that culture has a large influence on corporate risk taking and managerial risk attitudes globally. Thus, sound or improved institutions promote trust primarily through reassuring that investors' rights exist and are enforced (Laederkral and Zervos, 2004; Autore *et al* 2014; Lewellyn and Bao, 2014). Law and Finance theory, such as the Coasian view, explains this in the conjecture that in countries with institutions where legal systems are enforced, private property and investors' legal rights are implemented and protected, investors are keen to invest and economic growth, including bond market development is likely to follow. Conversely, in countries with institutions that do not support private property and investors' legal rights, financial development, more particularly bond market development, is stunted (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1997; 1998, 2000).

Akitoby and Stratmann (2010) use panel data fixed effects regressions to find that political institutions are relevant to financial markets. A similar finding in favour of institutions in financial markets and therefore bond markets, is that of Miletkov and Wintoki (2012) who employ panel regressions with dummy variables and vector auto regression models for 129 countries and establish a positive causal relationship between financial development level and the ensuing quality of property rights in institutions. Ogola (2012) approaches institutional responsibility and influences from a social responsibility stance. Unlike Miletkov and Wintok (2012), Ogola (2012) use sub-Saharan developing countries in the sample and identify seven social responsibilities of financial institutions. The study heavily relies on Sen's (2000) theory of development. While Akitoby and Stratmann (2010) repeatedly use GDP as a variable in equations, Ogola (2012) explicitly rejects any performance indicators in the framework construction. Moreover, although Miletkov and Wintoki (2012) focus the study on legal institutions, Ogola (2012) does not include legal compliance in the framework because, under socially responsible institutions, the study postulates that the equal distribution of wealth and legal issues are superfluous. Institutional theory posits that institutions that facilitate the efficient operation of economic activity can dissolve any doubt related to asymmetric information and the probability of opportunistic behaviour of transactions thus demonstrating the critical role of institutions, both formal and informal (North, 1990).

Figure 2.12: The various paths in the development of corruption (a-e).





Source: Sz´ant´o, T´oth and Varga. 2012. The social and institutional structure of corruption: some typical network configurations of corruption transactions in Hungary.

Figure 2.12 shows the development paths of typical types of corruption, according to Sz´ant´o (2012). Figure 2.12 (a) in the diagram shows the principal-agent-client relationship where the opportunity for moral hazard exists. Moral hazard can occur as one party, the agent, acts on behalf of the other, the principal. Agents tend to be more informed of their own attitudes, attributes, intentions and actions given that the principal can never know the full scope of their abilities. The result is the opportunity for an agent to behave in a manner that is contrary to the principal's interest. This is when corruption occurs (Sz´ant´o, 2012). Bribery, a form of corruption, is illustrated in figure (b). It occurs when the client acts as a briber and gives the agent payment in exchange for a service or contract to which he is not entitled. When the agent uses his power or coercion to extract payment from the client, extortion, as seen in figure (c) has taken place (Sz´ant´o, 2012). Figures 2.12 (d) and (e) show how embezzlement and fraud occur when threats and material benefits are exchanged by the principal, agent or client for material gains that are not otherwise owed to the party (Sz´ant´o, 2012).

One may consider the bond market as an institution, like any other, that intermediates the surplus and deficit units within the capital markets. As reflected above, an institutional environment may be deemed poor for many reasons, including poorly defined property rights, inefficient legal systems and high corruption. When a poor institutional environment is present the flow of funds from surplus to deficit units hampered. For example, in the

presence of an inefficient and corrupt legal system a borrower may deliberately fail to honour their debt obligations. This results in investor reluctance to relinquish the control of their surplus funds due to concerns about losing it. Thus, even when there is a demand for funds and surplus units have resources, surplus funds may still be unsuccessful in shifting to deficit units. The development of any intermediary, particularly bond markets, is hindered in such a setting. Furthermore, surplus units are then compelled to rely on their own resources, such as retained earnings.

2.22 Culture

Hofstede (1984, 2001), in a seminal contribution, depicts culture as "…the collective programing of the mind which distinguishes the members of one human group from another…" (Hofstede, 2001, p 25). Much like Hofstede (2001), Purnell and Paulanka (2003), House, Hanges, Mansour, Dorfman and Gupta (2004) and Hall (2005) suggest behavioural patterns and the dissemination of customs, beliefs and norms occurring through culture. Various cultural and economic features exist among developing countries with very different levels of corruption prevalent among the countries (Kutan *et al* 2009, Fayissa and Nsiah, 2013). Hearn (2014) observes a distinct difference in the institutional context among civil code and common law countries and between countries in general. Research finds that country level informal institutions induce communal, intellectual and customary contexts for economic agents, thus revealing the huge role of culture in financial markets (Abdi and Aulakh, 2012; Lewellyn and Boa, 2014). Lewellyn and Boa (2014) suggest that institutions develop as individuals, reason and draw conclusions and interact with other. The culturally instilled individuals through their beliefs, motives and preferences express their cultural influences into institutions (Cieslewicz, 2013). Thus, through the individuals who preserve and nurture them, institutions are influenced by culture (Cieslewicz, 2013; Claessens and Yurtogly, 2013; Miletkov and Wintoki, 2012). La Porta *et al* (1997, 1998) validate the above propositions and suggest the spread of legal traditions through colonization and imitation and explain the cross cultural variations in legal institutions and property rights around the world. Miletkov and Wintoki (2012) propose that a country's distance from the equator and residing continent explain its property rights quality. Sowell (2008) and Nunn (2009) use

geography to explain variations in institutional quality. Furthermore, Stulz and Williamson (2003) and Mensah (2014) establish that religion and corruption respectively have a gradual escalating relation to perceived corruption and relatively increased hostility to private property.

Bhaird and Lucey (2014) view culture as an essential variable in cross-country variations. In agreement with Mensah (2014), Stulz and Williamson (2003) and Coccia (2014) suggest religion as very significant in institutional development. Beracha *et al* (2014) find evidence of culture as an important determinant of trade frequency suggesting institutional differences as significant because of its causal relationship with culture. Similarly, Li, Griffin, Yue and Zhao (2013) employ a hierarchical linear modelling technique and data from 35 countries to conclude that culture has a significant influence on corporate risk-taking.

Tabellini (2010) suggests that institutional quality typically is determined by inherent cultural values and proposes national culture as the yoke connecting economic and political history to the present character of institutions, since institutions are intricate alterations of historical responses to interactions between individuals and objects (Fear and Azambuja, 2014). Williamson (2012) emphasizes the importance of interaction for cultural progression. Peaceful, voluntary interactions including economic exchange and involuntary exchanges through colonization and conquests contribute to the cultural development of societies (Williamson, 2012).

2.23 Colonialism

Colonialism, according to Dippel (2014) is a historical phenomenon of immense depth, thus any effort to compress it into a single definition will immediately incite resistance. This idea is important to understanding economic patterns and bond markets in Africa. Acemoglu *et al* (2005) explain colonization as the imposition of foreign institutions on the local population's prior structures, which comprised mostly local informal institutions. According to Gould (2007) colonialism is the deliberate and consistent invasion of, not only a territory but, culture and people.

Zolfagharkhani and Shadpour (2013) explain how colonizers branded African views and customs as barbaric, consequently demolishing African culture and supplanting it with their own foreign culture. The gravity of loss of culture of a nation is immense and has been well documented, among others, by Cesaire (2010) Nunn and Trefler (2013), Zolfagharkhani and Shadpour (2013). Cesaire (2010) recognize the elimination of traditional culture as one of the worst offences of colonialism primarily because there is no alignment between the foreign culture that is imposed and the traditional culture that is uprooted. Consequently, Dimico (2014) suggests that colonization is detrimental to economic development.

The widely vetted theory about culture by Hofstede (1984), later House *et al* (2004) and more recently Peterson and Wood (2008), is that it has persistent effects on a person and is a primary mechanism that directed the behaviour among locals prior to colonialism (Zolfagharkhani and Shadpour, 2013). The imbued, programmed culture of respective indigenous people would be highly persuasive in shaping the pre-colonial culture (Hofstede, 1980). It follows that colonized countries would experience a cultural and institutional disjuncture caused by their peoples' separation from familiar tradition and religion and the imposition of unusual living principles. The resulting confused, ill fitted culture would have seeped into domestic institutions, as suggested by Hofstede (1984), Licht *et al* (2007) and Cieslewicz, (2013).

2.25 The theoretical flaw in current bond market theory

Many theories used in African policymaking are based on neoclassical concepts (Booth, 2003). Post-colonial plans for Africa including structural adjustment were grounded in meta-theories and many authors have argued that such theories are embedded in the colonial era policies, which were devised by former colonizers and thus may be a continuation of the colonizer and colonized relationship prevalent in Africa during colonialism (Ayittey, 1991; Walwema, 2013; Kang, 2014). According to Carmody (1998), structural adjustment in Africa is rooted in neo-classical economics drawn from industrialization experiences in the U.S. and Britain. Thus, when colonization concluded and

African countries won independence, albeit under the close guidance of former colonizers, neoliberal and development theories founded on European and U.S. experience were used as a solution to African underdevelopment (Mokube, 2011; Mkandawire, 2014). Thus, a normative and epistemological obstacle may arise as African leaders and policy makers seek to establish suitable theory, without falling prey to repetition of the type of colonial authority that Africa seeks to evade (Ayittey, 1991; Mercer, Mohan and Power, 2003).

Andreasson (2010) summarizes the findings above perfectly by proposing the dismal failure of orthodox socio economic development strategies in Southern Africa. Nelson (2008), Alemazung (2010), Mokube (2011), Walwema (2013) and Mkandawire (2014) suggest that neither developmental nor neo-liberal policies appear to have rid Africa of her persistent socio-economic ills. Andreasson (2010) argues that the apparent failure of most development theories necessitates the development of strategies that combine theory and African development empirical studies to establish policies for sustainable development. Therefore, initiatives such as this study, that support growth and development, must understand and appreciate the constraints in Africa such as, high indebtedness (Aryeetey, 1991; Muhanji *et al,* 2013).

Transparency, accountability, rule of law and good governance are key constructs in the conversation about institutions, markets and economic growth. Information made available to the public has positive effects on transparency and ultimately economic growth. This is in part due the ability of the public and investors to make informed decisions from the information made available to them. Arguably, corruption, which varies across cultures and countries, stifles economic growth; however, it can be reduced by increasing good governance and adopting and enforcing rule of law. The African situation is unique because of the role of colonialism in shaping its present state. Colonialism is a key occurrence in the existence of Africa and a standardised approach is not suitable in an analysis of the continent. Opponents of theories such as the New Institutional Economics approach corroborate the uniqueness of the African situation in proposing that a one size fits all approach cannot be applied to Africa .

Section 2: Work on determinants of bond market performance

The work of Eichengreen and Luengnaruemitchai (2004) is one of the most important investigations into bond market performance determinants. Inspired by the 1997 Asian crisis and the dismal feat of Asian economies, they used panel data on a set of socio-economic and institutional factors for empirical estimation. A sample of data from 41 developing and developed countries, with a focus on Asia, from the year 1990 to 2001 was employed in the study. Many measures of domestic currency public bond markets were regressed against various explanatory variables and, whilst correcting for autocorrelation and heteroskedasticity, the authors applied GLS. Fiscal balance, interest rate spread, GDP per capita at purchasing power parity, quality of bureaucracy, volatility of exchange rate, and banking sector concentration were all found to be negative and significant determinants of government bond market performance. On the other hand, an open capital account, a positive investment profile, GDP at purchasing power parity, distance from the equator, exports, English origin and banking sector concentration were found to be positive and significant for government bonds.

Eichengreen and Luengnaruemitchai (2004) observed that for the private bond market accounting standards, domestic credit, corruption, and distance from the equator, GDP at purchasing power parity, exports, the dummy for Asia and the quality of bureaucracy were positive and significant determinants. The interest rate spread, English origin and exchange rate volatility were negative and significant determinants. The authors concluded that transparency, proxied by corruption, minimal bureaucratic quality and poor accounting standards hinder development. Consistent with the public bond market analysis, market size was established as a positive determinant of bond market performance. Thus, Eichengreen and Luengnaruemitchai (2004) concluded that size is a major determinant of bond market performance. The larger the debt market, the better the performance tends to be. Capital controls dissuade bond market development ;thus, trade openness would be a positive determinant of bond market development (Mu *et al,* 2013). An extension of the above analysis is carried out by Eichengreen, Panizza and Borensztein (2008); however the study is focused on the Latin American context.

Eichengreen (2008) is similar to Eichengreen and Luengnaruemitchai (2004) as both employed panel data on developed and developing countries. Both studies also investigated government and private bonds; however, the later study added financial bonds to the analysis. Country size was found to be positive and significant in the two studies whilst trade openness was a positive a and significant variable for bond market development. Countries with higher creditor rights tended to have smaller private bond markets. This conclusion is contrary to other studies of bond markets and particularly counter-intuitive. (Mu *et al* 2013).

Interest rates are positive and significant determinants for Eichengreen and Luengnaruemitchai (2004) and Eichengreen *et al* (2008); however, the latter study only found interest rates in private bond markets to be significant. Akin to Eichengreen and Luengnaruemitchai (2004), legal origin influenced bond market performance. The Latin American dummy variables in the above study were negative and significant. Eichengreen and Luengnaruemitchai (2004) conclude that critical determinants for bond market development are: country size, development of the financial system, geographical factors and historical elements, while only minor explanatory power exists in pension privatization, investor protection, transaction costs, openness and such policy component as macroeconomic stability.

Claessens *et al* (2007) examined macroeconomic and institutional variables and the role they play in the development of government bond markets for domestic and foreign bonds. Panel data for 36 countries over the period 1993-2000, were used. The authors observed that better fundamentals positively influenced the size of the government bond. Further, the foreign currency stock debt was more sensitive to these fundamentals than the stock of domestic currency debt. Inflation, fiscal burden, capital account openness and legal origin were also relevant variables of the study.

Khalid and Rajaguru (2010) focus on the influence of socio-economic and institutional variables on the development of a country's bond market. The model, an extension of Claessens *et al* (2007), was estimated over the years 1998- 2007 across a sample of 47

countries. A two least square technique was employed to estimate the model and GMM to confirm robustness of the empirical tests. The study, in concurrence with Eichengreen and Luengnaruemitchai (2004), Claessens *et al* (2007) Eichengreen *et al* (2008), Bae (2012) and Mu *et al* (2013) found that macroeconomic variables such as the size of the economy were decisive determinants of domestic bond market size particularly in emerging economies. The authors observed also that institutional factors were valuable determinants of bond market performance; however, as the sample switched from developed to emerging economies the importance changed. Institutional quality became more important as the sample tended toward emerging and developing economies. Conversely, as the sample switched from emerging economies to developed economies the significance of institutional quality waned.

Bae (2012) examined which variables – capital controls, institutional characteristics or macroeconomic variables – best explain country variances in bond market development. Cross country panel regressions were estimated to establish if contrasts in bond market development could be attributed to variations in capital control variables, institutional characteristics and macroeconomic variables. Much like Eichengreen and Luengnaruemitchai (2004) and Eichengreen *et al* (2008) public and private bond markets were examined separately by Bae (2012). The analysis extended from 1990- 2009 for developed and developing countries. Similar to Eichengreen *et al* (2008), Bae (2012) found that institutional quality had no value in determining bond market performance. Bae (2012) found that larger private bond markets occur with bigger public bond markets. The only significant variable applicable to financial bonds was GDP per capita. Further, the study found a bigger, more concentrated banking sector to be conducive to market development. A concern of the study was the validity of the data used.

Burger and Warnock (2006) examined the development of domestic debt markets across 49 countries. Much like Eichengreen and Luengnaruemitchai (2004), Eichengreen *et al* (2008), Khalid and Rajaguru (2010), Bae (2012) and Mu *et al* (2013) public and private bonds were analysed separately. Multivariate tests, including OLS regressions were applied to the cross

section of the sample. The authors found that countries with more resilient rule of law and sound inflation had larger corporate and sovereign bond markets. Fiscal policy was the primary distinction between corporate and sovereign bond markets. Inflation, according to Burger and Warnock (2006) is a vital determinant of bond market performance particularly because of the effect it has on a country's need to borrow from abroad and possibility of the 'original sin' phenomenon occurring. The only studies of bond market performance determinants that mention 'original sin' and the benefits of reducing foreign debt issuance in favour of local currency debt markets are Burger and Warnock (2006) and Khalid and Rajaguru (2010).

Mu *et al* (2013) concentrated on bond markets in sub-Saharan Africa, developing a baseline econometric model in harmony with Claessens *et al* (2007), Eichengreen *et al* (2008) and the original model presented by Eichengreen and Luengnaruemitchai (2004). Data for 36 countries across the years 1980 -2010 were used. Mu *et al* (2013) established that government bond market capitalization was related to interest rate volatility, improved institutions, and was inversely associated to fiscal balance, exchange rate volatility, current and capital account openness and higher interest rate spreads. Size, economic and financial market development, interest rate volatility and improved instruments were considered corporate bond market capitalization determinants. Inversely associated variables were current account openness and increased interest rate spreads. Parallel with Burger and Warnock (2006), Mu *et al* (2013) identified interest rate volatility as a key determinant of bond market performance.

Bhattacharyay (2011) also established interest rate spreads as a key determinant of bond market development in China. Simple OLS, multivariate OLS, fixed effects, random effects and GLS models were applied to time series and cross section panel data for the years 1998-2008. While controlling for heteroskedasticity and panel specific autocorrelation, economy size was found to have a positive, significant relationship with public and corporate bond market development. Economy size appears to be a recurring determinant among the studies reviewed so far, presumably because larger economies are likely to have increased

accessibility to financial instruments, reduced transaction costs and increased liquidity (Sibanda and Dubihlela, 2013). Bhattacharyay (2011) observes that a decrease in exchange rate volatility improves bond market performance. Furthermore, banking system development and the stage of development are positively linked to development of bond markets while the study detects a negative relationship between corporate bond market development and banking system development. Trade openness is a significant, positive performance determinant for the corporate bond market. While common variables and policy implications exist across all the studies examined, some findings and conclusions contradict each other.

Vast arrays of variables determine the performance and size of bond markets, as demonstrated in studies examined in this chapter. These studies show that not all determinants are applicable in all contexts. For instance, Bae's (2012) investigation of bond markets in China concludes that institutional quality has no value in determining bond market performance. However, Khalid and Rajaguru (2010), in their analysis of developed and developing markets observe that institutional factors are valuable determinants of bond market performance whilst Mu *et al* (2013), in their study of sub-Saharan African bond markets find that government bond market capitalization is related to institutions. One may argue therefore, that the varying time frames, analytical techniques used as well as study areas explored may have contributed to these differences. As a further illustration, Khalid and Rajaguru (2010) used data from 1998-2007 while Mu *et al* (2013) employed data from the year 1980 -2010. The expanded time frame of Mu *et al* (2013) may have captured events between 1980 - 1998 and 2007 – 2010 that reject the significance of institutional quality. It appears also that while the Eichengreen and Luengnaruemitchai (2004) econometric framework has been relied on heavily by authors of bond market development, they have ignored the propositions of Eichengreen (1998).

The wider social context in which daily financial transactions are embedded, according to Eichengreen (1998), is made up by culture, in the sense of shared values, social norms and interpersonal interactions. The author urges researchers to include cultural and financial

history in their analysis because this is the only means to conduct rigorous theorizing, transparent model building and robust hypothesis testing.

The only study that finds historical variables as relevant determinants of bond market development is Eichengreen *et al* (2008); the variables were pertinent only to corporate bond markets. This suggests a potentially rich enquiry that has not been fully addressed.

Section 3: Lessons learnt from bond market development initiatives

Initiatives for bond market development are implemented as governments, regions and IFIs recognize and appreciate the many benefits of bond market development (Suk and Hong Bam, 2008; Blommestien, 2009; Garcia-Kilroy and Silva, 2011; IMF, 2013). The most prominent initiatives, arguably, are the Asian bond market development initiatives, the African bond market initiatives and the initiatives spurred and managed by international financial institutions (IMF, 2013; IMF and World Bank 2013). All initiatives aim to advance bond market development; however, it is noteworthy to understand the reasons behind them and their methodological underpinnings (Pelizzon, Subrahmanyam, Tomio, 2013). Such an understanding enables one to appreciate the factors contributing to the outcomes of the initiatives.

Initiatives such as the G-20 Bond Market Development Plan and Action Plan intervene and assist developing and emerging economies to develop domestic bond markets; however, one should appreciate the private interests of the G20 and G8 groups (BIS, 2007; IMF, 2013). According to BIS (2007) a key objective of international financial institutions' (IFI) issuance of emerging market currencies is typically to exploit the cost effectiveness involved. A major factor is that the AAA rating of IFI'S permits the arbitrage of returns in several markets including swap markets (BIS, 2007; Christensen, 2014). BIS (2007) adds that the relatively small amounts of international financial institution local currency bonds issues that are launched with the intention of domestic bond market development have a very discerning impact on the development of bond markets.

A practicable example is that the IMF, the World Bank, the European Bank for Reconstruction and Development (EBRD) and the OECD - all international financial institutions – were commissioned by the G20, to "…draw on their experience …." to develop a diagnostic framework to detect overall preconditions, key factors and limitations for effective local currency bond markets (Balino and Sundararajan, 2008; IMF, 2013, p1). Balino and Sundararajan (2008) acknowledge the unquestionable assistance and expertise emerging and low income countries can offer developed countries. They assert that a broad view is not appropriate for the public debt market scenario because countries at varying stages of bond market development may have to alter the framework considerably (Balino and Sundararajan, 2008; IMF, 2013). To improve the framework, generalization may be detrimental to the country on the receiving end particularly considering the vast inconsistencies in the socio-economic realities of Africa and Western nations (Ehrenberg, 1995; Xiaoyun, Gubo, Lixia, Lixia, Leshan, Zhanfeng and Jin, 2012). Given the large differences in frontier, emerging and developing markets such an approach may be complex (Nellor, 2008; ACCA, 2012). According to Kovala (2014) these differences cannot be disregarded even through different conceptualizations. Similarly, Welter (2012) highlights the wealth of information in appreciating context, while analysing a position.

Kovala (2014) indicates that contexts are the basis and conclusion of analysis in unison, while Welter (2012) views contexts as powerful lenses and not merely variables in analysis. The essential dimensions of context frame ones experience of a situation (Welter, 2012; Kang, 2014; Kovala, 2014). Welter (2012) considers contexts to impact bond market development but bond market development unable to influence contexts. He suggests that the socio-spacio context of bond market development, where the culture-based rules of a setting reside can cultivate the eruption of norms. It may be argued, therefore, that it is essentially impractical for the international institutions commissioned by the G20 Action Plan to create a diagnostic plan of action, based on elicited experiences from their more developed locations. To address the matter of context, the time, history and location variances of IFI experience and that of the African situation are worthy of a brief assessment.

The Bretton Woods (1994) conference gave birth to the major IFIs such as the IMF, the WB and the General Agreement on Tariffs on Trade (GATT), now the World Trade Organization (WTO) (Hope, 2011). Contrary to common belief, the vast majority of IFI's were not primed to assist developing countries (Easterly, 2002; Hope, 2011; IFC, 2011). The IMF was given the duty to monitor and supervise the implementation of the rules set forth to the member states at Bretton Woods (Arestis and Singh, 2010; Hope, 2011; Martin, 2013).

Two main proposals were considered in the monetary system design, one prepared by Britain's John Maynard Keynes (Keynes Plan) and the other by Harry Dexter White of the U.S. Both planners of the monetary system arrived at the process with predisposed Western experiences and distinctively Western approaches to development (Hope, 2011; Tilly, 2013; Kovala, 2014). For example, Harry Dexter White was a contentious US economist with a background in the U.S. Treasury, while Keynes, arguably the most influential economist of the 21st century, presented theory that focuses on demand side economics thus, largely disregarding Africa's needs for both demand and supply side variables to achieve optimal sustainable growth on the continent (Boughton, 2000; EDAR, 2014). The international economic system postured by Bretton Woods was generally productive for fostering sustained global economic growth and development through market-based, open trade systems (Eichengreen,1993; Martin, 2013). During most of this time African countries were under colonialism or recently out of colonialism and thus experiencing completely different contexts of specific dimensions from those of Bretton Wood countries (Arestis and Singh, 2010; Heldring and Robinson, 2012). The key argument is that, the vastly divergent contexts and experiences will significantly reduce the ability of IFI's to be conscious of ,and understand the African environments enough to form sustainable developmental bond market development policies.

The aggregate Asian bond market is negligible particularly when compared to the number of outstanding bonds in the US (Mizen and Tsoukas, 2013). However, the vast efforts of Asian governments have caused Asian bond markets to improve remarkably since the start of

their bond development initiatives. According to Gyntelberg, Ma and Remolona (2005) subsequent to the Asian crisis the development of deep, liquid regional bond markets became a priority for Asian governments. Bond markets have not yet met a critical mass, and trading volumes continue to be relatively subdued (Eichengreen *et al* 2006). However, the Asian Bond Market Development Initiative may be viewed as a success because it achieved the greater aims of bond market development- financial stability, socio-economic development and remarkably decreased risk for currency miss-match (Parrenas and Waller, 2006; Yoshitani, 2011).

Mexico also found success in its bond market reform initiatives after the bitter outcomes of the 1982 Latin American debt crisis and the 1994 Tequila crisis (Suma, 2007; Bekaert and Harvey, 2003). The Mexican government produced negative fortunes but, launched a remarkable turnaround strategy in 2006 by issuing a 30 year fixed-rate peso-determined bond, thus attracting investor confidence and achieving a complete Peso yield curve (Patel, 2008). Mexico, by learning from past experiences and contexts have become prominent among other bond markets in Latin America (Burger, Warnock and Warnock, 2008; Patel, 2008).

Other success cases are Chile and Singapore (Braun and Briones, 2006b; Sin, 2005). The Chilean state imposed stern interventionist economic policies that eventually resulted in financial market decline in the 1930s (Braun and Briones, 2006b). Subsequent to the financial and political crises including the military coup of 1973, Chile swiftly progressed toward market-centered policies (Cifuentes, Desormeaux and Gonzalez, 2002; Claro and Soto, 2014). The Chilean government was able to use the experience learnt from previous financial market and political failure to create a sizeable impact in its corporate bond market, even during a downward economic cycle (Kovala, 2014; Claro & Soto, 2014). For example, from the period 1980-2004 the corporate bond market grew by about 150% of GDP, while from 1995-2004 Singaporean corporate debt market, new issuance and outstanding increased only by approximately 15 % of GDP (Truman, 2014).

The Singapore Monetary Authority has arguably, presented the most worthy example of a successful bond market development initiative (Braun and Briones, 2006a; Claro and Soto, 2014). Subsequent, to 1998 the country had a small and underdeveloped bond market with bonds mostly issued to meet the statutory requirements of banks' demand for liquid assets (Sin, 2005). Furthermore, a liquid yield curve was created thus lessoning the heavy reliance firms had on banks (Gambacarta *et al* 2014).

A common theme in successful bond market initiatives is the involvement of the government particularly, the benefits of good management of the government securities market (Balino and Sundararajan, 2008). However, the authors caution about the obstacles in crafting a sound government securities market framework consistent with a country's level of development (Balino and Sundararajan, 2008).

African governments are fiercely attempting to reform their bond market initiatives. Evidence suggests that they usually experience limited success and, invariably request the services of IFI's (AFMI, 2013). The government of Ghana, for example, experienced such difficulty maintaining economic stability, and in August 2014, the country requested the IMF assistance (Sy and Deressa, 2014). The economic problems in Ghana stem, partly, from the badly managed government securities market and over reliance on international bond issuance to the neglect of the local currency bond market (Bax and Dontoh, 2014). However, the efficiency of bond market development initiatives vary (AFMI, 2014; Mu *et al* 2013). According to AFMI (2013) while there are very scant collaboration efforts more inclusive partnerships on current and future initiatives are required to maximize collaborations and facilitate success.

President Mahama of Ghana, prior to requesting assistance from the IMF, on 13 May, 2014, advised that the country was in search of a home-grown strategy to resolve its economic ills (Bax and Dontoh, 2014). This suggests that while some countries would like to develop bond markets without the intervention of IFI's, some African countries do not have the capacity to execute such initiatives. According to the AFMI (2013) the fragmentation of many African

markets is partly the result of excessive amounts of bonds issued in the absence of a benchmark yield curve. Other countries, such as Botswana, struggle with very few governments bond issues because the government tends to run budget surpluses and relatively cost effective concessional loans from donors (AFMI, 2013; Bank of Botswana, 2014).

An outcome of the G20-endorsed action plan is a diagnostic framework that includes microeconomic policy framework, primary and secondary market structures, investor base, legal and regulatory frameworks and market base, among others (IMF, 2013, 2014). It appears to be quite comprehensive, and highlights the difficulty of using such a framework in the African context. For instance, the framework repeatedly mentions the importance of transparency, particularly for the development of the short end of the yield curve (IMF, 2013). However, transparency is very low in Africa thus, interpretation of such a framework may be challenging for policymakers. Furthermore, foreign debt burden in developing countries can influence interest rates and the overall effect of bond markets (Misia, Kegode, Mwaka and Wambua, 2013; Fayisssa and Nsiah 2013). The framework briefly makes references to foreign debt payment but, fails to mention the burden of such payments on monetary and fiscal policy (Balino and Sundararajan, 2008). A disregard of the influence of foreign debt in the analysis of bond markets and economic growth in Africa has broad implications for the validity of such inquiry particularly because of the heavy foreign debt obligations of many African emerging economies (Nhamo, 2011).

3.0 Conclusion

The literature presented identifies bond markets as a viable component of African financial markets. It shows that although the current state of an economy is important when addressing bond market development, historical context is even more important in the examination of bond market determinants in Africa. Consequently, studies that ignore this dimension disregard a rich aspect of analysis, thus rendering such analysis incomplete and insufficient. This insight is shared by Harris-White (2004), Kumar and Francisco (2005), Claessens (2006) and Johnson and Nino-Zarazua (2011) who support the suggestion that

more socio-economic, demographic and contextual determinants of bond market development be analysed to better learn, understand and implement its development in the unique contexts of African emerging economies. The literature shows also that good governance is a critical element for financial market functioning and must be developed to reap the rewards of financial market deepening, such as bond market development. The benefits of bond markets in Africa are recognized by many governments and IFI's; however, caution must be exercised when considering the motives of institutions from outside of a country. Many plans and legislations that apply to Africa were conceived by parties who had little or no comprehension of the African experience. The relative lack of understanding of Africa and the African experience and culture, to a large extent, undermines the relevance and efficacy of policies originating from such plans. Many developmental theories may need to be rejected as one may argue that they lack applicability to the African context. Bond market development and operations must be particularly fitted to the African contexts, and governments should be involved in their expansion with knowledge sharing among IFI's and governments with bond market expertise.

CHAPTER 3: OVERVIEW OF AFRICAN FINANCIAL AND BOND MARKETS

3.0 Introduction

Failed systems, swelling debts and economic crisis spurred African governments to turn to international financial institutions (IFI's) for assistance at the beginning of the 1980's. Policies such as structural adjustment and financial sector reforms were implemented to help Africa attain economic growth. Financial systems in Africa were fragile generally, banks were nationalized and credit backed funds were utilized inefficiently (Beck, Fuchs and Uy, 2009). Political leaders, such as Mobutu Sese Seko, obtained loans through corrupt means, and generally non-transparent financial systems with weak institutions dominated Africa (Moyo,2009;Kelly, 2014). The result of this was all time low African savings and investment rates leading to interest rate manipulation by governments (Kelly, 2014). Capital market development, including the promotion of stock exchanges formed part of the financial sector reforms proposed by IFI's. Steady developmental progress, since then, has been made to financial systems in Africa, although, many damaging characteristics remain.

The purpose of this chapter is to outline the characteristic and features of the African financial system between 2005 and 2013. An overview of the financial systems prior to the discussion on bond markets in Africa will give a broad sketch of where the bond markets are positioned in Africa. Comparison between the market components of various African countries and emerging and developed counterparts provides a barometer of the continent's standing among global markets. The microstructure of bond markets is the concluding part of this chapter.

3.1 Liquid liabilities (M3) As % of GDP

King and Levine (1993) suggest measurements of financial depth by the ratio of liquid liabilities of financial intermediaries to GDP; that is, the M3 money supply divided by GDP is a proxy for the holistic size of financial markets. The rationale behind the ratio is that it is a suitable gauge of an economy's financial system due to the positive correlation of financial system size with its ability to accommodate the needs of financial services (King and Levine, 1993). An alternative indicator of liquid liabilities is M3, which represents the aggregate of

currency and deposits in the central bank (M0), electronic currency and transferable deposits (M1), certificates of deposit, foreign currency, transferable deposits including savings and time deposits, repurchase agreements of securities (M2); commercial paper, foreign currency time deposits, travellers' checks and shares of mutual or market funds possessed by residents are included in the summation of M3.

Table 3.1: Liquid liabilities (M3) as % of GDP

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	*Average
Algeria	39.1	41.9	48.4	46.7	51.8	46.7	43.9	43.0	43.5	45.0
Benin	26.8	29.5	32.9	37.0	38.2	39.2	40.0	38.0	41.8	35.9
Burkina Faso	19.4	20.2	23.6	22.9	26.6	27.4	29.0	30.3	32.2	25.7
Burundi	17.5	21.1	19.0	19.5	20.8	22.3	19.8	19.1	18.0	19.7
Comoros	16.5	18.4	20.8	21.2	24.8	25.3	..	..	..	21.2
Cote d'Ivoire	24.1	25.3	29.9	28.6	32.3	36.6	40.5	39.0	35.8	32.4
Ethiopia	45.2	43.7	..	..	..	..	..	..	..	44.5
Guinea-Bissau	17.3	18.2	20.8	23.6	24.2	28.6	40.5	38.8	44.1	28.5
Kenya	40.3	41.3	43.1	..	..	..	..	..	..	41.6
Malawi	20.9	18.6	21.6	..	..	..	..	..	..	20.4
Mali	30.0	28.4	28.9	25.5	27.0	27.5	29.6	32.4	33.6	29.2
Niger	13.8	15.1	17.3	16.5	18.5	20.3	20.1	23.1	24.2	18.8
Senegal	34.0	35.7	36.4	33.5	36.9	39.7	39.8	40.4	41.8	37.6
Seychelles	80.5	76.0	59.7	62.2	52.1	58.3	54.7	48.8	56.8	61.0
South Africa	42.9	44.1	46.5	47.3	45.0	41.6	42.8	43.0	42.9	44.0
Tanzania	24.9	26.2	28.1	..	..	..	..	..	..	26.4
Togo	28.1	33.4	37.2	37.5	41.3	45.6	46.8	45.2	45.2	40.0
Tunisia	55.0	56.0	57.8	59.9	63.7	66.4	70.7	69.8	68.9	63.1
Japan	188.3	186.0	184.6	190.6	207.0	206.3	217.0	220.8	226.6	..
United States	60.2	62.3	65.3	67.8	71.2	67.8	70.1	70.9	71.5	..
Brazil	53.8	57.9	60.9	62.0	..	..	..	..	..	..

*Arithmetic average
Data from database: World Development Indicators
Last Updated: 11/06/2014

Table 3.1 shows the M3 ratio of countries such as Algeria and Tunisia have ratios similar to that of the developed U.S. and emerging market of Brazil. A largely steady ratio occurs in most countries with the exception of Benin, Burkina Faso, Guinea Bissau, Seychelles and Togo. The ratio may give the indication that retraction of the financial sector occurred in Seychelles and South Africa between 2005 and 2013 with Algeria and Niger experiencing huge expansion in their financial sectors. However, Africa's history of printing money to service deficits may have caused fluctuations in M3 reading and may distort the interpretation of the results above. Thus, the use of yet an alternative indicator is warranted. This is private credit to GDP.

3.2 Private credit to GDP

The ratio of private credit to GDP is a popular indicator of financial development. Arcand, Berkes and Panizza (2011) and Becero, Cavallo and Scartascini (2012) employ this ratio in assessing weather finance in selected markets is excessive or scanty. This reveals the size of the loan book of a bank in relation to economic output; however, little is suggested about the position of financial sector components other than banks. It concerns financial resources supplied to the private sector by financial corporations (WB, 2014).

Table 3.2: Domestic credit to private sector (% GDP)

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	*Average
Algeria	12	12	13	13	17	16	14	15	17	14
Angola	6	8	11	13	21	20	20	22	24	16
Benin	16	17	20	21	22	23	25	24	25	21
Botswana	20	20	23	25	29	25	28	32	32	26
Burkina Faso	16	18	17	18	17	17	19	22	26	19
Burundi	16	17	17	15	17	19	21	19	18	18
Cabo Verde	39	45	46	52	58	62	66	64	63	55
Cameroon	10	9	10	11	12	13	15	14	15	12
Central African Republic	7	7	7	7	7	9	10	12	15	9
Chad	3	2	2	3	4	4	5	6	6	4
Comoros	10	9	10	11	16	19	18	21	22	15
Congo, Dem. Rep.	1	2	3	5	5	4	4	5	6	4
Congo, Rep.	2	2	2	3	5	7	8	10	11	6
Cote d'Ivoire	14	14	16	16	17	18	18	18	19	17
Djibouti	20	20	23	24	26	33	31	29	31	26
Egypt, Arab Rep.	51	49	46	43	36	33	31	29	28	38
Equatorial Guinea	3	3	4	5	9	9	10	7	11	7
Eritrea	28	26	21	22	17	16	14	..	..	20
Ethiopia	23	24	19	18	..	..	..	..	..	21
Gabon	9	10	11	9	10	8	9	11	14	10
Gambia, The	10	12	12	14	15	15	16	16	15	14
Ghana	16	11	14	16	16	15	15	16	17	15
Guinea	6	7	5	5	4	6	9	..	..	6
Guinea-Bissau	1	2	3	5	6	6	12	15	16	7
Kenya	26	26	27	30	30	34	37	37	40	32
Lesotho	9	9	11	11	13	14	15	20	21	14
Liberia	7	9	10	12	12	15	17	16	20	13
Libya	8	7	6	7	11	9	20	11	14	10
Madagascar	10	10	10	11	12	12	11	11	12	11
Malawi	8	9	10	11	13	18	20	21	19	14
Mali	17	18	18	17	17	18	21	21	23	19
Mauritania	25	19	21	26	31	29	27	31	..	26
Mauritius	75	72	75	85	83	88	91	101	108	86
Morocco	46	49	58	63	65	69	72	73	70	63
Mozambique	12	13	14	18	25	27	24	26	29	21
Namibia	52	49	48	47	49	50	49	47	49	49
Niger	7	8	9	11	12	12	13	14	14	11
Nigeria	13	13	25	34	38	15	12	12	..	20
Senegal	23	23	23	24	25	26	29	30	32	26
Seychelles	31	28	29	31	23	28	26	25	25	27
Sierra Leone	3	3	4	6	8	8	8	6	5	6
South Africa	144	163	168	147	152	153	144	152	156	153
Sudan	10	14	13	11	13	12	11	12	10	12
Swaziland	21	21	24	22	23	22	26	23	25	23
Tanzania	10	13	15	16	15	16	18	18	17	15
Togo	18	17	21	17	20	23	29	30	32	23

Tunisia	58	57	58	60	62	69	76	76	76	66
Uganda	9	10	10	14	13	16	19	16	16	14
Zambia	8	10	12	15	12	12	12	15	15	12
Brazil	31.4	40.3	47.9	53.1	48.9	54.4	61.3	68.5	70.7	52.9
China	113.3	110.7	107.5	103.7	127.2	129.9	127.0	133.7	140.0	121.4
Japan	194.2	190.5	181.3	175.6	184.9	176.4	175.3	179.0	189.0	182.9
United States	187.8	197.7	206.3	188.0	196.5	191.7	182.7	185.6	198.0	192.7

*Arithmetic average
Source: World Development Indicators Database
Last Updated: 11/06/2014

Private credit ratios for most African economies, seen in Table 3.2, are below that of emerging Brazil and far below the figures for the more developed countries of Japan, China and the United States. South Africa, Mauritius and Tunisia, to an extent, are the only exceptions in the sample. Private credit provision and more investment act as a key indicator of excessive credit required which may signal financial instability (Kelly, McQuinn and Stuart, 2013). Table 3.2 shows also the huge disparity in credit available to the private sector and the uneven nature of financial systems in Africa. The lowest average ratio is Chad with 4% and highest average South Africa at 153%. New reforms and capital adequacy regulations, such as the Basel Committee on Banking Supervision, in the aftermath of the 2008 sub-prime crisis may have contributed to the decrease in credit to the private sector in Egypt, Namibia, Seychelles and Japan.

3.3 Banking sectors in Africa

Huge variances among banks in Africa exist. World class banking services may be attainable in economies such as South Africa, Nigeria and Kenya while in countries like Chad and Sierra Leone banking systems struggle to penetrate the market.

State-owned banks and occasionally large foreign banks dominate the African banking sector, causing difficulties for small businesses to access credit (Ncube, 2009). Table 3.1 and Table 3.2 show that in comparison with more developed countries, there is a dismal reach of banks to adults in Africa. Information in Table 3.2 translates to approximately less than 20% of adults in Africa with access to banks, in contrast with between 30% and 50% of adults in more developed countries. The excessive costs associated with banking in Africa, low penetration of banks (as indicated in Table 3.2) and immense documentation needed to open an account are key contributors of the high interest rate spreads (MFWA, 2014).

Typical of Africa's banking system is the disproportionately large investments in government securities, mostly treasury bills, as opposed to investments in government and corporate securities of varying maturities (Allen *et al,* 2012). This practice signals an impaired banking intermediation that avoids private credit provision in preference of more secure government securities (Allen *et al* 2012),and contributes to the low and shallow financial development in Africa (Allen *et al* 2012; European Investment Bank (EIB), 2013).

Table 3.3 indicates the extent of disparity between bank presence in African countries and other countries of the world. The low number of commercial banking institutions in African countries leads to a lack of competition thus enabling them to keep interest rate spreads relatively high.

Table 3.3: The number of commercial bank institutions in selected African and global financial systems

	2004	2005	2006	2007	2008	2009	2010	2011	2012	*Average
Angola	11	12	14	17	19	19	22	22	22	18
Botswana	5	5	6	6	7	8	9	9	9	7
Burundi	9	8	7	7	8	8	8	8	8	8
Cameroon	10	10	11	12	12	13	13	13	13	12
Cape Verde	4	4	4	4	5	5	8	8	8	6
CAR	3	3	3	4	4	4	4	4	4	4
Chad	7	7	7	7	7	7	8	8	8	7
Congo	4	4	4	5	6	6	7	7	7	6
DRC	10	10	10	11	14	17	20	20	20	15
Equatorial Guinea	3	3	4	4	4	4	4	4	4	4
Ethiopia	8	9	10	10	12	14	15	16	16	12
Gabon	6	6	6	7	7	7	9	9	9	7
Gambia	6	7	8	9	11	13	14	13	13	10
Ghana	20	21	24	24	26	27	26	28	28	25
Kenya	44	41	41	42	43	44	43	43	43	43
Lesotho	4	4	3	3	3	3	4	4	4	4
Liberia	4	5	5	5	6	7	7	8	8	6
Madagascar	7	7	7	8	8	9	10	5	5	7
Malawi	–	–	–	–	–	–	–	13	13	13
Mauritius	20	19	19	19	18	18	19	20	20	19
Mozambique	11	12	12	12	14	14	16	18	18	14
Namibia	4	4	4	4	4	4	4	4	4	4
Nigeria	89	25	25	24	24	24	24	20	20	31
Rwanda	6	6	6	6	8	8	8	9	9	7
Seychelles	6	6	6	6	7	7	7	7	7	7
Sierra Leone	7	7	8	10	13	14	13	13	13	11
South Africa	37	36	35	35	34	32	32	30	30	33
Tanzania	25	26	26	27	29	31	28	31	31	28
Togo	7	8	10	10	11	11	11	11	11	10
Uganda	15	15	15	16	20	21	22	23	23	19
Zambia	13	13	13	13	18	18	18	19	19	16

Zimbabwe	11	13	14	14	14	16	16	16	16	14
Brazil	139	135	133	125	127	123	125	127	127	129
Germany	252	252	256	260	273	278	280	284	284	269
Japan	132	130	127	126	125	124	121	120	120	125
UK	346	335	335	335	338	336	332	327	327	335

*Arithmetic average

Source: Ecobank Middle Africa Guidebook 2013: Fixed Income, Currency and Commodities (2013)

3.3.1 Interest rate spreads

A primary obstacle to African financial systems are banking sectors that do not implement intermediation as a result of excessive interest rates triggered by high-priced credit and inadequately remunerated deposits (Dahou *et al,* 2009). Further, banks may have become complacent in the event of high-yielding debt (Hauner, 2006). According to Abbas and Christensen (2007), a poor credit environment often reduces banks' incentive to provide credit to the private sector.

Table 1.4: Interest rate spread of selected African and more developed markets.

Country	2005	2006	2007	2008	2009	2010	2011	2012	*Average
Algeria	6.1	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Djibouti	10.3	..	8.1	9.4	9.7	9.3	9.1	..	9.3
Egypt, Arab Rep.	5.9	6.6	6.4	5.7	5.5	4.8	4.3	4.4	5.5
Libya	4	3.8	3.5	3.5	3.5	3.5	3.5	3.5	3.6
Morocco	8	..	..	..	..	..	..	..	8.0
Canada	3.6	4	4	3.2	2.3	2.4	2.5	2.5	3.1
Angola	54.3	15	10.9	6	8.1	9.8	12.4	13.1	16.2
Botswana	6.5	7.6	7.6	7.9	6.3	5.9	5.9	7.4	6.9
Cabo Verde	8.9	5.4	7.3	6.2	8.1	7.9	6.5	6.1	7.1
Cameroon	12.8	11	10.8	..	..	..	..	..	11.5
Central African Republic	12.8	11	10.8	..	..	..	..	..	11.5
Chad	12.8	11	10.8	..	..	..	..	..	11.5
Comoros	8	8	8	8	8.6	8.8	8.8	8.8	8.4
Congo, Dem. Rep.	..	..	32.6	35.4	49.3	39.7	30.4	20.7	34.7
Congo, Rep.	12.8	11	10.8	..	..	..	..	..	11.5
Equatorial Guinea	12.8	11	10.8	..	..	..	..	..	11.5
Gabon	12.8	11	10.8	..	..	..	..	..	11.5
Gambia, The	17.6	17.1	15	14.1	11.5	12.4	16.3	16.5	15.1
Kenya	7.8	8.5	8.2	8.7	8.8	9.8	9.4	8.2	8.7
Lesotho	7.8	7.6	7.7	8.5	8.2	7.5	7.7	7.3	7.8
Liberia	13.6	12.1	11.3	10.4	10.1	10.7	10.7	10	11.1
Madagascar	8.3	7.2	28.5	33.5	33.5	38.5	41.9	49.5	30.1
Malawi	22.2	21.3	21.7	21.8	21.8	21	19.6	21.3	21.3
Mauritania	15.1	16	15.5	12.3	11.5	9	9	11.2	12.5
Mauritius	13.8	11.5	10.1	1.4	0.8	0.5	1.8	2.4	5.3
Mozambique	11.7	8.2	7.7	7.3	6.2	6.6	6.1	5.4	7.4
Namibia	4.4	4.9	5.3	5.4	4.9	4.7	4.4	4.4	4.8
Nigeria	7.4	7.2	6.7	3.5	5.1	11.1	10.3	8.4	7.5
Rwanda	8.1	7.8	9.3	9.8	..	9.6	..	..	8.9
Sao Tome and Principe	19	18.6	19.7	19.7	19.2	17.8	14.6	13.3	17.7
Seychelles	6	7.6	7.8	7.8	5.6	9.8	9.1	8.9	7.8
Sierra Leone	12.8	12.9	14.2	13.9	12.4	11.8	10.7	10.6	12.4
South Africa	4.6	4	4	3.5	3.2	3.4	3.3	3.3	3.7
Swaziland	6.6	6.2	6.1	6.7	6	5.9	6.2	6.3	6.3

Tanzania	10.5	8.9	7.4	6.7	7.1	8	8.2	5.9	7.8
Uganda	10.9	9.6	9.8	9.8	11.2	12.5	8.8	10.1	10.3
Zambia	17	12.8	9.7	12.5	15	13.5	11.8	5.1	12.2
Brazil	37.8	36.9	33.1	35.6	35.4	31.1	32.9	28.7	33.9
Canada	3.6	4.0	4.0	3.2	2.3	2.4	2.5	2.5	3.1
Japan	1.4	1.0	1.1	1.3	1.3	1.1	1.0	0.9	1.1

*Arithmetic average
Source: World Development Indicators Database
Last Updated: 11/06/2014

The interest rate spread between emerging and developed countries varies greatly. The more mature markets of Egypt, South Africa and Nigeria have average spreads of 5.5, 3.7 and 7.5 respectively while, Canada, the most developed country in the sample has an interest rate spread of 3.1. Brazil has a spread similar, only, to Madagascar. Libya, South Africa and Namibia have the lowest average spreads in the sample and the Democratic Republic of Congo, Madagascar and Malawi the highest. The relatively lower ratios of liquid liabilities to GDP and private credit to GDP suggest that African banks are considerably smaller to those in many other countries. Thus, the banks may not be able to benefit from economies of scale thereby increasing costs associated with banking. The low level of intermediation delineated by the ratios in Table 3.2 and Table 3.3 may be attributed to the challenges in enforcing creditor rights and evaluating creditworthiness (MFWA, 2014).

3.4 Stock markets in Africa

Stock markets on the continent have developed very fast in a short period. Large growth in the number of stock exchanges has occurred from five stock exchanges two decades ago to approximately 24 stock exchanges including two regional exchanges currently operating in Africa (Nkontchou, 2010; Allen *et al* 2012). These key mechanisms of exchanges are beneficial for growth as they provide a channel for domestic savings.

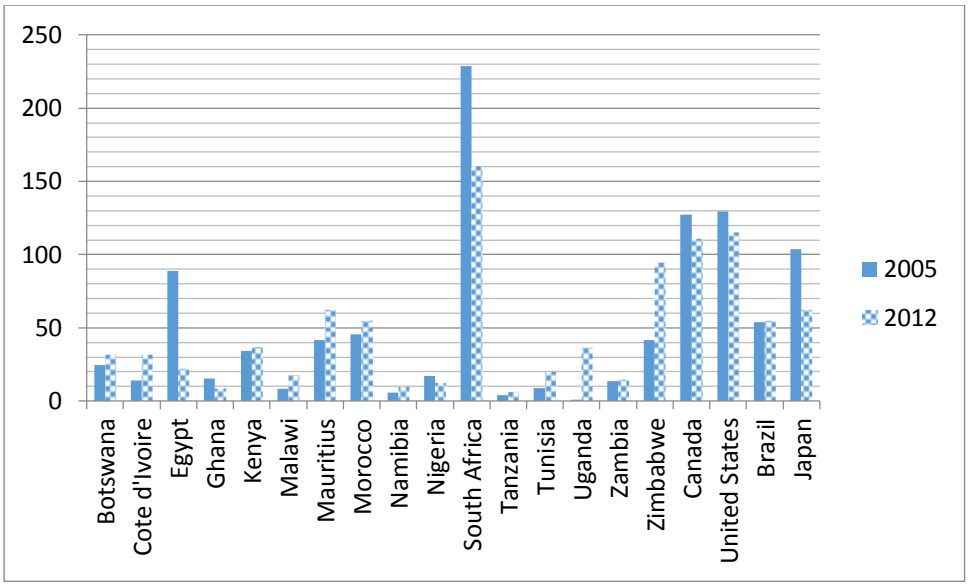
Table 3.5: Market capitalization of listed companies (% of GDP)

Country	2005	2006	2007	2008	2009	2010	2011	2012	*Average
Botswana	24.5	39.0	53.8	32.0	42.3	29.7	26.9	31.6	35.0
Cote d'Ivoire	14.2	23.9	42.2	30.2	26.7	31.0	26.1	31.7	28.3
Egypt	88.8	87.0	106.8	52.8	47.6	37.7	20.6	22.1	57.9
Ghana	15.5	15.8	9.6	11.9	9.7	11.0	7.8	8.3	11.2
Kenya	34.1	50.6	49.2	35.8	35.0	44.6	29.7	36.7	39.5
Malawi	8.4	18.8	..	41.4	27.5	25.3	24.6	17.8	23.4
Mauritius	41.7	53.5	72.7	35.7	53.7	76.6	68.1	62.0	58.0
Morocco	45.7	75.2	100.4	74.0	69.2	76.2	60.6	54.8	69.5

Namibia	5.7	6.8	7.9	7.3	9.7	10.6	9.3	9.7	8.4
Nigeria	17.2	22.6	51.9	23.9	19.7	13.8	9.5	12.2	21.4
South Africa	228.9	274.0	291.3	179.9	248.0	174.0	129.5	160.2	210.7
Tanzania	4.2	3.8	..	6.2	..	5.5	6.5	6.4	5.4
Tunisia	8.9	12.9	13.8	14.2	21.0	24.3	21.0	19.6	17.0
Uganda	1.1	1.2	..	21.6	25.3	11.2	49.9	36.4	20.9
Zambia	13.8	11.1	20.3	..	21.9	17.4	20.9	14.6	17.1
Zimbabwe	41.7	487.8	100.8	..	47.0	121.4	99.5	94.7	141.8
Canada	127.2	129.7	150.0	65.0	122.6	133.8	107.2	110.7	118.3
United States	129.6	140.2	137.8	79.7	104.6	114.6	100.7	114.9	115.3
Brazil	53.8	65.3	100.3	35.6	72.0	72.1	49.6	54.7	62.9
Japan	103.6	108.5	102.2	66.4	67.1	74.6	60.0	62.0	80.6

*Arithmetic average
Data from database: World Development Indicators Database
Last Updated: 11/06/2014

Figure 3.1: Market capitalization of listed companies (% of GDP)



Source: World Development Indicators Database
Last Updated: 11/06/2014

Known as market value, the market capitalization indicator is the share price multiplied by the amount of shares outstanding of domestically incorporated firms on a country's stock exchange at the end of the year (WB, 2014). It provides an idea of the size of the stock market.

Africa has had a steady growth in the size of equity markets over the last two decades. Figure 3.1 provides five-year averages for African market capitalization as a percentage of gross domestic product (GDP) between 2005 and 2012. There was a noticeable drop on capitalization between 2007 and 2008 in all countries in the sample except Tunisia.

Botswana, Mauritius and South Africa gained traction and increase in market capitalization following the 2008 drop. This trend parallels that of United States, Japan and Brazil.

South Africa leads in market capitalization in Africa and even surpasses the capitalization of developed markets in the sample. Morocco and Egypt appear to be growing their stock markets at the fastest rate, the greatest capitalization occurring at the end of 2007. With the exception of South Africa, capitalization of African equity is below that of the more developed countries in the world.

Table 3.6: Turnover ratio of selected African and global stock markets

Country	2005	2006	2007	2008	2009	2010	2011	2012	*Average
Botswana	1.8	2.3	2.2	3.1	2.6	3.4	3.6	2.6	2.7
Cote d'Ivoire	1.4	3.3	2.5	4.1	2.0	2.0	1.8	2.3	2.4
Ghana	3.2	2.1	3.9	5.2	2.0	3.4	4.1	1.6	3.2
Kenya	9.8	14.6	10.6	11.8	4.6	8.6	7.1	8.1	9.4
Malawi	4.1	3.5	..	..	1.2	1.5	3.9	1.5	2.6
Mauritius	6.0	4.4	8.0	8.9	8.1	5.9	6.9	4.0	6.5
Namibia	1.5	3.8	3.7	2.8	3.0	1.8	1.2	1.7	2.4
Nigeria	11.5	13.6	28.2	29.3	11.0	12.5	9.2	8.8	15.5
South Africa	39.3	48.8	55.0	60.6	57.3	50.7	64.3	54.9	53.9
Tanzania	2.3	2.1	..	..	..	..	2.5	1.6	2.1
Uganda	3.0	5.5	..	..	0.3	0.4	0.3	0.2	1.6
Zambia	2.0	2.1	4.1	..	..	4.3	2.9	5.6	3.5
Zimbabwe	15.3	6.2	5.1	..	..	15.0	16.3	14.2	12.0
Tunisia	16.5	14.3	13.3	25.5	16.2	17.2	11.0	13.5	15.9
Brazil	38.3	42.9	56.2	74.3	73.9	66.4	69.3	67.9	61.2
United States	129.2	182.8	216.5	404.1	348.6	189.1	187.6	124.6	222.8
Canada	63.6	81.1	84.7	111.1	92.4	71.1	74.8	61.6	80.0
United Kingdom	141.9	123.8	269.8	227.2	146.4	101.9	98.9	84.0	149.2
Japan	118.8	132.1	141.6	153.2	127.1	114.5	108.9	99.8	124.5

*Arithmetic average
Source: World Development Indicators Database
Last Updated: 11/06/2014

Senbet and Otchere (2008) observe illiquid and thin equity markets in Africa, with the exception of Egypt and South Africa, despite the expansion of African stock markets. The low turnover ratios in Africa in relation to the other countries indicates a low number of stocks traded, and according to Piesse and Hearn (2005) and Andrianaivo and Yartey (2010), these stocks usually comprise a significant portion of the aggregate market capitalization. Low turnover ratios are also associated with informational deficiency, which obstructs institutions and governments from developing and implementing adequate strategies (Nkontchou, 2010).

3.5 Bond markets in Africa

Financial instruments emulating bonds have an extensive history (Homer, 1975). Prior to the Reformation Circa in 1550, the issuance of credit was generally viewed as illegal by European governments. However, bankers issued copious amounts of credit in a clandestine manner (Homer, 1975). According to Homer, bankers who offered the dissident credit facilities were ashamed about their profession and would seek to secure absolution by financing cathedrals and various types of infrastructure for their governments. Compared to other forms of financing such as those from royals, this illicit credit from bankers was more efficient and effective (Homer, 1975). The Reformation in 1550 changed the scene of credit for the era. Reformers such as Martin Luther and John Calvin favoured credit, at a minimal rate of interest, and government's inclination for finance increased (Homer, 1975; Freudenberg, 2009).

The desire for finance and credit extended to other parts of Europe during the 14th century, the Denizens of Venice issued bonds, as they are presently known, to fund a war with the then Constantinople – capital city of the Byzantine empire (Levinson, 2009). Governments' appetite for finance continued to increase and bankers found difficulty in keeping up with money demanded by clients. Later in 1751, Britain created consols, which are still in use today (Stockman, 2013). Bonds presented a means for governments to access money from numerous people as opposed to accessing it from a few bankers and lenders. Participants appreciated the spread of risks provided by bonds (Levinson, 2009). The pivotal role of sovereign domestic debt in pooling funds from the public has been recognized by governments, policy makers and academia as far back as the 14th century (Holmer, 1975; Levinson, 2009; Mezi, 2012). More recently, the 2008 sub-prime financial crisis has renewed interest from governments, policy makers and academia in the influence of domestic debt on stabilizing monetary and fiscal variables and fostering financial growth of economies (Schumpeter, 1911; Angeletos, 2002; Faraglia, Marcet and Scott, 2010; Ismihan and Ozkan, 2012; Afonso and Jalles, 2014).

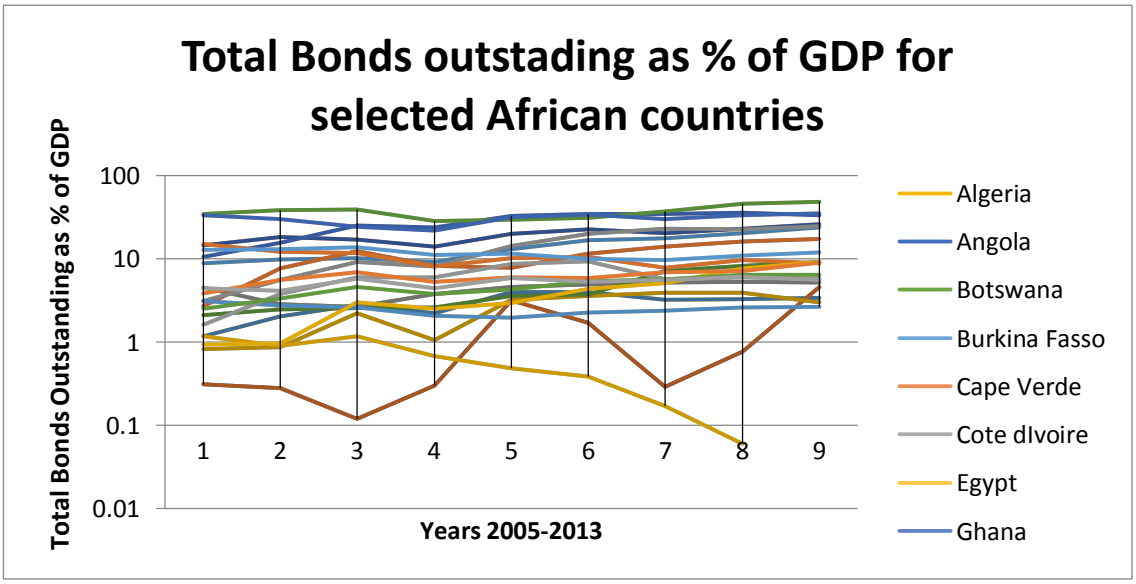
Africa, in this study, is represented by a sample of twenty-six countries, four in the North (Algeria, Mauritania, Morocco and Tunisia), five in the West (Ghana, Nigeria, Senegal, Cote

d'Ivoire and Burkina Faso), five in the East (Kenya, Uganda, Tanzania, Rwanda and Seychelles), five located in Central Africa (Cameroon, Chad, Congo, Equatorial Guinea and Gabon), and five in Southern Africa (South-Africa, Botswana, Namibia, Angola and Mauritius). Sampling is based on the presence of a bond market in each country and the vibrancy of the market. Vibrancy is defined as the average weekly volume of trades and transactions (Kodongo, 2011). Additionally, the availability of a reasonably long series of debt market transactions is considered in bond market selection. On this account, countries with absent trade transactions and relatively no bond markets such as Guinea-Bissau and Mali are excluded (AFMI, 2014).

Fixed income markets of African emerging economies have developed positively over the past decade. Sizes of bond issuance have improved, yield curves have extended from short term bonds to medium and long term bonds and reforms have been devised for the clearing and settlement systems of many markets. More diversity has been infused into the investor base with a decrease in the dominance of commercial banks to more participation of non-financial institutions Foreign participation in local bond markets have increased as well as secondary market liquidity.

Despite the global financial market turbulence in 2008, African local currency debt produced positive returns, while other emerging market local currency debt markets endured considerable losses. Sharp losses and increased volatility were registered by African hard currency debt during the 2008 sub-prime crisis; however, in 2009 high returns counteracted the poorer performance of the previous year (AFMI, 2014).

Figure 3.2: Depiction of total bonds outstanding as % of GDP for each year over a nine year period for selected African countries



Source of data: African Financial Markets Initiative Database (2014)

The GDP and total outstanding amount of domestic debt have increased steadily over the past decade as reflected in Figure 3.2 above, particularly since the 2008 sub-prime crisis. The more liquid money and interbank markets appear to have attracted more investors thus improving the efficiency in pricing and trading long term bonds.

Table 3.7: Total bonds outstanding as % of GDP for selected African countries and Average time (in years) to maturity

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013
Algeria	1.16	2.02	2.78	2.23	3.96	3.98	3.23	3.28	3.41
	6.58	**7.73**	**7.57**	**7.7**	**7.77**	**7.7**	**8.26**	**8.21**	**8.05**
Angola	0.33	0.5	0.5	0.65	3.41	4.7	3.89	4.26	4.57
	7.02	**7**	**6.8**	**5.57**	**4.11**	**4.01**	**4.04**	**4**	**3.62**
Benin	--	--	1.71	2.3	3.61	3.37	2.67	2.18	1.62
	--	**--**	**10.04**	**10.03**	**9.03**	**--**	**--**	**--**	**--**
Botswana	4.52	2.85	2.66	3.74	4.57	4.9	5.22	5.25	5.21
	8.59	**8.59**	**8.59**	**9.42**	**8.46**	**8.28**	**8.85**	**9.64**	**10.33**
Burkina Faso	0.82	0.86	2.2	1.05	3.2	3.56	3.87	3.91	3.01
	4.01	**4.01**	**10.03**	**10.03**	**7.37**	**7.28**	**6.67**	**6.47**	**--**
Burundi	--	--	0.03	0.79	0.73	1	0.93	0.73	1.36
	--	**--**	**2.01**	**4.93**	**5.02**	**3.89**	**3.89**	**5.02**	**1.69**
Cabo Verde	14.59	18.27	17.01	13.92	19.82	22.63	20.23	22.9	26.09
	6.98	**6.56**	**6.87**	**7.43**	**6.83**	**6.07**	**6.72**	**6.76**	**6.83**
Cameroon	--	--	--	--	--	1.73	1.49	1.14	1.25
	--	--	--	--	--	5.02	5.02	5.02	4.7
Egypt	8.82	9.86	10.19	9.1	13.07	16.68	17.54	20.37	23.92
	6.82	6.57	6.63	7.04	5.69	5.22	4.96	5.11	5.55
Cote d'Ivoire	2.1	2.45	2.53	2.58	3.6	3.72	7.07	8.19	9.19
	3.01	3.01	3.01	3.01	4.74	5.13	4.8	4.61	4.78
Gabon	--	--	1.6	1	1.03	0.56	0.29	0.15	0.4
	--	--	5.98	5.98	5.98	5.98	5.98	5.98	3.01
Ghana	2.69	7.65	12.37	8.27	7.82	11.42	13.99	16.15	17.36

	1.51	1.87	2.37	2.72	2.81	2.36	2.51	2.96	2.84
Kenya	3.09	5.54	9.16	8.11	14.3	19.74	23.05	22.46	24.74
	8.18	8.15	8.66	8.72	9.19	9.23	9.69	9.54	10.13
Malawi	1.17	0.9	1.16	0.67	0.48	0.38	0.17	0.06	
	3.77	3.8	3.73	3.75	--	--	--	--	--
Mali	--	--	--	0.78	1.3	2.09	1.46	1.2	0.82
	--	--	--	10.03	8.11	6.71	--	--	--
Mauritius	10.54	15.42	25.2	23.66	32.59	34.65	34.19	35.8	33.42
	8.05	6.77	6.05	6.17	6.16	6.42	6.73	7.04	7.28
Morocco	34.54	38.35	39.1	28.51	29.38	31.25	36.72	45.95	48.55
	9.78	10.32	10.67	11.25	11.32	9.8	8.92	8.6	8.58
Mozambique	3.12	2.76	2.61	2.07	1.97	2.27	2.38	2.58	2.64
	304.8	304.8	310.75	291.38	292.05	303.21	224.02	163.82	147.22
Namibia	14.91	12.12	11.63	8	10.2	10.55	7.82	9.55	8.79
	8.57	9	10.07	10.79	10.74	11.19	10.08	10.13	9.94
Niger	--	--	--	--	0.68	0.6	0.51	0.4	1.12
	--	--	--	--	7.02	7.02	7.02	7.02	5.84
Nigeria	1.6	3.75	5.92	5.98	8.69	9.27	5.64	5.96	5.79
	2.92	3.97	4.93	5.19	6.5	8.14	7.74	8.21	9.25
Rwanda	--	--	--	0.66	0.48	0.73	0.52	0.33	0.23
	--	--	--	2.35	2.35	3.13	3.46	--	--
Senegal	0.93	0.97	2.97	2.51	2.95	4.31	5.1	7.64	9.1
	5.02	5.02	6.9	7.35	7.01	6.33	5.3	5.14	5.43
South Africa	33.23	30	24.13	21.9	31.34	33.6	29.73	33.08	34.87
	9.38	11	10.91	11.86	12.78	13.05	14.29	14.92	16.03
Swaziland	--	--	--	--	--	1.82	2.71	2.66	3.65
	--	--	--	--	--	3.95	4.31	4.31	5.18
Tunisia	12.89	12.96	13.72	11.02	11.58	10.05	9.67	10.95	11.88
	7.69	7.54	8.28	8.73	8.75	8.93	8.63	8.32	8.21
Tanzania	2.49	3.31	4.59	3.74	4.27	5.36	5.67	6.4	6.36
	5.01	4.95	5.28	5.38	6.02	5.77	5.96	6.37	6.4
Togo	--	3.28	4.35	2.8	2.39	2.85	5.5	7.55	10.63
	--	5.02	6.9	6.9	6.9	6.45	6.05	5.72	5.5
Uganda	3.81	5.53	6.86	5.32	6.01	5.84	6.91	7.11	9.03
	2.71	2.87	2.99	3.01	3.41	4.12	3.92	4.05	4.57
Zambia	4.41	4.15	5.81	4.38	5.86	5.23	5.53	6.08	5.55
	2.28	3.31	3.89	4.4	4.65	4.84	4.67	4.8	4.98

Source of data: African Financial Markets Initiative Database (2014)

3.6 The microstructures of African bond markets

The level of market development has a bearing on regulations of the market. Less developed markets require a delicate balance between regulations and market participation so that participation is not suppressed. Equally, more developed markets must possess regulations that do not support corrupt activities (AfDB, 2010). This section presents the micro structural aspects of bond markets in Africa. Auction systems, clearing and settlement systems and trading platforms are emphasised in the bond market setting.

Most fixed income securities are first issued by the government through the central banks of each African country. The central banks present tenders to banks, brokerage firms, discount houses and sometimes the public who present their applications to a bank. Brokerage companies and other financial institutions are appointed as primary dealers according to the decision of the banks (Bank of Zambia, 2014; CSD, 2014). The increase of bonds outstanding

in bond markets signals an increase in the depth and size of transactions thus raising the need for anonymity in the market (AfDB, 2010). Licenced interdealer brokers are present in South Africa and Kenya where they coordinate bigger transactions among dealers. A further strategy to address inefficiencies in the respective markets is the advent of discount houses. Such houses purchase securities from willing sellers for their own account and through this, benefit from inefficiencies that may be present in the market.

Table 3.8: Bonds traded, trading platforms and mechanism and regulatory agencies of selected African emerging markets as of June 2014.

Country	Trading platform	Local currency bonds traded		Regulatory supervision
		Government	Corporate	
Algeria	Algiers Stock Exchange	X	X	Organising Committee and Supervisory and Exchange (COSOB)
Angola	Banco Nacional de Angola (BNA)	X		The Central Bank
Benin	BRVM	X	X	The Regional Council for Public Savings and Financial Markets (CREPMF)
Botswana	Botswana Stock Exchange	X	X	Bond Market Association
Burkina Faso	BRVM	X	X	CREPMF
Burundi	Banque de la République du Burundi (BRB)	X		N/A
Cameroon	Douala stock exchange	X		The Commission for the Supervision of Financial Markets in Central Africa (CONSUMAF)
Cape Verde	BRVM	X	X	CREPMF
Central African Republic	Douala stock exchange	X		CONSUMAF
Cote dIvoire	BRVM	X	X	CREPMF
Egypt	Egyptian stock exchange	X	X	Capital markets Authority (CMA)
Gabon	Douala stock exchange	X		CONSUMAF
Ghana	Ghana stock exchange	X		Securities Industry Law, Securities Industry Amendment Act
Kenya	Nairobi securities exchange	X	X	CMA
Malawi	Malawi stock exchange	X		CMA
Mali	BRVM	X	X	CREPMF
Mauritius	The stock exchange of Mauritius	X	X	The Guarantee Fund and Compensation Fund ,the International Convention on the Recognition and Enforcement of Foreign Arbitral Awards
Morocco	Casablanca stock exchange for corporate bonds,	X	X	the CDVM 's (Securities Ethics Board)
Mozambique	Mozambique stock exchange	X	X	The Commercial Code
Namibia	Namibia stock exchange	X	X	The Namibia Financial Sector Strategy
Niger	BRVM	X	X	CREPMF
Nigeria	Nigerian stock exchange	X	X	The Securities and Exchange Commission (SEC), Nigerian Securities Exchange (NSE), The Debt Management Office (DMO)
Rwanda	Rwanda stock exchange	X		CMA
Senegal	BRVM	X	X	CREPMF
South Africa	Johannesburg stock exchange	X	X	The Financial services board
Swaziland	Swaziland stock exchange, government	X	X	The Swaziland Investment Promotion Act of 1998, the Multilateral Investment Guarantee Agency (MIGA)
Tanzania	Dar es salaam stock exchange	X	X	Dar Es Salaam Stock Exchange (DSE)

Togo	BRVM	X	X	The Regional Council for Public Savings and Financial Markets (CREPMF)
Tunisia	Bourse se Tunis stock exchange	X	X	CMA, The Guarantee Market Fund
Uganda	Uganda securities exchange	X	X	CMA
Zambia	Lusaka stock exchange	X		Companies Act, Securities Act, Banking and Financial Services Act

*BRVM = Bourse Regionale Des Valeurs Mobiliers Stock Exchange
Source: African Fixed Income and Derivatives Handbook (2010), African Securities Exchange Association Yearbook (2012), Ecobank Middle Africa Guidebook 2013: Fixed Income, Currency and Commodities (2013), African Financial Markets Initiative (2014).

Table 3.8 describes the bond trading procedure of selected African countries and indicates those that trade both stocks and bonds. Algeria, Botswana, Egypt, Kenya, Namibia, South Africa, Nigeria trade both government and corporate bonds on their exchanges and are also the most capitalised bond markets as shown in Table 3.7 above. Regional stock exchanges such as Bourse Regionale Des Valeurs Mobiliers (BRVM) Stock Exchange and Douala Stock Exchange (DSE) have equipped countries that otherwise would not have an exchange to trade bonds. The BRVM and DSE also allow countries to trade on additional platforms other than theirs in order to increase output of bonds. Online and intraday trading are available in most of the countries. More developed markets such as Botswana, Nigeria, and South Africa have intraday, online and margin trading facilities. This caters for more investors than markets with only intraday of margin facilities. Intraday facilities mean trading takes place during trading periods on specific days while online trading services allow for broader hours of trade. Margin trading facilities suggests derivative trading on the stock exchange meaning a further group of investors can interact on the bond market. Securities regulations show that Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Mali, Niger and Senegal, Togo operate under the Regional Council For Public Savings And Financial Markets (CREPMF) as a regulatory agency. The Capital Markets Authority (CMA) regulates Egypt, Kenya, Malawi, Tunisia and Uganda.

The number of trades per month informs one about the nature of the trading. Thin trades would be present when the frequency of monthly trading is low, indicating a buy and hold practice of investors in the particular market. Table 3.8 shows that South Africa followed by Mauritius has the highest monthly trading frequency of 8 and 7.7 times respectively.

3.6.1 Auction Systems

A crucial element in many African capital markets is pricing of assets. Factors such as the absence of yield curves and poor information symmetry increase the need for effective pricing of African securities. Typical methods used are book building or an auction (Chen, Morrison, William and Wilhelm, 2014).

Table 3.9: Clearing and settlement party, settlement cycle trading portal and type of auction in selected African countries

Country	Clearing and Settlement		Settlement cycle (T+ S)	Frequency of trading	Clearing and Settlement platform	Auction type
	internal	vendor		Per month		
Algeria	Vendor		T+ 1	5	Algeries Stock Exchange	Dutch
Angola	N/A		N/A	5.3	N/A	Competitive bid
Benin	Vendor		T+ 2 (average)	3.3	Dépositaire Central/Banque de Réglement (DC/BR)	Competitive bid
Botswana	Vendor		T+ 3	6	The Central Securities Depository Company of Botswana Ltd (CSDB)	Competitive bid
Burkina Faso	Vendor		T+ 2 (average)	3.7	Dépositaire Central/Banque de Réglement (DC/BR)	Competitive bid
Burundi	N/A		T+ 6	6.3	Central Bank of Burundi	Non-competitive bid
Cameroon	Vendor		T+ 3	4.3	CRTC, CAAC, BVMAC	Competitive bid
Cape Verde	Vendor		T+ 2 (average)	4	BVMC	Non-competitive bid
Central African Republic	Vendor		T+ 3	4	CRTC,BVMAC	Competitive bid
Cote dIvoire	Vendor		T+ 2 (average)	3.3	DC/BR, BVMAC	Competitive bid
Egypt	Vendor		T+1 (average)	3.7	MCDR	Dutch
Gabon	Vendor		T+ 3	3.3	CRTC, CAAC	Competitive bid
Ghana	Internal		T + 1	5	GSE Securities Depository Co. Ltd	Competitive and non-competitive bid
Kenya	Vendor		T+ 3	5	CDSC CBK	Competitive and non-competitive bid
Malawi	Vendor		T+ 3	5.3	Lusaka Stock Exchange	Competitive bid
Mali	Vendor		T+ 2 (average)	3.7	Dépositaire Central/Banque de Réglement (DC/BR)	Competitive bid
Mauritius	Vendor		T+ 2	7.7	Central Depository & Settlement Co.	Multiple price bid
Morocco	Vendor		T + 6	4.7	Casablanca stock exchange	Dutch
Mozambique	Vendor		T + 3	6	intraday	Competitive bid
Namibia	Vendor		T+ 1	5.3	There is no CSD in Namibia.	Competitive bid
Niger	Vendor		T+ 2 (average)	3.7	Dépositaire Central/Banque de Réglement (DC/BR)	Competitive bid
Nigeria	Vendor		T+ 2	4	Central Securities Clearing System Ltd	Competitive and non-competitive bid
Rwanda	Vendor		T+ 2	6.7	National Bank of Rwanda	Competitive and non-competitive bid
Senegal	Vendor		T+ 2 (average)	3.7	Dépositaire Central/Banque de Réglement (DC/BR)	Competitive bid
South Africa	Internally		T+3	8	STRATE	American-type, Dutch
Swaziland	Vendor		T+2	4.3		Competitive
Tanzania	Internal		T + 1	5	Bank of Tanzania (BOT)	Competitive
Togo	Vendor		T+ 2 (average)		Dépositaire Central/Banque de Réglement (DC/BR)	Competitive bid
Tunisia	Internally		T + 3	6	Societe Generale Securities Services (SGSS)	To be determined
Uganda	Internally		T + 1	4.7	Bank of Uganda	Competitive and non-

					competitive bid
Zambia	internally, vendor	T + 3	5.3	Lusaka Stock Exchange, Bank of Zambia	Competitive and non-competitive bid

*BRVM = Bourse Regionale Des Valeurs Mobiliers Stock Exchange

Source: African Fixed Income and Derivatives Handbook (2010), African Securities Exchange Association Yearbook (2012), Ecobank Middle Africa Guidebook 2013:Fixed Income, Currency and Commodities (2013), African Financial Markets Initiative (2014)

Dutch auction is employed in Egypt, Nigeria and Uganda while competitive bids are used in the remainder of countries that employ auction systems. The auctioneer begins the process by requesting a high price and slowly lowers the price up until a bidder declares, or shouts in the case of an open outcry auction, for the item. Congruently, in competitive bid auctions, bids usually sealed, are given to the auctioneer and the highest bid receives the sell. Dutch auctions are beneficial in developed markets as they promote vigorous bidding by market participants and reduce the borrowers financing expenses; however, such an auction method may not be of benefit for African emerging economies. Thin underdeveloped markets may experience greater volatility in price from marginal bids under a Dutch auction. Rather, multi-price auctions may be of advantage for the seller as it encapsulates the extra revenue relinquished by the seller in a single-price Dutch auction system.

Shorter term treasury bills are typically issued by the Treasury. The securities are sold directly to primary dealers in the majority of the countries sampled including Algeria, Ghana, Nigeria, South Africa, Tanzania and Tunisia. Primary dealers are a set of purposefully selected institutions, in most cases, financial institutions which aim to enhance market liquidity. Primary dealers, instead of investors, bid in the primary market while generating liquidity in the secondary market. Electronic Auction bidding systems receive bids from work stations located in different areas of central banks. Auctions are made available to all primary dealers for bid input. It is processed electronically by means of a termination rate or to the extent that government requires to borrow. The system automatically assigns the winning bids and their cost which are accessible to participants (Bank of Zambia, 2014, CSD, 2014). Countries that do not utilise the primary dealer system, such as Kenya and Zambia, increase liquidity by listing government securities on their stock exchange (AfDB, 2010). Thus, traditional stock market brokers are acquainted with bond trading in addition to their usual trading of stock.

3.6.2 Exchange versus OTC system

The plethora of frameworks range from over-the-counter (OTC) systems and exchange systems. An OTC system entails the direct transaction of dealers among themselves, uninhibited by involvement of brokers while brokers execute all trades on a stock exchange (Duffie, 2013). The vast majority of bond trading in Africa occurs on an exchange platform rather than on an OTC system. Namibia and Uganda are exceptions as their debt markets are OTC while Tunisia and Zambia trade bonds and bills on OTC and government bonds on their respective exchanges. Angola and Burundi, trade bonds through their central banks while Swaziland and Zambia trade only corporate bonds on their stock exchanges with the government issuing government securities. OTC markets exist in Algeria, Egypt, Nigeria, South Africa, Tunisia, Morocco, Mauritius and more recently Kenya. They are also among the more mature markets in Africa. The difference between OTCs and exchanges extends beyond the fact that exchanges are formal and OTCs less formal trading networks. Markets operating OTC have the propensity to be more volatile than exchanges as dealers in the OTC setting can retreat from the market at any time (Faurie, 2013). The tendency of OTC markets to become abruptly illiquid may be a contributing factor for exchanges being the preferred platform for African bonds.

Trades in the exchange are operated on the floor of the exchange, also known as the 'trading floor' (Dodd, 2012). Orders and directions are shouted out to dealers in an open outcry system. Many African exchanges including the Johannesburg Stock Exchange, Botswana Stock Exchange, Nigeria Securities Exchange, Nairobi Securities Exchange and Casablanca Stock Exchange have phased out of the open outcry system signalling a move into the electronic trading systems. However, the Uganda Securities Exchange and the Dar es Salaam Stock Exchange conduct trading through a continuous Open Outcry Auction Trading System. Broker representatives meet at the trading floor and trade by calling out their orders to a board writer who then documents it on the display board. A match between a bid and an offer results in a trade (Uganda Securities Exchange, 2014).

Movement from an open outcry system towards the electronic trading system implies that

orders submitted to dealers are automatically organised in a chronological order and according to the price limit in a market's order book. Automatic downloads to a market information system occurs with electronic trading systems thus reducing the time to settlement (T+S) of a transaction. Real time market data are shared with dealers and the trading process is much faster when automated in comparison to manual (Mlambo and Biekpe, 2007). Settlement systems for bigger transactions are also converted to electronic RTG settlement systems. Nigeria currently employs the NASDAQ OMX-X-Stream Trading System which makes the exchange among the fastest and most efficient in Africa. The preference for electronic over the open outcry system also stems from the knowledge that the ease of collusive schemes is increased in the latter system. The identification of participants' trades is relatively simple in an Open outcry system thus encouraging enforcement of group discipline. Secret bids impair the might of collusive schemes because information about other bids are not immediately obvious (Vajs, 2014).

3.6.3 Clearing and settlement

A vital issue to the operation of interbank, money and capital markets are payment and settlement systems to facilitate the transmission of monetary value between groups and meeting mutual obligations (WB, 2014).

Effective trading requires efficient clearing and settlement; however, relatively large investments need to be made into many African markets to be upgraded to international standards. Clearance and settlement conducted at exchanges would be an ideal situation as separate clearing and settlement organisations demand more complex links and operations to ensure that information is not lost , distorted or duplicated between activities. A script system, typically, is used in nascent markets such as Sierra Leone and Burundi, and entails orders on tangible paper that is transferred to a decentralised electronic bookkeeping system. Ghana, South Africa, Tanzania, Tunisia, Uganda and Zambia manage such activities internally while the remainder of the sample use external vendors, mostly from the private sector. Table 3.9 suggests that those countries with internal clearing and settlement systems, Ghana, Tanzania and Uganda, tend to have shorter times till settlement (T + S).

The legal and regulatory frameworks in North African countries are among the world's weakest (World Bank, 2014). Close inspection shows that a disjuncture between institutional arrangements and payment system regulators exists, causing confusion around matters such as settlement finality. Payment is made by cheque even for very large orders. Large trades are settled by Real Time Gross settlement systems; however, not all investors have access to the system. Besides regulation by the stock exchanges, supervision or regulation is not available in Botswana and Malawi. This may obstruct trust among participants of the exchange.

3.6.4 Delivery and payment

Three distinct methods of delivery and payment of securities exist among African emerging economies (Nasra, 2012). Algeria, Egypt, Ghana, Kenya and Tunisia use a settlement system that facilitates the transfer of securities on a gross basis. Delivery of securities (transfer of bonds from the seller to the buyer) takes place during the course of the processing cycle. The transfer of funds from the buyer to the seller, however, occurs with the completion of the processing cycle (Nasra, 2012). The sellers encounter extensive principal risk since securities are transferred to buyers prior to fund transferal. Mauritius employs a more cautious strategy where, between the seller and buyer, funds are transferred through a settlement bank. Subsequent to this, the securities account of the seller is debited and the buyer's account is credited with each participant receiving a settlement statement. Markets such as Morocco employ one type of settlement system on their OTC and a different type on their exchange. Systems that apply transfer guidelines on a trade-by-trade (gross) basis are used in Moroccan OTC transactions. This involves transferring securities to the buyer and payment to the seller simultaneously. Money balances are not adjustable during the processing cycle since payment occurs on a gross basis rendering such a system vulnerable to considerable liquidity risk as large balances of money may be required (Nasra, 2012).

Poor payments and banking systems, ill developed securities lending and repurchase markets, badly formed regulatory and legal structures, bulky trade comparison and

settlement mechanisms and unstable trade streams are part of the causes of failing settlement and clearing frameworks (Stehm, 1996). African emerging markets remain fraught with such ills; therefore, concerted efforts must be directed towards developing their systems. Their significance stems from the basic function of discharging obligations within these systems. Therefore, if inefficiencies are present, transaction costs may rise, reinforcing weak financial systems. Credit ratings are one means to gauge, among other things, the sovereign position of bond markets.

3.6.5 Credit rating

Solid credibility will elevate the appetite of investors of hard currency issuances, while encouraging domestic savers to lend at extended maturities. This will attract local pension funds and contribute to lengthening of the government yield curve. The existence of extended maturities will, in turn, enable governments to access funds from long term bonds in local currencies (Exchange Data International, 2014).

The main credit rating agencies, S & P, Moody's and Fitch, determine credit ratings using institutional effectiveness and political risk, economic framework and growth forecasts, international investment stance and external liquidity, fiscal performance and liquidity including contingent liabilities and debt burden as variables in their assessment (S & P, 2014).

Table 3.10: The evolution of local currency credit ratings in selected African countries from March 2010 to January 2014.

	March 2010			January 2014		
Country	**S&P**	**Moody's**	**Fitch**	**S&P**	**Moody's**	**Fitch**
Angola	--			Ba3	BB-	BB-
Benin	B	--	B	--		B
Botswana	A	A2	--	A2	--	A-
Burkina Faso	B	--		--		B
Cameroon	--				B	B
Cape Verde	B+	--	BB-		B+	B+
Egypt	BBB-	Baa1	BBB			
Gabon	BB-	--	BB-		BB-	BB-
Ghana	B+	--	B+	B1	B+	B
Kenya	B	--	BB-	B1	B+	B+
Lesotho	--		BB		BB-	--
Mauritius	--	Baa2	--	Baa1	--	--
Mozambique	B+	--	B+		B	B +

Namibia	--		BBB	Baa3	BBB-	
Nigeria	B+	--	BB	Ba3	BB-	BB-
Rwanda	--		B-		B	B
Senegal	B+	--	B+	B1	--	B+
Seychelles	--		B		B	
South Africa	A+	A3	A	Baa1	BBB	BBB
Uganda	B+		B		B	B +
Zambia	--			B1	B+	B+

* -- indicates that the local currency credit was not rated by the rating agency that particular year.
Source: African fixed income guidebook (2010), Ecobank (2014)

Credit rating agencies (CRAs) ascribe a grade to the initial issuance of a country's debt that represents the creditworthiness of the country. A 16 point scale ranging from AAA (Aaa in the case of Moody's) to C informs investors with an indication of the likelihood that their loans in a particular country will be repaid (Beaulieu, Cox and Saiegh, 2012). A rating at the upper 9 points of the 16 point scale is regarded as investment grade while ratings in the bottom 7 point span (BB+ (Ba1)-C) are considered speculative or junk. The countries are continuously monitored by CRAs and their ratings are adjusted accordingly (Beaulieu *et al* 2012).

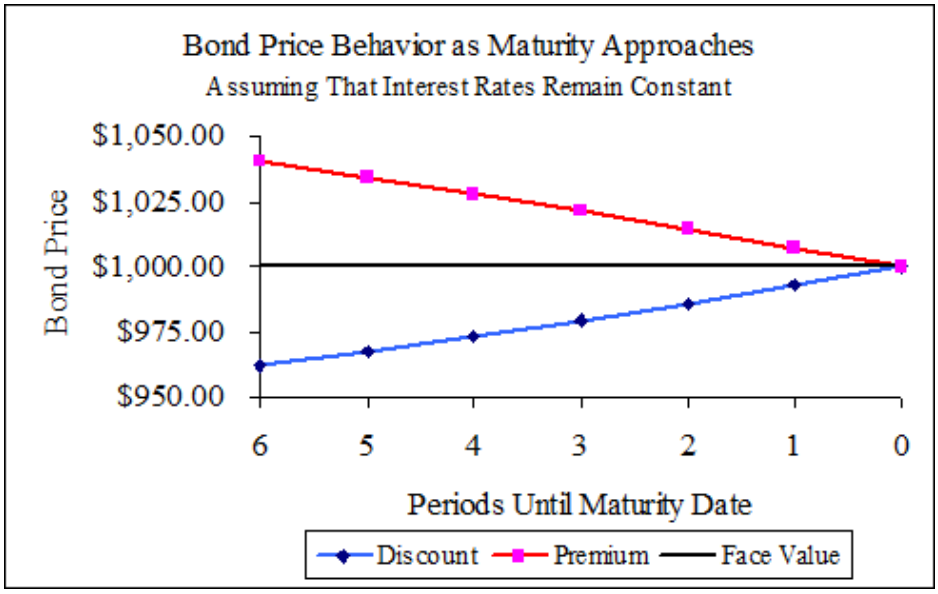
The development of African markets from being unrated to being rated by CRA's and receiving relatively positive ratings is documented in Table 3.10. Noticeable is Angola, from being unrated in 2010, to being rated by the three major CRAs in 2014. Despite the fact that Angola was considered more speculative from the ratings, they inform investors about the country as a reliable investment destination. Botswana and South Africa are two other countries in the sample that possess investment grade ratings; of the two, only Botswana has maintained that grade with South Africa dropping from A ratings in 2010 to a modest B rating in 2014.

3.6.6 Bond maturity

The initial years of bond market issuance in the markets surveyed, characterised securities with short maturities to finance monetary policy instruments and government expenditure (AfDB, 2014). However, Table 3.6 shows that as bond issuance and bond market increase and bond development progresses, maturities of bonds have incresed to service the needs of governments, parastatals and companies to finance especially infrustructure projects

(Faurie, 2013). This development signals the markets' ability to access funds at each rollover of maturity and pay the rate of interest at each rollover period (Faurie, 2013). It is also responsible for the slow but steady progression from the dominant commercial bank investor base to non-bank financial sectors though commercial banks still hold over 80% of government bonds outstanding thus broadening the diversity of security holdings. The implications of longer maturities are infrustructure improvements that encourage economic development, eventually translating into fiscal revenue that match liabilities and thereby reducing the incidence of currency mismatch and original sin.

Figure 3.3: Bond Price Behaviour as maturity approaches



Source: Mayes (2015)

Figure 3.3 suggests that, if one assumes that interest rates remain constant, the longer investors are willing to part with their money in a bond, the higher compensation they will recieve. Further, the longer investors hold a bond the more the discounted and premuim bond will tend towards the same value.

3.7 Conclusion

This section has examined African financial systems, of which bond markets are a component. Measures such as liquid liabilities to GDP and private credit to GDP have been

used to decipher the effectiveness of intermediaries in the various African markets. The results are varied. Markets such as South Africa show liquidity ratios on par with those of fellow emerging country Brazil, while Guinea Bissau reflects a yearly decreasing ratio far below that of African countries. The banking sector and stock in selected African countries have been examined against those of developed and emerging countries with results indicating huge variations among African markets. African bond markets are, however, maturing at a promising pace. Deeper inspection of the micro infrastructure elements of these markets reveals the growing inclusion of the markets into the global investor arena. Furthermore, developments in clearing and settlement, investments into trading systems and advancements in settlement times are promising signals for the future developments of African bond markets.

CHAPTER 4: METHODOLOGY

4.0. Introduction

Methodological issues that address the objectives of establishing variables that contribute to the performance of bond markets in African emerging economies are examined in this chapter.

This study extends previous studies of bond market determinants such as Eichengreen and Luengnaruemitchai (2004), Burger and Warnock (2006), Adelegan and Radzewicz-Bak (2009), Bhattacharyay (2013), Mu *et al* (2013) and Essers *et al* (2014) by applying stricter methodology that takes downside risk into consideration and by employing tighter robustness and sensitivity tests such as the GMM. Factors that contribute to corporate bond issuance by firms are examined in accordance with studies by de Albornoz and Pope (2004), Hale and Santos (2008), Hosono *et al* (2013), Stewart and Watson (2013) and Mizen and Tsoukas (2013). Unlike many studies of bond market performance, this study separates the analysis of government and corporate bond markets, citing different underlying reasons for investment and issuance of the two classes of bonds. This is considered under the premise of Wang and Wu (2015) who suggest that public and corporate bond markets are selected by investors for different reasons, the different risk profiles for each class of bonds being among the principle reasons.

Three analytical techniques are developed in this chapter. Guided by the literature, the primary processes consist of: 1) a model that accounts for downside risk, 2) a model testing macro-economic, social, institutional and historical determinants of local currency bond market performance, 3) a model establishing the determinants of a firms' decision to issue in the primary corporate bond market or not.

Section 4.1 contains the hypotheses and foundation of the analysis. Section 4.2 conveys the first of five models of this study. Section 4.3 comprises a proposed econometric model of bond market performance determinants. Factors that influence firms to issue bonds are modelled in Section 4.4. The sample selection and estimation techniques employed are

discussed in Section 4.5. The dependent and independent variables used in this study are examined in Section 4.6 which precedes the conclusion and close of this chapter.

4.1 Hypotheses

The literature survey demonstrated the diversity of performance and stages of development between African markets and the rest of the world. The extent of the disparity and relative levels of performance are of crucial importance not only for academic research but also for policy analysis. A systematic approach to addressing this strand of the literature would thus help enlarge our understanding of African capital markets. To this end, and based on the gaps identified, a number of hypothesis are tested .

H1: Bond markets in African emerging countries perform at sub optimal levels particularly in comparison to other emerging and developed countries.

H2: The macroeconomic environment and the microstructure of capital markets boost bond market development and performance in African markets.

H3: A model of bond market performance that explicitly includes historical, institutional, and social factors can help capture the unique characteristics of the breadth and depth of domestic bond markets in Africa.

4.2 Conventional model: Standard bond market determinants model

The first model examines bond market performance determinants. Knowledge of these determinants informs policy initiatives to suit African markets. Previous studies of bond market determinants, including Eichengreen and Luengnaruemitchai (2004), Burger and Warnock (2006), Khalid and Rajaguru (2010) and Bhattacharyay (2013) utilize this standard model. This standard multivariate model is specified as follows:

$$BF_{it} = \alpha + \beta_{it} X_{i,t} + \varepsilon_{i,t} \quad (4.1)$$

where BF_{it} is the size of the bond market proportional to GDP of country i in year t. A constant, which is also the intercept of the regression line is denoted by α. The explanatory

variables are represented by $X_{i,t}$ and the normally distributed, zero mean error terms are denoted by $\varepsilon_{l,t}$. Table 4.1 displays the explanatory variables employed in bond market determinant studies by Eichengreen and Luengnaruemitchai (2004), Burger and Warnock (2006), Adelegan and Radzewicz-Bak (2009), Bhattacharyay (2013), Mu *et al* (2013) and Essers *et al* (2014). Risk is represented by the risk coefficient, β (Fama, 2004). Rather than overall risk, β is a measure of risk of a diversified portfolio (Damodaran, 2012). According to Lui and Lui (2012), beta is essentially a measure of risk exposure divided by expected excess return and is represented by dividing the covariance between asset *i* and the market portfolio by its variance, establishing the most commonly used measure of risk. It is reflected in the equation:

$$\beta_i = \frac{\sigma_{iM}}{\sigma_i \cdot \sigma_M} = \frac{E[(R_i - \mu_i)(R_M - \mu_M)]}{\sqrt{E[(R_i - \mu_i)^2] \cdot E[(R_M - \mu_M)]^2}} \quad (4.2)$$

where β is the risk coefficient, σ_i M is the covariance risk of asset *i* in security M assessed in relation to the mean covariance risk of securities (Sabal, 2002; Fama, 2004). The expected return of the market portfolio and specific security is R_M and R_i respectively, μ_M *and* μ_i is the expected return of the respective securities (Sabal, 2002; Kroll and Ben-Horin, 2014). Moreover, $\sigma_i \cdot \sigma_M$ is proportional to the risk of each dollar invested in asset *i* and is a factor in the market portfolio (Fama, 2004). Beta (β) derives from an equilibrium wherein investors present mean variance behavior (MVB) within the CAPM (Artavanis, Diacogiannis and Mylonakis, 2010). Equations such as the CAPM are consistent with standard methodologies, such as the bond market determinant model above, applied to advanced economies (Jaramillo and Weber, 2013).

4.2.1 Capital asset pricing model and beta (β)

Estrada (2002, 2007), Cwynar and Kazmierkiewicz (2010), Yury (2012) and Kroll and Ben-Horin (2014), among others, question the standard framework of the CAPM and consequently beta for emerging economies. Estrada (2007) proposes its replacement with an alternative framework based on mean semi-variance behavior (MSD), the downside risk

capital asset-pricing model (D-CAPM) and the downside beta. The variance of returns as a risk measure is appropriate only when the underlying return distribution is normal and symmetric (Malkiel and Xu, 2002; Raei *et al,* 2011). The traditional CAPM, from which beta is derived, is thus a partial portrayal of risk in markets that do not exhibit such distributions (Kroll and Horin, 2014). Kambadza and Chinzara (2012) show that the underlying return distribution is not normal and symmetric in most African economies, therefore, suggesting the inappropriate use of beta as a risk factor in African economies. The result is a model with a downside measure that captures the information contained in the skewness and variance in a single measure obtained by:

$$\beta_i^D = \frac{\Sigma_{iM}}{\Sigma_M^2} = \frac{E\{\min[(R_i - \mu_i),0] \cdot min[(R_M - \mu_M).0]\}}{E\{\min[(R_M - \mu_M),0]^{\ 2}\}} \quad (4.3)$$

Here, the risk of asset *i,* taken individually is measured by the assets' downside standard deviation of returns (ε_i) or semi deviation (Estrada, 2007). Downside covariance (co semi variance) (Σ_{iM}) gives the counterpart of asset *i's* covariance to the market portfolio, in a downside risk framework. The co semi variance, according to Nikoomaram (2010) is scale dependent and unbounded thus, it is derived by the markets' semi variance of returns, therefore realizing the downside correlation ($\frac{\Sigma_{iM}}{\Sigma_i \cdot \Sigma_M}$) and downside beta ($\beta_i^D$) of asset *i.* The downside beta ($\beta_i^{\ D}$) of asset *i,* is attained when the co semi variance is divided by the semi variance of returns of the market (Fama, 2004).

4.3 Model 1: Proposed bond market performance determinant model

This study extends the standard Eichengreen and Luengnaruemitchai (2004) model by proposing the replacement of the standard beta(β) with the downside beta (β_i^D) to account for the unique nature of African emerging markets. Estrada (2007) questions the standard framework based on the MVB, CAPM and beta in emerging economies and proposes a replacement of it with an alternative framework based on mean semi- variance behavior (MSD), the downside risk capital asset-pricing model (D-CAPM) and the downside beta. Major reasons for this proposal are that the variance of returns as a measure of risk is

appropriate only when the underlying return distribution is normal and symmetric (Estrada, 2007). Kambadza and Chinzara (2012) show that the underlying return distribution is not normal and symmetric in most African economies ,therefore, suggesting the inappropriate use of beta as a risk factor in African economies. Thus, this study alters, slightly, the standard Eichengreen and Luengnaruemitchai (2004) model to suit the African condition because the beta value in the model (semi-variable) will combine into one measure the information contained in two statistics, skewness and variance. The result is a one-factor model to estimate required returns. The model for bond market determinants used in this study is:

$$Y_{i,t} = \alpha + \delta(\mu_i + \mu_t) + \sum_{k=1}^{K} \beta_k^D X_{i,kt-1} + \sum_{l=1}^{L} \gamma_l Z_{i,lt} + \varepsilon_{i,t} \quad (4.4)$$

where $Y_{i,t}$ is bond market capitalization as a share of GDP (Adelegan and Radzewicz-Bak, 2009; Essers *et al* 2014). A constant equivalent to the value of the dependent variable when the independent variable equals 0, is denoted by α. The independent variable $X_{i,}$ is lagged by the inclusion of $_{t-1}$ to its subscript and symbolizes time variant explanatory lagged variables that compensate the mismatched starting dates of the dependent and some of the explanatory variables thus, increasing the sample size (Essers *et al,* 2014). A common intercept across countries is adopted and asymptotically estimated for the nonlinear function of the parameters means of δ (Weisberg, 2001). Variables are normalized by γ with time invariant explanatory variables denoted by $Z_{i,t}$ Eichengreen and Luengnaruemitchai, 2004; Mu *et al,* 2013). Country specific and time fixed effect takes the form μ_i and μ_t respectively and the error term is $\varepsilon_{l,t}$ (Essers *et al,* 2014). Fixed effects, random effects and OLS estimators are used in this model. Many advantages exist in each method; however, each has disadvantages that researchers must acknowledge (Bhattacharyay, 2013). The FE estimator analyses the causes of variations within each country and removes all time invariant unobserved heterogeneity among countries. Efficiency of estimates may be decreased in this method (Essers *et al,* 2014). Several studies on bond market determinants rely only on the fixed effects model to consider disparities across countries (Khalid and

Rajaguru, 2010; Peristiani and Santos, 2010; Ebeke and Lu, 2014). However, such an approach may assume complete disassociation of fixed effects and repressors. A RE estimation is presented since the influence of time-invariant variables such as religion and former colonial power on bond market capitalization is not detected by the standard fixed effects estimator. Rather than carrying out tests to decipher which estimation technique is most suited for the situation, the stance of Clarke and Linzer (2012) to abandon specification tests such as the Hausman (1978) test which is intended to convey the disparities among the parameter estimates of the respective approaches, is taken (Clarke et al. 2010; Clarke and Linzer, 2012;). A comparison of the RE, FE and GMM estimator between the models are made. Time invariant explanatory variables are denoted by $Z_{i,t}$ (which is legal origin) and a multivariate normally distributed random disturbance is indicated by $\varepsilon_{i,t}$ (Eichengreen and Luengnaruemitchai, 2004; Mu *et al,* 2013). A novel characteristic of the model proposed in this study is the lagged explanatory variable ($X_{i,t-1}$). It symbolizes time variant explanatory lagged variables that are applicable to this model as they compensate for the mismatched starting dates of the dependent and some of the explanatory variables thus, increasing the sample size (Essers et al. 2014).

4.4 Model 2: Factors that influence firms' decision to issue bonds

This subsection determines firm level characteristics that drive a firm to issue bonds. This is important because, according to Mizen and Tsoukas (2013), a favourable environment for bond issuance on the supply side and investment on the demand side is essential for bond markets to develop. Model 1 relates, largely, to the supply of bonds in a market and Model 2 to the demand side. This section scrutinises firm size, age, risk, profitability, leverage, growth and tangibility of assets from the financial reports of selected firms.

The dependent variable is categorical; thus, a probit model is most applicable (Park, 2009). This standard cumulative normal distribution probit response function deals with unobserved heterogeneity that arises when treating endogenous explanatory variables in panel data (Cortei and Farhat, 2011). A combination of techniques employed by Oberhofer and Pfaffermayr (2012) and Stewart and Watson (2012) form the basis of this section.

Fractional probit analysis finds factors that influence the choice of firms in African emerging economies to issue bonds. The analysis is utilized by the following model:

$$E\left(Bonds_{it} \mid x_{i1,}\, x_{i2,\ldots.}\; x_{it}\right) = \Phi\left(\Psi_{it} + x_{it}\,\beta_i + \bar{x}_{\,i}\,\xi_i\right) \quad (4.5)$$

where i indexes companies and t the year, Ψ_{it} highlights the distinctive intercepts applied for each year. The standard normal cumulative distribution function is Φ while the scaled coefficients are Ψ_{it}, β_i and ξ_i . Unobserved effects are represented by $\Phi\left(\Psi_{it} + \bar{x}_{\,i}\,\xi_i\right)$. The matrix of independent variables are represented by x_{it}. Where:

$$x_{it} = [Size_{it}, risk, Profitability_{it}, tangibility\ of\ assets, Leverage_{it}, Growth_{it}, Year_i] \quad (4.6)$$

The assumption of this model is that the amount of resources put into a single debt category instrument by a firm, is comparatively independent of the amount used for other types of debt. The downside risk measure of the preceding subsection is not applied to this model. Rather, the standard beta remains, guided by the postulations of Samuelsson's (1998) theory that efficiency can be divided into micro efficiency and macro efficiency and micro level securities are more efficiently priced. This model, according to Samuelsson's (1998) theory does not require application of a downside beta model because securities of micro environments tend to have efficient prices.

Unobserved heterogeneity is not taken into consideration in fractional logit modelling; thus, this study follows Papke and Wooldridge (2008), and Oberhofer and Pfaffermayr (2012), and employs a probit response function to deal with a probable bounded effect. This occurs when fractional dependent variables restricted between zero and one are predicted to cause rounding off of the dependent variable to the nearest number to produce incorrect results (Haucap and Muck, 2013). The probit response function takes the form:

$$E\left(y_{it} \mid x_{it}, c_i\right) = \Phi(x_{it}\,\beta + c_t), \mathrm{t} = 1, \ldots . \mathrm{T} \quad (4.7)$$

where Φ is the standard normal distribution function and the unobserved effects are $c_i \; and \; c_t$. The components of β provide the partial effects direction, since Φ is firmly monotonic. The vector of variable i at time t is shown by x_{it} (Papke and Wooldridge,2008; Oberhofer and Pfaffermayr, 2012; Stewart and Watson, 2012). Continuous regressors follow the equation:

$$\frac{\partial E(y_t \mid x_{t,c})}{\partial x_{it}} = \beta_j \Phi \, (x_i \beta + c) \tag{4.8}$$

and, discrete explanatory variable modifications require:

$$\Phi\left(x_t^{(1)} \, \beta + c\right) - \Phi\left(x_t^{(0)} \, \beta + c\right) \tag{4.9}$$

Where, $x_t^{(1)}$ and $x_t^{(0)}$ denote the two measures (1 and 0) that the discrete variable may assume (Papke and Wooldridge,2008). Unobserved heterogeneity is dealt with by a measure that takes into account the value of observed covariates to address unobserved heterogeneity of the panel data.

The partial effects, through the distribution of the unobserved effects are averaged, and the average partial effects (APE) obtained (Papke and Wooldridge, 2008). According to Cotei (2010), the APE regarding x_{it}, for continuous variables, assessed at x_i is:

$$E \left[\beta_{tj} \, \Phi(x_i \, \beta + c)\right] = \beta_t \, E_c \left[\Phi \, (x_i \, \beta \; + c)\right] \tag{4.10}$$

The above equation suggests that the APE is contingent on x_i, β, but not on c. Contrarily, the APE for discrete explanatory variable alterations is generated by averaging $\Phi\left(x_t^{(1)} \, \beta + c\right) - \Phi\left(x_t^{(0)} \, \beta + c\right)$ through the distribution of c (Stewart and Watson, 2012). Two assumptions are made for the identification of β and the APE. First, the independent variables must be truly exogenous depending on the unobserved effects and the effects must be conditionally normal (Wooldridge, 2004).

$$E\left(y_{it} \mid x_{i,} \; c_i\right) = E \left(y_{it,} \mid x_{it,} c_i\right), \mathrm{t} \; = 1, \ldots . \mathrm{T} \tag{4.11}$$

where $x_i \; \equiv \left(x_{i1,} \ldots . x_{i\mathrm{T}}\right)$ represents the group of covariates in all periods.

The distribution of the unobserved effects, c_i is restricted in the second assumption by means of a conditional normality assumption:

$$C_i \left| \left(x_{i1,} x_{i2,\ldots.} \; x_{i\mathrm{T}}\right) \sim \mathrm{Normal}(\Psi + \bar{x}_i \, \xi, \sigma_a^2) \right. \quad (4.12)$$

where $\bar{x}_i \equiv T^{-1} \sum_{t=1}^{T} x_{it}$ is the 1 x K vector of time averages.

4.5 Estimation techniques

4.5.1 Static panel estimators

Several forms of functional estimation are employed in this framework including: random effects (RE), fixed effects (FE) and pooled ordinary least squares (POLS) models. A further estimation stage is presented in Model 2 since the influence of time-invariant variables on bond market capitalization may not be detected by the standard fixed effects estimator. The estimation takes the shape of a regression of estimated country specific effects $\hat{\mu}$, on $Z_{i,t}$ variables:

$$\widehat{\mu_i} = \theta + \sum_{l=1}^{L} \gamma_l \; z_{i,lt} + \eta_{i,t} \quad (4.13)$$

Many advantages exist with the fixed and random effects models respectively; however, each has disadvantages that researchers must acknowledge (Bhattacharyay,2013). A simulation exercise to compare fixed effects, pooled ordinary least squares (POLS) and the feasible generalized least squares (FGLS) is performed.

4.5.2 Generalized Method of Moments (GMM)

One major assumption of OLS regression is that the x_i values are uncorrelated with the error terms. Endogeneity occurs in a statistical model when there is a correlation between the X variable and the error term. Generally, omitted variable bias brings about this issue; however, the panels of this study are strongly balanced and therefore no variables are omitted. A further source of endogeneity is reverse causality (Rose and Spiegel, 2015). An exogenous variable, that is, a variable that is not associated to other variables of the

equation, is required for a causal claim about bond market performance determinants to be made. An infinite amount of unobserved variables exist in the observation of bond market performance data, which can bring about endogeneity. The result of endogeneity is false estimations that completely erode the validity of the estimator. Inflation, in this study, is endogenous with at least public debt. All else equal, higher inflation rate and negative adjustments in GDP growth rates push up yields. This will occur as investors are likely to demand greater yields from a country with high inflation rates and low growth projections. Inflation is therefore correlated with other variables of the study. Due to endogeinity, the generalized method of moments (GMM) technique is employed. The rationale behind it is the fulfilment of a set of orthogonality conditions (Lee and Yu, 2014; Sun and Ashley, 2014). Arellano and Bond (1991) and Blundell and Bond (1998) developed the technique which, like the proposed model, utilizes baseline panel data specification as well as dummy variables for time. Theoretically, several variables of this study may influence or depend on each other. The endogenous variables are hypothesized as: the dependent variable, fiscal balance and inflation. The reduced form equation used in this study takes demand and supply side issues into consideration. The first two variables are associated with interest rate, in that both the demand and supply for bonds are contingent on existing market interest rates. The government, however, also has the ability to impact market rates. Therefore, the supply of bonds may push interest rates, implying reverse causality from bonds to variables associated with interest rates. Regarding fiscal balance, many governments in Africa have limited ability to borrow funds. The size of the fiscal deficit may be propelled by the availability of debt finance, which may bring about endogeniety. For all three variables, therefore, a GMM is employed to take into account possible endogenous relationships. Thus, the parameters of equation 4.2 are estimated by a two-stage, least square method by permitting the errors of equation 4.2 to satisfy the orthogonality condition:

$$E\left(INF_{i,s}\,\varepsilon_{i,t}\right) = 0,\ \forall s\ < t-1. \tag{4.14}$$

This occurs to achieve a system of a differenced equation and another in levels (Mu *et al,* 2013). Under the serially uncorrelated errors assumption, the condition of orthogonality

suggests that the instrumental variables to detect the parameters of equation 4.2 hold the structure:

$$Z_{i,t} = \left[INF_{i,t-2}, X_{i,t}\right]. \quad (4.15)$$

where, variable *X* is all exploratory variables of equation 4.1, excluding the dependent variable, fiscal balance and inflation. Often, efficiency is enhanced through the variables in levels in the second equation as they are implemented with their particular first differences. The revised model thus, reflects the lagged dependent variable as independent.

If one assumes serially uncorrelated errors, the orthogonality conditions infer that the vector of instrumental variables available to recognize the parameter of the above situation takes the shape:

$$Z_{i,t} = \left[Ln\left(\frac{Bond_{it-2}}{GDP_{it-2}}\right), \ldots\ldots Ln\left(\frac{Bond_{i,1}}{GDP_{i,1}}\right)\right]; X_{i,t-2}, \ldots\ldots, X_{i,1} \quad (4.16)$$

where, Z_i^* is a block diagonal matrix with m^{th} block determined by equation 4.16, for *m*=1,….,*T*-2, the matrix of instrumental variables is Z=$(z_1^*,\ldots,z_N^*)$. The one-step GMM estimator for the K x 1 coefficient vector in which the lagged dependent variable is introduced as an independent variable is presented by:

$$\left(\hat{\delta}\right) = (\tilde{X}^{*\prime} Z A_N Z' \tilde{X}^*)^{-1} \tilde{X}^{*\prime} Z A_N Z' Ln\left(\frac{\text{Bond}_{it}}{\text{GDP}_{it}}\right) \quad (4.17)$$

$A_N = (\frac{1}{N} \sum_i^N Z_i^{*\prime} H Z_i^*)^{-1}$, with *H* a T-*2* square matrix including 2's in the primary diagonal, -1's in the first sub-diagonal and 0's in another place, and $\tilde{X}^*$ is the $N(T-1) \times K$ design matrix stacked by cross-sectional units with conventional row. The asymptotic variance-covariance matrix of the GMM coefficient vector, is exhibited by:

$$\text{a var}\left(\hat{\delta}\right) = N(\tilde{X}^{*\prime} Z A_N Z' \tilde{X}^*)^{-1} \tilde{X}^{*\prime} Z A_N V_N A_N Z' \tilde{X}^* \left(\tilde{X}^{*\prime} Z A_N Z' \tilde{X}^*\right), ^{-1} \quad (4.18)$$

where $V_N = N^{-1} \sum_i^N Z_i' \varepsilon_i \varepsilon_i' Z_i$ and the $\varepsilon_{I's}$ are the GMM residuals

A benefit of GMM estimator is that, it assists in reducing complications due to multicolinearity between the explanatory variables and endogeneity among dependent and explanatory variables (Kumar and Pradhan, 2002; Yao and Wei, 2007).

4.5.3 Bernoulli quasi-maximum likelihood estimator (BQMLE)

Scaled estimates can be stabilized by using the pooled Bernoulli quasi-maximum likelihood estimator (BQMLE), which is achieved by maximizing the pooled probit log-likelihood. An initial step in finding estimates of the parameters requires the estimation of the generalized linear moment (GLM), such as probit and logistic models. A key assumption of the GLM is its creation from a probability distribution in the exponential category, Bernoulli in this instance (Kaiser, 2013).

4.6 Data and variables

4.6.1 Data Sources

Secondary data on macroeconomic, social, and economic indicators are taken from the World Bank World Development Indicators(WDI) database, the African Development Indicators (ADI) database, African Financial Markets Initiative database, African Securities Exchanges 2014 Yearbook, Ecobank 2014 Fixed Income Report and the respective country central bank websites. Firm level information comes from Bank Scope, Business Monitor, McGregor BFA Domain and published balance sheets and income statements of the respective listed firms.

Model 1 utilises monthly data over the period January 2005 and December 2014. A period start date earlier than 2005 would yield scarce data as many bond markets in Africa had not yet issued bonds prior to 2005. Yearly data for non-financial firms between January 2009 and December 2014 are employed in Model 2. Further, firm data used in the model have positive long-term debt in the company's capital structures and consistently reported

annual accounts during the analysis interval (Bhaduri and Majumdar, 2005). The data of the key variables in this study are presented in varying frequencies; for instance, GDP data are presented quarterly and exchange rate at a much higher frequency (Armesto, Engemann and Owyang, 2010). Data frequencies have been matched through temporal aggregation where higher-frequency data are aggregated to the lowest frequency (Foroni and Marcellino, 2013). There is a slight possibility that a great deal of potentially rich information is destroyed and corrupt measurements incorporated into the model when data are converted into alternative frequencies. However, under data constraints in Africa's developing bond markets, this seems to be the most plausible way out.

4.6.2 Dependent variables

i. The Logarithm of Bonds Outstanding as a Percentage of GDP and Total Bonds

The size and composition of the domestic bond markets are the dependent variables. The year-end outstanding local currency marketable central government debt as a ratio of GDP measures the size of the domestic government markets (Mu *et al* 2013). Marketable central government local currency debt is used regardless of the residency of the creditors. Essers *et al* (2014) explain that cases where debt settlements occur in foreign currency may be included in the dependent variable computation, only if their cash flows are of local currency. Macro-economic variables such as fiscal balances in good health are expected to be negatively correlated with bonds outstanding as a percentage of GDP and total bonds possibly because of the lesser need for governments to issue bonds in the presence of improved fiscal balances.

ii Decision to issue corporate bonds

A firm's decision to issue corporate bonds is based on the ratio of total bond debt to total assets of the firm at a particular time. It signifies the full quantity of bonds issued by the firm. This variable represents firm level factors that contribute to the availability of corporate bonds in a market. Larger firms listed in their domicile country's stock exchange for relatively longer periods are expected to issue bonds more than firms that do not have such attributes.

4.6.3 Explanatory Variables

The explanatory variables are built on the extensive overview in Chapter 3 and classified into various natural sets including the macroeconomic, institutional and cultural. The macroeconomic set comprises inflation, consumer prices (annual %), the natural logarithm of GDP to PPP, the fiscal three year moving average of GDP, the standard deviation of log first difference of nominal exchange rate, total central government debt (% of GDP), GDP per capita, PPP (current international $), external debt stocks (% of GNI), exports of goods and services (% of GDP) and domestic credit to private sector (% of GDP). The institutional set includes political stability and absence of violence/terrorism, the World Governance Indicator: control of corruption and public protest. The former colonialist power and the religion dummy comprise the cultural set. Table 4.1 and Table 4.2 show the variables used in previous macro and micro economic studies.

Table 4.1: Variables used in bond market determinants regressions

	Eichengreen and Luengnaruemitchai (2004)	Burger and Warnock (2006)	Adelegan and Radzewicz-Bak (2009)	Bhattacharya (2013)	Mu *et al* (2013)	Essers *et al* (2014)
MACROECONOMIC						
Bank interest rate spread					X	
Banking concentration	X					
Banking sector size	X					X
Capital account openness					X	X
Capital controls			X			
Composite political, economic and financial risk				X		
Country size					X	X
Developmental stage of the economy	X					
Domestic credit provided by banking sector		X	x			
Domestic credit to trade					X	
Economy size	X				X	
Exchange rate	X		X	X	X	
Exports as percentage of GDP						
Exports origin			X			
Financial development						X
Fiscal balance		X	X		X	X
GDP		X				
GDP growth		X				

GDP per capita PPP			X	X	X		
GDP, PPP			X	X			
Government debt						X	
Inflation		X				X	
Interbank rate			X		X		
Interest rate	X		X	X			
Investment risk	X		X		X		
INSTITUTIONAL							
Democracy						X	
Institutional quality						X	
Law and order	X	X	X		X		
Legal origin	X				X	X	
Natural openness	X				X	X	
Bureaucracy			X		X		
Corporate governance and transparency							
Corruption			X		X		
Creditor rights		X					
OTHER							
Geographical/ disease endowment environment	X						

Source: Researchers' compilation from literature survey.

Table 4.2: Variables used in corporate bond market determinants regressions

	de Albornoz and Pope (2004)	Hale and Santos (2008)	Hosono *et al* (2013)	Stewart and Watson (2013)	Mizen and Tsoukas (2013)	
Advertising expenditure				X		
Bond market conditions		X				
Capital expenditure/total fixed assets (CAPEX)	X					
Collateralized assets owned by firm				X		
Company risk	X					
Costs			x			
Current assets/ total liabilities					X	
Debt			x			
EBIT/ total assets					X	
Extent of managerial equity ownership				X		
Extent of regulation						
Firm value				X		
Firms investment or growth opportunities						
Firms non debt cash shields				X		
Free cash flow amount			x	X	X	
Growth in sales	X					
Industry classification	X			X		
Industry market/ book ratio	X					
Information asymmetry				X		

Intangibles	X					
Interest coverage ratio				X		
Investment/assets		X				
Location				X		
No of years firm has been listed on stock exchange					X	
Number of employees				X		
Operation Assets/ Total Assets						
profitability				X		
Profitability of bankruptcy or default				X		
Quick ratio		X				
R & D expenditure			x			
Real assets		X				
Recession indicator		X				
ROA	X					
Sales	X		x			
Sales growth rate			x		X	
Size of the firm				X	X	
Country of ownership					X	
Tangible assets/ total assets						
Tobin's Q		X				
Total assets	X		x			
Total debt/ total assets	X	X			X	
Type of business operation				X		
Uniqueness of firms product				X		
Volatility of firms value				X		
Year dummy			x			
Years in business operation			x	X		
net income / assets		X				

Source: Researchers' compilation from literature survey

4.7 Population and sample selection

Countries in the sample are selected according to their issuance of bonds. Only countries that issue government bonds with a maturity of at least one year are included in the government bond sample. In total, 26 African countries and five emerging economies are included in this study. Three countries, Gabon, Burundi and Cameroon are from Central Africa. Rwanda, Kenya, Mauritius, Tanzania and Uganda are the five Eastern African countries employed in this study. The four North African countries in this study are: Algeria, Egypt, Tunisia and Morocco. Seven countries in the sample are from Southern Africa and are: Angola, Botswana, Malawi, Mozambique, Namibia, South Africa and Zambia. Six countries are located in West Africa, namely Burkina Faso, Cabo Verde, Cote d'Ivoire, Ghana, Nigeria and Senegal. Mexico, of North America, and Brazil of South America are emerging

economies included in the study. A set of three other emerging economies is included in the study: India, situated in South Asia and Indonesia in South-East Asia are included in the emerging economy set of countries. Turkey, a country located in South-eastern Europe and Western Asia completes the set. African countries which issue corporate bonds on their own or operate on regional exchanges are included in the corporate bond analysis. Appendix 9.1 shows the countries used in this study.

The firms used in this study operate from various sectors in African countries. The sample of 49 countries consists of 32 bond issuing firms and 17 non-issuing firms. Appendix 9.2 shows the firms, sector of operation, country of origin , and year founded.

4.8 Conclusion

The chapter commences with motivation for the positivist lens through which this study is conducted. The analytical techniques and models, tests of variables and estimation methods used are defined. Several models are specified as well as a critique of the standard beta and its subsequent modification and inclusion in the standard baseline econometric model for bond market determinants. Estimation techniques include static panel estimations: Fixed and random effects, pooled ordinary least squares, feasible generalized least squares, and a dynamic model estimation using the General Method of Moments (GMM). A Bernoulli quasi-maximum likelihood estimator estimates the parameters of the penultimate and final model of this chapter. The estimated results of models presented in this chapter are analysed, interpreted and discussed in chapters five, six and seven.

CHAPTER 5: PRESENTATION OF EMPIRICAL RESULTS AND ANALYSIS

5.0. Introduction

Panel data procedures are used in this chapter to analyse data for 26 African countries, five emerging economies, and 49 listed firms. Incorporation of a set of emerging economies is advantageous as a benchmark for comparison. The data collected attend to the research problem and its subsequent questions. Both annual and monthly data are used in this balanced set. Two dependent variables are drawn upon to explore the driving factors behind bond market efficiency, effectiveness, size, and liquidity in Africa. The utilization of dynamic and static techniques permits more robust outcomes of the methods employed in the estimations. The results presented in this chapter are useful in the derivation of policy implications presented in Chapter 7.

Key variables of Models 1 and 2 are summarized using descriptive statistics in section 5.1. Factors that determine the performance of bond markets in Africa are investigated in section 5.2 and section 5.3 is devoted to the analysis of factors that influence the issuance of bonds by a firm. The chapter closes with a summary in section 5.4.

5.1 Factors that determine the performance of bond markets in Africa (Model 1)

5.1.1 Descriptive statistics of Model 1 panel data.

Summary statistics for the 26 African countries including the dependent and explanatory variable are reflected below by means of annual data. The natural logarithm is used, where necessary, in the computation of descriptive statistics as suggested by Nelson (1991) and Alagidede (2011).

Table 5.1: Descriptive statistics of African country sample, 2005-2014

Variable	Count	Mean	Median	Interquartile Range	Standard deviation	Variance	Skewness	Kurtosis	Jacque-Bera Test
Inflation	250	7.07	6.24	6.54	5.20	27.02	1.11	1.66	80.47
Central government debt	250	39.43	35.46	26.03	24.39	594.76	1.44	2.85	171.58

GDP per capita	250	5809	3705	8037	4959	2.46E+07	0.90	-0.30	34.47
External debt	250	30.66	25.89	21.65	21.27	452.58	1.51	2.97	186.88
Exports	250	33.73	30.98	24.51	15.69	246.10	0.52	-0.11	11.42
Domestic credit	250	32.51	18.55	29.61	31.69	1004	2.23	5.03	469.86
GDP to PPP	250	24.66	24.55	1.80	1.46	2.12	0.27	-0.44	5.07
Fiscal balance	250	-2.34	-3.07	3.68	4.34	18.87	1.42	2.53	150.82
Political stability	250	-0.30	-0.21	1.20	0.82	0.68	-0.28	-0.62	7.40
Corruption	250	-0.40	-0.49	0.83	0.61	0.38	0.57	-0.41	15.51
Public protest	250	3.59	1.31	4.22	6.00	35.97	3.14	11.51	1790.18
Exchange rate	250	0.03	0.02	0.08	0.08	0.01	1.11	4.86	297.44

Confidence Level (95.0%)

The kurtosis for all of the sampled variables, except for exports of goods and services, exceeds the threshold of 0.3, which indicates that the variable measures of the sample have flatter tails than would be the case in normal distribution. The predominance of positively skewed distributions among the sample data may suggest non-normality; however, the null hypothesis of Kurtosis for normal distribution is rejected due to the Kurtosis coefficients, thus suggesting a leptokurtic distribution of the returns. Rejection of the null hypothesis is consistent with that of Simons and Laryea (2005), and Mollah (2007). The findings of the distributional properties of return are similar to those of Alagidede (2011) in that they appear to indicate extreme observations. The maximum kurtosis in the sample occurs in the GDP per capita variables, exchange rate and public protest and reflects, from the standard deviations and means, broad disparities among the observations. The GDP per capita followed by domestic credit to the private sector reflect the widest differences.

The summary statistics for this sub section are viewed in isolation and in comparison with the group of emerging economies comprising Turkey, Indonesia, Brazil, India, and Mexico. The overall high standard deviation corroborates the common observation of riskiness in emerging markets (Forgha, 2012).

Table 5.2: Summary descriptive statistics of emerging economies, 2005-2014

Variable	Mean	Median	Interquartile Range	Standard Deviation	Variance	Skewness	Kurtosis	Jacque-Bera Test	Observations
Inflation	6.75	6.34	4.04	2.51	6.28	0.67	-0.50	4.20	50
Central government debt	47.67	46.73	22.20	13.06	170.50	-0.23	-0.89	2.06	50
GDP Per capita	11419	12820	8096	4786	2.29E+07	-0.31	-1.15	3.60	50
External Debt	52.15	27.90	37.52	17.23	10.36	107.27	0.62	-0.82	50
Exports	23.09	23.98	7.12	6.36	40.46	-0.53	-0.47	2.76	50
Domestic Credit	40.04	39.53	24.57	14.99	224.78	0.46	-0.68	2.71	50
GDP to PPP	28.42	28.34	0.74	0.54	0.29	0.44	-0.30	1.79	50
Fiscal balance	-3.61	-3.09	2.06	2.30	5.31	-0.82	0.16	5.64	50
Political Stability	-0.77	-0.76	0.53	0.40	0.16	0.42	-0.43	1.89	50
Corruption	-0.30	-0.30	0.54	0.29	0.08	-0.13	-1.09	2.61	50
Public protest	2.14	2.00	2.82	2.09	4.38	1.69	5.34	83.24	50
Exchange rate	0.087	0.084	51.49	0.017	0.0003	1.743	0.62	21.81	50
							Confidence Level (95.0%)		

The mean and deviation of the inflation variable between African and emerging economies are very similar. Most of the inflation measures between the two groups of countries are comparable except for the skewness of inflation that is noticeably higher in emerging

economies than in Africa. The distribution of inflation measures is 1.3 and 0.3 for kurtosis and skewness respectively indicating more skewness in the emerging economy sample than the African sample. Interquartile range measurements between the African sample and that of emerging economies further delineate the nature of dispersion of variable counts. Even when outliers are taken into consideration, African economies display higher rates of variability in variable measures than emerging economies. Control of corruption and exchange rate are the only two variables that display distribution measures of Africa that exceed those in emerging economies. The mean GDP per capita in the emerging economy sample is more than double that of the African sample. The standard deviation and variance, both measures of dispersion, are consistently higher for the African economies in comparison to the emerging economies.

Table 5.3: Correlation Matrix for bond market determinants

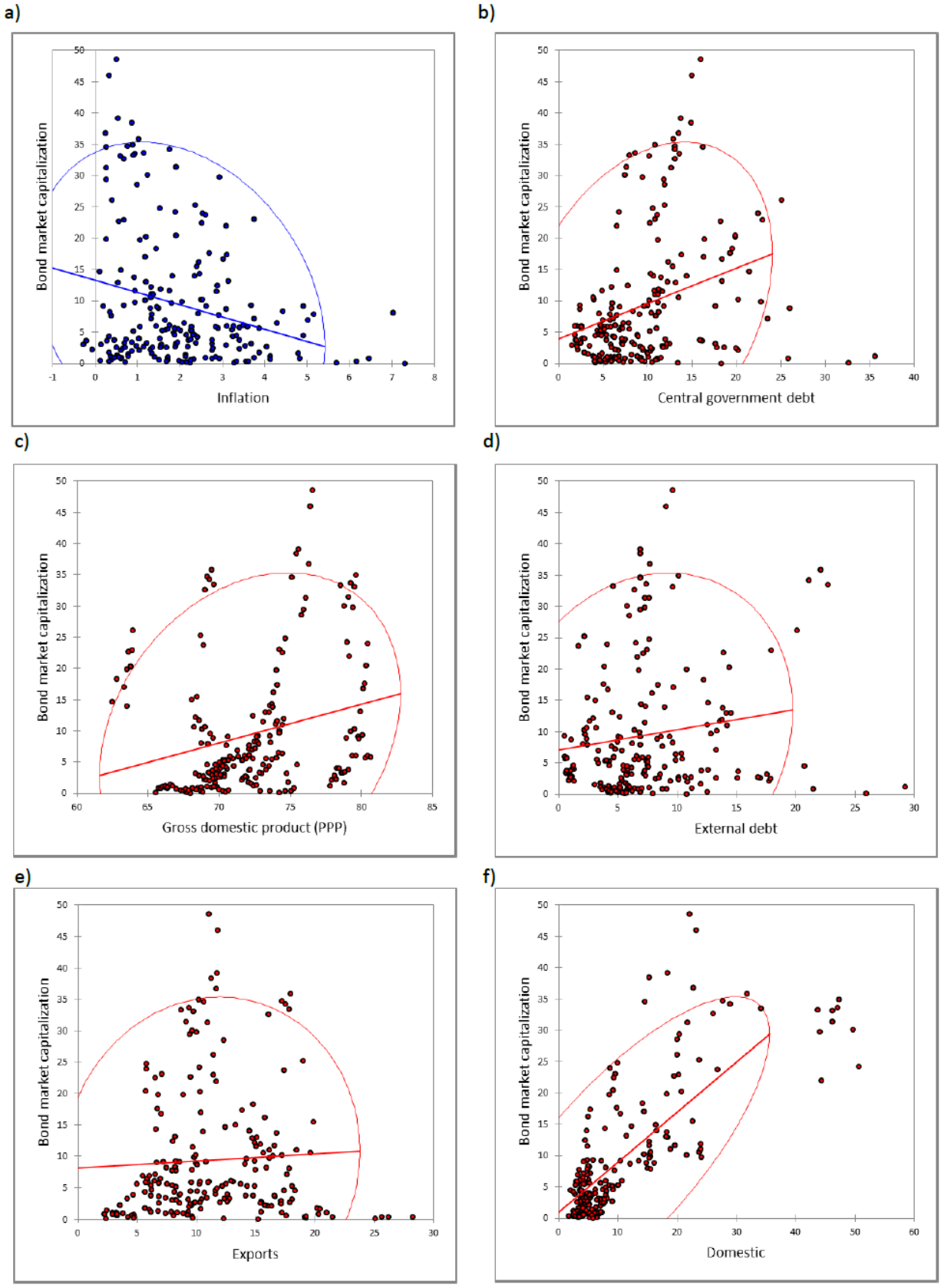
Variable	Inflation	Central government debt	GDP per capita	External debt	Exports	Domestic credit	GDP to PPP	Fiscal balance	Political Stability	Control of Corruption	Public protest	Exchange rate
Inflation	1											
Central government debt	0.006 (0.97)	1										
GDP per capita	-0.223 (0.27)	-0.093 (0.65)	1									
External debt	-0.029 (0.88)	0.724 (0.000029)	-0.114 (0.57)	1								
Exports	-0.037 (0.85)	-0.070 (0.73)	0.609 (0.0009)	0.020 (0.92)	1							
Domestic credit	-0.210 (0.30)	0.177 (0.38)	0.481 (0.01)	0.162 (0.42)	0.163 (0.42)	1						
GDP to PPP	0.059 (0.77)	-0.199 (0.32)	0.294 (0.14)	-0.349 (0.08)	0.084 (0.68)	0.230 (0.68)	1					
Fiscal balance	-0.009 (0.96)	-0.356 (0.07)	0.197 (0.33)	-0.191 (0.34)	0.460 (0.01)	-0.182 (0.37)	0.069 (0.73)	1				
Political Stability	-0.130 (0.52)	-0.068 (0.74)	0.316 (0.11)	0.062 (0.76)	0.330 (0.09)	0.285 (0.15)	-0.475 (0.01)	-0.028 (0.89)	1			
Control of Corruption	-0.185 (0.36)	0.016 (0.93)	0.370 (0.06)	-0.018 (0.93)	0.139 (0.49)	0.461 (0.01)	-0.295 (0.14)	-0.214 (0.29)	0.725 (0.00002)	1		
Public protest	-0.101 (0.62)	0.042 (0.83)	0.259 (0.20)	0.000	-0.043 (0.83)	0.262 (0.19)	0.375 (0.05)	-0.131 (0.52)	-0.266 (0.18)	-0.150 (0.46)	1	

Exchange rate	0.295 (0.10)	0.021 (0.91)	-0.030 (0.8)	-0.040 (0.84)	-0.024 (0.90)	0.044 (0.83)	-0.007 (0.97)	-0.148 (0.47)	0.094 (0.64)	0.105 (0.60)	0.048 (0.80)	1

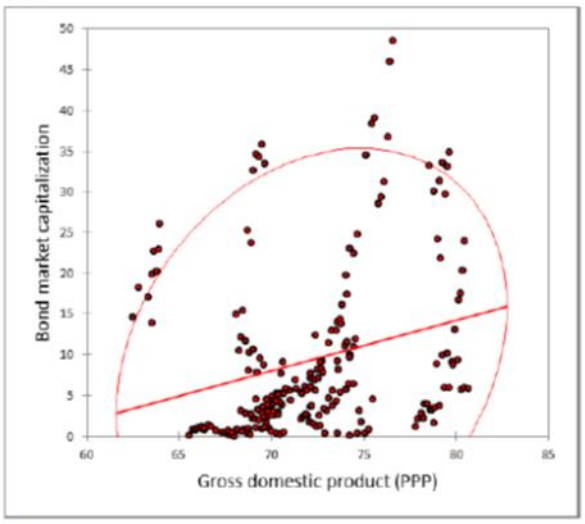
ρ-values in brackets, confidence Level (95.0%)

Figure 5.1 (a-k) depicts the strength of the linear relationship between the variables. Inflation has a weak negative correlation with all variables except for government debt, where it displays a very weak and positive correlation. Government debt and external debt are highly correlated with a positive coefficient of 0.72 and a ρ-value of 0.000029 suggesting high significance. The majority of variables have correlations below 0.3 with the highest correlation among external debt and central government debt, external debt and GDP per capita, exports and GDP per capita, and domestic credit and GDP per capita. This indicates that high measures on one relate to high measures on the other, and that low counts on one relate to low counts on the other. High variability exists in the ρ-values with the greatest value (0.96) being on the correlation between inflation and fiscal balance. The most significance is found in the correlation between external and central government debt and control of corruption and political stability. Fiscal balance, mostly, correlates negatively with the variables of the study meaning that high measures of it link to low scores on the other variables. Conversely, low measures on other variables are associated with high counts on fiscal balance. Political stability also strongly correlates with control of corruption. The high correlation may suggest endogeneity of the variables; however, estimation techniques in the models to follow address this bearing in mind that only the presence or absence of a correlation is denoted in the correlation matrix and not causation. Despite the relatively high correlations of external debt and central government debt, this study understands that the variables have different underlying mechanisms; therefore, none will be excluded from the study. Visual description of data, often portraying data graphically reveals patterns that are difficult to identify otherwise. Figure 5.1 (a-k) displays the correlation between bond market capitalization and various explanatory variables.

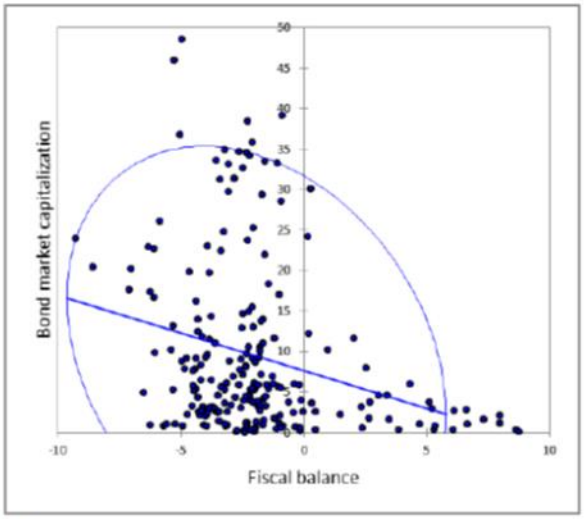
Figure 5.1 (a-k): Correlational scatter plots of bond market capitalization and various bond market variables



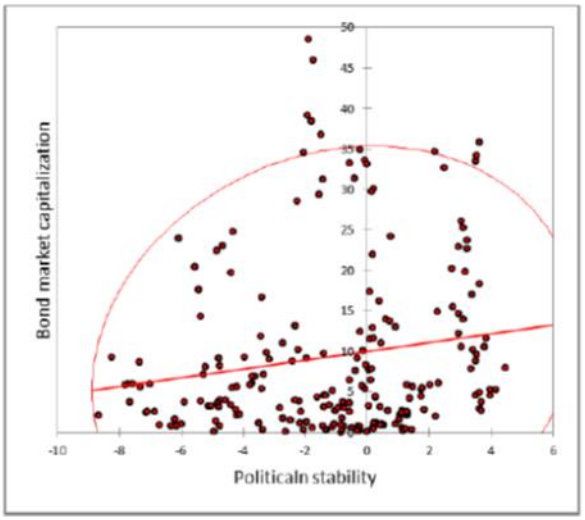
g)


Bond market capitalization
Gross domestic product (PPP)

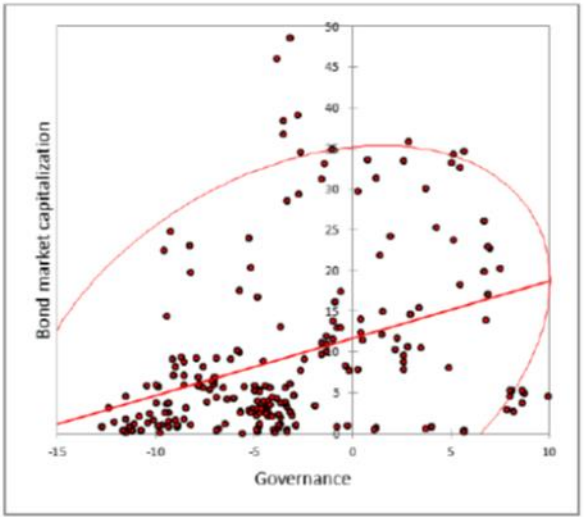
h)


Bond market capitalization
Fiscal balance

i)


Bond market capitalization
Politicaln stability

j)


Bond market capitalization
Governance

k)

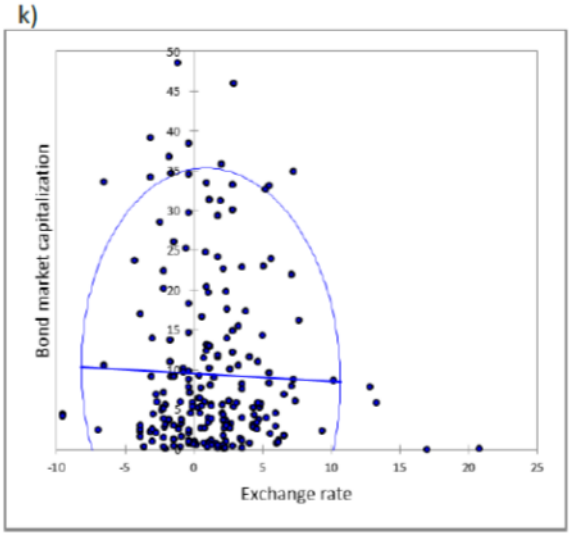

Bond market capitalization
Exchange rate

Figure 5.1 (a-k) confirms previous calculations. Inflation, central government debt, GDP, external debt stocks, domestic credit to private sector and political stability display positive relationships with bond market capitalization in the scatter plot diagrams above. Fiscal balance presents a clear negative association; however, exports, GDP per capita, political stability, governance and exchange rate have more ambiguous visual associations with the dependent variable. All the variables display considerable outliers. Noticeable clustering appears in central government debt, external debt and particularly domestic credit to private sector.

5.1.2 Empirical findings

Table 5.4 presents the results of the estimation for government bonds under FE, RE and GMM. Unlike Mu *et al* (2013) and Essers *et al* (2014) POLS is excluded as it completely ignores the panel structure. The sample is analysed according to three categories. Category one (1) comprises of the entire sample of African countries of the study, the second category (2) excludes the five economies with the most capitalized government bond markets of the sample, being Egypt, Kenya, Mauritius, Nigeria and South Africa. The five countries are eliminated as part of the second category to elucidate clear patterns among the variables that may not be apparent among the excluded countries. Only sub-Saharan countries are included in the third category (3). Isolation of these countries clarifies the influence of colonial rule and distance from Europe in bond market development in Africa. The rationale behind separation of North and sub Saharan Africa lies in the well-documented division in terms of shared social and cultural practices, minimal cultural exchange, particularly due to the desert dividing the north and south of the continent (Maquet, 1972).

The Sargan test for the GMM estimation establishes whether overriding assumptions in instrumental variable estimations hold (Sargan, 1958). The ρ-values of each of the three samples are smaller than the critical significance level; therefore, the null hypothesis that the overriding assumptions hold, is rejected meaning that the models do not suffer from over identification.

Table 5.4: Estimation results-baseline models

	GMM			RE			FE		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
ReligionXb	-1.074**	-0.194	-0.315	0.432**	0.456**	0.245+	0.236	0.070	0.204
	(0.474)	(0.547)	(0.918)	(0.193)	(0.212)	(0.193)	(0.227)	(0.169)	(0.214)
ColonialXb	1.469***	-0.527	1.252	-0.281*	-0.440***	0.561+	0.468	0.102	0.539+
	(0.468)	(1.053)	(1.526)	(0.162)	(0.160)	(0.349)	(0.410)	(0.302)	(0.383)
InflationXb	-1.367***	-0.873	-0.736+	-0.367	0.430	-0.674***	-0.800***	-0.345+	-0.696**
	(0.226)	(1.488)	(0.531)	(0.395)	(0.427)	(0.248)	(0.280)	(0.246)	(0.272)
CentralXb	0.423	0.274	-0.231	0.363***	0.595***	-0.101	-0.077	0.134+	-0.079
	(0.415)	(1.177)	(0.367)	(0.113)	(0.154)	(0.098)	(0.113)	(0.101)	(0.109)
GDPXb	-0.755	2.747	-2.965*	0.060	-0.046	-0.329	-0.357	-1.047***	-0.281
	(1.734)	(8.652)	(1.581)	(0.102)	(0.111)	(0.330)	(0.361)	(0.310)	(0.366)
ExternalXb	0.172	1.769	0.569**	-0.326**	-0.772***	0.387***	0.419***	0.029	0.351***
	(0.180)	(1.475)	(0.248)	(0.131)	(0.171)	(0.109)	(0.125)	(0.124)	(0.123)
ExportsXb	0.710***	-0.647+	0.806*	0.118	-0.024	-0.304**	-0.351**	0.135	-0.297*
	(0.231)	(0.453)	(0.480)	(0.146)	(0.151)	(0.141)	(0.158)	(0.137)	(0.155)
DomesticXb	0.437*	-2.587	0.930**	0.718***	1.101***	0.181	-0.180	0.255+	0.189
	(0.253)	(1.364)	(0.469)	(0.057)	(0.107)	(0.159)	(0.147)	(0.190)	(0.174)
GDPPPPXb	-12.650**	21.244**	-11.999+	-0.015	-0.006	-0.207	-1.082	0.069	-2.125+
	(5.916)	(8.117)	(9.499)	(0.032)	(0.033)	(0.512)	(1.613)	(1.264)	(1.569)
FiscalXb	0.026	-1.253**	-0.337	-0.587***	-0.282+	0.089	0.009	-0.465***	0.137
	(0.312)	(0.608)	(0.542)	(0.208)	(0.215)	(0.167)	(0.174)	(0.152)	(0.187)
PoliticalXb	1.310	1.391	0.238	-0.592**	-0.298	-0.445+	-0.454+	0.384+	-0.467+
	(1.168)	(3.609)	(0.487)	(0.261)	(0.281)	(0.310)	(0.307)	(0.268)	(0.340)
GovernanceXb	1.521+	-0.363	0.914**	0.196+	0.077	0.263+	0.296+	-0.067	0.281+
	(0.617)	(1.118)	(0.447)	(0.149)	(0.145)	(0.184)	(0.209)	(0.171)	(0.202)
ProtestXb	0.023	0.185	-0.038	-0.077	-0.091+	-0.020	-0.037	-0.022	-0.020
	(0.056)	(0.165)	(0.099)	(0.065)	(0.071)	(0.040)	(0.040)	(0.033)	(0.044)
ExchangeXb	-0.035	-0.200	0.013	-0.142	-0.229*	0.010	0.036	-0.020	0.019
	(0.043)	(0.185)	(0.039)	(0.120)	(0.122)	(0.066)	(0.076)	(0.064)	(0.072)
Observations	214	169	178	214	169	178	214	169	178
Time effects				NO	NO	NO	YES	YES	YES
R2/R2- within (for FE)							0.738	0.8131	0.9337
Hausman ρ - value				<.0001	0.6829	<.0001	<.0001	0.6952	<.0001
Sargan-Hansen test	<.0001	<.0001	<.0001						

Column notes:
(1) Full sample GMM estimation
(2) Estimation excludes strongest five macroeconomic countries
(3) Estimations exclude sub-Saharan Africa

All explanatory variables are lagged one year. Country level clustered standard errors are reported in brackets. Significance indicated as ***$\rho<0.01$; **$\rho<0.05$; *$\rho<10$; +$\rho<0.20$.

The (F) test for the two-way FE model across all three subgroups is smaller than 0.05; therefore, the model is significant at the 5% level of significance. Further, the FE model reflects an Adjusted R^2 value of 93%, 95% and 92% for samples (1), (2) and (3) respectively. This implies that 93% of category 1 can be explained by the FE model, 95% of category 2, and 92% of the third (3) category.

The null hypothesis that the coefficients are equal to zero is rejected as the probability is higher than 0.05; consequently, it cannot be considered significant. The R^2 for the RE model are slightly lower than that of the FE model with 81% of the amount of variance of bond market capitalization explained by the explanatory variables.

Religion, in sample (1) has a weak and negative effect on bond market development according to the GMM estimations. Sample (2) also displays a weak, negative association with bond market capitalization, but not significant. Colonialisation presents a strong, significant relationship with the dependent variable. Sample (3) also reveals a positive association with the dependent variable although insignificant. The category that excludes countries with relatively high capitalization, sample (2), shows a negative, insignificant link with the dependent variable. Inflation, under the GMM estimation, is negatively correlated with bond market capitalization across all three samples with significance below 0.001 for sample (1) and 0.20 for sample (3). Central government debt is not significant across all samples and the association is weak in the first two categories but negative in the third (3). Conversely, GDP, the measure utilized to capture the size of a country, exhibits the highest coefficient of the study and varies throughout the samples. The GDP, at a significance level of 5%, has a relatively strong, negative relation with the dependent variable in sample (1); however, the variable is positively associated with bond market development in sample (2). The third (3) sample follows the negative correlation of sample (1); however, at a confidence level of 0.2. Only in sample (2), fiscal balance reflects a weak, negative connection to the dependent variable. Political stability shows a relatively weak, positive connection with bond market capitalization, but the results are not statistically significant. A positive, statistically significant link between fiscal balance and bond market capitalization occurs in the first (1) and third (3) sample at a respective 0.2 and 0.05 level of significance. Public protest and exchange rate are insignificant explanatory variables under the GMM estimation.

The RE estimation reflects a positive relationship between religion and the dependent variable across all samples. Colonialisation is significantly and negatively associated with bond market capitalization for sample (1) and sample (2); however, the sub-Saharan category, sample (3) displays a positive correlation with the dependent variable at a 0.2 significance level. Inflation is significant only in sample (3) with a weak, negative link. Central government debt is positively related to capitalization in sample (1) and sample (2); however, when North Africa is excluded from the sample, the association is negative and insignificant. Neither GDP nor GDP per capita is significantly related to the dependent variable under the RE estimation. External debt stocks are negatively and significantly linked to bond market capitalization in sample (1) and sample (2) but a positive, significant association occurs in sample (3). The export variable, under the RE estimation, is only statistically significant in sample (3) with a weak negative estimate. A negative estimate also appears in sample (2) though it is statistically insignificant. Domestic debt displays a positive correlation across all samples; however, sample (3) fails to indicate significance of the estimate. Sample (1) and sample (2) show negative links with fiscal balance at the 0.001 and 0.2 levels of significance respectively, while sample (3) reflects a positive estimate though it is very weak and lacks statistical significance.

Political stability reflects a negative connection throughout the three samples though statistical significance occurs only in sample (1) and sample (3). Governance is also statistically significant in the first (1) and third (3) samples while the relation is positive across all samples. Similar to the GMM results, public protest and exchange rate are statistically insignificant in the RE estimation with the exception of sample (2) where both variables are negative and statistically significant.

Religion is not statistically significant under the fixed effects model and only in the sub-Saharan sample does it display a statistically significant link with bond market capitalization. Inflation bears a negative, statistically significant connection at various levels of significance across all samples while, central government debt is only significant in sample (2). The proxy for size, GDP, is negatively related to the dependent variable for sample (1) and (3);

however, sample (2) demonstrates a very weak positive association. Furthermore, only sample (3) is statistically significant for the GDP predictor.

Fiscal balance is positively related to the dependent variable at a significance level of 1%. A contrasting drift is exhibited by political stability under the FE model in samples (1) and (3). The results mirror the outcome of the RE model in its negative association with local currency bond market capitalization; thus, as political instability increases, bond market capitalization decreases. Sample (2), however, reveals a weak, positive correlation at the 0.2 level of confidence. Governance has a positive association with bond market capitalization while, as in the RE model, the public protest and exchange rate estimates are statistically insignificant.

5.2 Factors that influence issuance of bonds by a firm (Model 2)

5.2.1 Descriptive statistics of Model 2 fractional probit regression

Comprehension of factors that influence a firm to issue bonds offers rich information into the analysis of factors that hinder or boost bond market performance in Africa. Knowledge of such firm level factors offers further insight for the development of a framework, which can be applied to African bond markets to improve their performance. Analyses of these variables also provide a benchmark on which bond performance in African and emerging economies can be compared. Prior to estimating the fractional probit regression, correlation coefficients for each pair of explanatory variables included in Model 2 are computed to determine whether linear associations or multicolinearity occurs among the variables.

Table 5.5 presents summary statistics for the variables used in the second model. Statistics are recorded for all companies (Panel A), firms that issue bonds (Panel B), and those which do not issue bonds (Panel C). The mean, standard deviation, minimum and maximum values and the observation count are included in the table, following Mizen and Tsoukas (2013).

Table 5.5: Descriptive statistics of entire sample (Panel A)

	Mean	Standard Error	Median	Standard Deviation	Sample Variance	Kurtosis	Skewness	Range	Minimum	Maximum	Observations
Risk	0.03	0.01	0.01	0.04	0.00	9.28	2.78	0.20	0.00	0.20	146
Leverage ratio	13.24	5.21	0.58	62.99	3968.09	26.02	5.11	437.99	0.15	438.15	146
Size	14.25	0.36	15.06	4.35	18.94	-0.50	-0.51	18.65	3.24	21.89	146
Growth	0.11	0.02	0.08	0.26	0.07	5.83	0.69	2.07	-0.75	1.32	146
Tangability of assets	0.52	0.03	0.54	0.39	0.15	32.84	4.13	3.76	0.00	3.76	146
Profitability	5.70	1.91	0.07	23.11	534.03	28.09	5.08	159.58	-0.45	159.13	146
Age	44.01	2.58	41.50	31.20	973.52	2.57	1.35	156.00	5.00	161.00	146

The sizes for the total sample range between mid-size and large-sized companies with a mean of 14.24. The growth opportunities are relatively stable with a minimum ratio of -0.748 and a maximum of 1.31. The measure of the mean is also higher than that of the median. A high mean and median of tangibility of assets (52% and 54%) indicate intense reliance on fixed assets for the sampled firms. Features have relatively weak correlations with each other.

Table 5.6: Correlation matrix for issuance of bonds model

	Risk	*Leverage ratio*	*Size*	*Growth*	*Tangability of assets*	*Profitability*	*Age*
Risk	1.00						
Leverage ratio	-0.14 (0.33)	1.00					
Size	0.17 (0.24)	-0.29 (0.04)	1.00				
Growth	-0.03 (0.83)	-0.07 (0.63)	0.19 (0.19)	1.00			
Tangability of assets	-0.19 (0.19)	0.14 (0.33)	-0.20 (0.16)	-0.18 (0.21)	1.00		
Profitability	-0.16 (0.27)	0.46 (0.0008)	-0.34 (0.016)	-0.15 (0.30)	0.00 (1)	1.00	
Age	-0.27 (0.06)	0.00 (1)	-0.18 (0.21)	-0.22 (0.12)	0.10 (0.49)	0.03 (0.83)	1.00

ρ-values in brackets

Correlations of firm specific variables are presented in Table 5.6. Most variables are relatively low and do not exceed 0.3 except for profitability and the leverage ratio. Risk is negatively correlated with all variables apart from size. The weakest correlation in the

sample is between profitability and leverage ratio followed by profitability and size with ratios of 0.46 and -0.34 respectively. Age and leverage ratio and profitability and tangibility of assets display no correlation.

Table 5.7: Descriptive statistics of sample of bond issuers (Panel B)

	Mean	Standard Error	Median	Standard Deviation	Sample Variance	Kurtosis	Skewness	Range	Minimum	Maximum	Observations
Risk	0.040	0.008	0.028	0.047	0.002	4.739	2.214	0.198	0.002	0.200	108
Leverage ratio	0.580	0.022	0.561	0.230	0.053	7.198	1.727	1.645	0.150	1.795	108
Size	15.733	0.382	16.602	3.974	15.793	2.373	-1.454	18.648	3.241	21.889	108
Growth	0.134	0.023	0.094	0.238	0.057	6.594	1.805	1.813	-0.495	1.318	106
Tangability of assets	0.451	0.026	0.502	0.267	0.071	-0.806	-0.063	1.158	0.000	1.158	108
Profitability	0.049	0.010	0.056	0.108	0.012	9.869	-2.228	0.782	-0.500	0.282	108
Age	39.120	3.207	26.500	33.324	1110.499	3.554	1.778	156.000	5.000	161.000	108

The sample of bond issuers consists of 32 firms within sectors that include manufacturing, agriculture, mining and telecommunication listed on bond markets in Africa. The size of the firms range from small to large and the time since establishment of the firm ranges from over a century to seven years. A list of the firms used in the study is available in Appendix 9.2.

Table 5.8: Descriptive statistics of non-bond issuers (Panel C)

	Mean	Standard Error	Median	Standard Deviation	Sample Variance	Kurtosis	Skewness	Range	Minimum	Maximum	Observations
Risk	0.001	0.00	0.00	0.00	0.00	0.001	0.001	0.00	0.00	0.001	38.00
Leverage ratio	49.25	19.02	0.72	117.26	13750.29	3.72	2.23	437.81	0.34	438.15	38.00
Size	10.04	0.32	9.61	1.95	3.78	1.32	1.15	7.35	7.85	15.20	38.00
Growth	-0.02	0.07	0.03	0.33	0.11	3.14	-0.52	1.62	-0.75	0.87	24.00
Tangibility of assets	0.70	0.10	0.59	0.59	0.34	20.73	4.14	3.76	0.00	3.76	38.00
Profitability	21.74	6.76	0.28	41.66	1735.64	4.82	2.26	159.25	-0.11	159.13	38.00
Age	56.08	3.06	55.00	18.88	356.40	0.26	0.27	77.00	18.00	95.00	38.00

Seventeen non- bond issuing firms compose Panel C. Table 5.8 reveals that firms that issue bonds have a higher risk compared to those that do not, while non-bond issuing firms consistently reflect very low measures of risk at less than 0.1%. Large divergences appear in the leverage ratios of the two groups. Non-bond issuing firms display a mean ratio of 49.2% and issuers 0.58%; however, Panel C displays a relatively high standard deviation and variance compared to Panel B. All variables of Panel B exceed the benchmark measure of kurtosis and only the age variable in Panel C remains within the 0.3 threshold. The only variable in Panel B within the confines of the 1.3 skewness thresholds is that of tangibility of assets. Risk, size, growth and age are within the 1.3 skewness threshold in Panel C. Profitability of Panel C firms outweighs that of Panel B at ratios of 0.049 and 21,735 respectively. Non-issuing firms are more mature than their bond issuing counterparts; they have an average age of 56.0 years while issuing firms have a mean age of 39.1 years. The negative growth opportunities of Panel C contrast the positive measure of Panel B; and size of the bond issuers is slightly higher than non-bond issuers with ratios of 15.73 and 10.04 respectively. Both samples rely heavily on fixed assets, particularly Panel C. This is evident in the tangibility of assets of 70% for Panel C and 45% for Panel B. The differences between the sample of issuing and non-issuing firms is statistically significant.

Table 5.9: Results of t-test of two-Sample assuming unequal variances

	Mean	Variance	Observations	df	t Stat	P(T<=t) one-tail	t Critical one-tail	P(T<=t) two-tail	t Critical two-tail
Bond issuers	8.88	380.07	682.00	252.00	-3.80	0.00009	1.65	0.00018	1.97
Non-bond issuers	22.89	3039.56	233.00						

Hypothesized Mean Difference= 0

A Welch's t-test, displayed in Table 5.9 examines the difference between the sample means of the two groups and presents statistical corroboration of the dissimilarities of the two samples. The ρ-value is less than the 0.05 threshold; therefore, it is highly probable that significant disparities between the population means of issuers and non-issuers are present. A t-test of two means assuming unequal variances rejects the null hypothesis that the means are equal.

5.2.2 Estimation results of fractional probit regression.

The intention of the fractional probit regression is to model the probability of a firm issuing bonds as a function of a range of firm level characteristics including the firm's risk, leverage, size, and growth, tangibility of assets, profitability and age.

Table 5.10: Estimation results of fractional probit regression.

Variable	Parameter Estimate	Wald Chi-Square	Maximum Likelihood
Intercept	-1.655^{+} (1.212)	1.866	0.172
Risk	-29.749** (10.489)	8.045	0.005
Leverage ratio	0.004 (0.035)	0.010	0.921
Size	0.265^{+} (0.176)	2.253	0.133
Growth	-0.105 (0.705)	0.022	0.881
Tangibility of assets	-0.053 (0.998)	0.003	0.958
Profitability	0.031 (0.027)	1.273	0.259
Age	0.025* (0.014)	3.298	0.069
Observations	147		
Number of firms	49		
Pseudo - R^2	0.460		
X^2 Statistic	25.392 (ρ-value = 0.0013)		
Log Likelihood	90.799		

All explanatory variables are lagged one year. Country level clustered standard errors are reported in brackets. Significance indicated as ***ρ< 0.01; **ρ< 0.05; *ρ< 10; +ρ<0.20.

The binary probit model, using Fishers scoring method, has 147 subjects: 41 not admitted and 106 admitted. It models the predicted probability of issuance. The ρ-value =1 for deviance of the goodness of fit test and ρ-value =1 for the Pearson Chi-Square goodness of fit test in agreement with the H_0 that the probit regression function is appropriate. The Alkaike Information Criterion (AIC) and the Schwarz Criterion (SC) are both 63.137. The

Likelihood ratio, Score and Wald tests represent the null hypothesis that $\beta = 0$. The null hypothesis for all three tests is rejected at the one percent level.

Analysis of the MLE include a constant term F (-1.655) entailing that if all the predictors are assessed at zero, the predicted probability of issuance would be very low. The ρ-value, however, is larger than 0.05; therefore, the null hypothesis cannot be rejected and the estimate cannot be considered statistically significant at the alpha level. The intercept is significant at the 0.2 level. Risk has the strongest estimate at -29.749, indicating the variable as the highest quantitative contributor with a ρ-value of 0.005 signalling statistical significance at the 1% and 5% levels. Leverage does not display significance at any level and displays a weak, positive effect on corporate bond issuance. Size, profitability and age have positive estimates; however, size is significant at the 0.2 level, profitability is slightly over the ρ-value threshold for significance and age is significant at the 10% level. Growth and tangibility of assets, like risk, have negative estimates that are approximately ten times the quantity of the estimate for risk but are not statistically significant at any level. The parameter estimation coefficient of age is 0.0249 implying that an increase in age increases the predicted probability of issuance by 2.49%.

5.3 Conclusion

This chapter sought to examine data for 26 African countries, five emerging economies, and 49 firms listed on the African continent through descriptive statistics and regression procedures. The collected annual and monthly data analysed draw answers about factors that contribute to the hindrance or development of bond markets on the continent. They also offer a huge contribution to the development of a framework for bond market performance determinants in Africa. Factors that determine the performance of bond markets in Africa have been investigated by means of panel data procedures, and factors that influence the issuance of bonds by a firm have been scrutinized through logistic regressions. Together, the two dependent variables employed investigate the driving factors behind bond market efficiency, effectiveness, size, and liquidity in Africa.

The structural results of the model of the study confirm the effects of culture, more particularly culture formed by colonialism in bond market development in Africa. The majority of the estimated parameters are statistically different from zero. Religion influences bond market behaviour in Africa and countries that were colonized by the British appear to have higher levels of bond market capitalization than their counterparts which were colonized by France and Portugal.

The results suggest that former British colonies in the samples, generally, have the highest degrees of bond market capitalization. Economies that are predominantly Christian pose higher capitalization than their Muslim, Hindu and indigenous believer counterparts, with the exception of Egypt. Low inflation and fiscal balance are favoured for bond market capitalization in African economies. Central government debt is only beneficial to weaker economies and external debt and governance are advantageous to local government debt performance. The GDP, PPP only has a positive effect on bond market capitalization of weaker economies. Counter to intuition, the empirical results show that GDP has a negative influence on bond performance. Political stability and protest are significantly, negatively correlated with bond market capitalization while exchange rate displays ambiguous results with the dependent variable. A dependent variable of a firm's decision to issue bonds yields similar results.

Against the fractional probit regression, the goodness of fit tests express suitability of the binary probit model, and the estimate for the constant term cannot be considered statistically significant at the alpha level. Risk and size have the strongest explanatory power in firms' decision to issue bonds while no significance of the weak, positive leverage is observed. Size, profitability and age have positive and significant estimates at varying levels.

CHAPTER 6: DISCUSSION AND IMPLICATIONS OF EMPIRICAL RESULTS

6.0. Introduction

This chapter interprets the results of the outcomes of the empirical models and incorporates them with the theoretical underpinnings to establish motives and explanations for the results from chapter five. The first part of this chapter delineates the macroeconomic, institutional and cultural factor findings of this study. The second section, 6.2, explains firm level factors of bond market capitalisation.

6.1 Macroeconomic, institutional and cultural factors

The exploratory variables that follow answer questions regarding the macroeconomic, cultural and institutional factors that supply much needed funds to African emerging economies, particularly in comparison with Western economies. A framework that takes into account the unique nature of African economies with the aim of increasing the breadth and depth of bond markets is presented. Lastly, factors that fuel the development of local currency bond markets in Africa are discussed.

Bond market capitalisation is a measure of bond market development that has been used extensively in bond market research including but, not limited to, Essers *et al* (2015), Bae (2012), Mu *et al* (2013) and Adelegan and Radzewicz-Bak (2009). The highly significant negative correlation established in the study rebuffs scale effects in local currency bond market growth in accordance with Bhattacharyay (2013), Khalid and Rajagyuru (2010) and Claessens *et al* (2007). Contradictory findings are observed, on a country level for Egypt and South Africa show scale effects by a positive association between bond market capitalisation and GDP. The GDP factor, therefore, boosts local currency bond market development according to outcomes of this study. According to Claesens *et al* (2007), the scale effects found in Egypt and South Africa occur through the development of local currency bond market infrastructure and comprise fixed costs involved in forming settlement and clearing systems. This positive relationship supports evidence of Coase (1937) and Thumrongvit *et al* (2013) on the interdependence between an increase in bond market capitalization and real output growth and contests the proposition conveyed most notably by Lucas (1988) that there is no causal link between the financial sector and real economic development. The

intuition behind this is that additional options for government financing are most likely facilitated by larger economies. Overall, this study finds that the financial system would benefit from growth in the size of bonds outstanding as a percentage of GDP, particularly due to the governance diffused into the rest of the financial system.

The data supports the findings of Berensmann *et al* (2015) that a positive relationship may exist between economic development, measured here as GDP, PPP and the depth of local currency bond markets for Egypt, South Africa and Mauritius, which are the more developed countries in the sample. Additionally, and in corroboration with Berensmann *et al* (2015), the relative size of local currency bond markets is least in low-income economies and greatest in upper-income economies. This suggests that bond markets in upper-income countries tend to supply more capital to their economies than low-income countries.

Literature, previously, has used the previous year's budget balance as a share of GDP and public debt as a percentage of GDP to assess fiscal policy; however, the three year moving average is favoured here because it is less susceptible to subjugation by fleeting influences (Eichengreen and Luengnamiemitchai, 2004). The steady, negative and significant correlation of fiscal balance with local currency bond markets implies that as fiscal balance improves the impetus for local currency bond financing decreases. This occurs, as funds required by governments are more available and the need to seek additional funds from local currency bond markets decreases. The importance of fiscal balance to bond market capitalisation lies in a sound fiscal policy. Robust fiscal policy positively influences bond market development through the conduct of state policy (Uppal, 2011). This study interprets the results of the regressions as emanating from corruption of governments, which has dire consequences for investors of local currency bond markets and hinders their development. Such corruption occurs as politicians' exhibit opportunistic behaviour by increasing the expenditure of government beyond funds raised by taxes in order to delight voters (Aisen, 2007; Uppal, 2011).

Wide consensus that elections closely influence macro-economic variables such as inflation, fiscal balance and exchange rate has been documented (Ghezzi, Stein and Streb, 2000;

Bonomo and Terra, 2005; Kaeding, 2013). Quite often, expansionary policies are adopted during election years causing uncertainty for businesses and investors (Upal, 2011). It is highly likely that in much of the sample, fiscal balances increased due to politicians providing more government initiatives causing them to be perceived as more capable thus enticing additional ballots (Marcela, 2006). Voters, however, in an imperfect African environment have imperfect information about politicians, which may lead to their misguided decisions (Bohn, 2013). This may have translated into a widening of the fiscal deficit in the periods immediately prior to an election in most of the African countries in the sample. An example of this occurred in Egypt where, during the presidency of Hosni Mubarak, a persistent pattern of sharp declines in total reserves was observed six months prior to elections, and exchange rate devaluations were experienced shortly afterwards.(Blaydes, 2010).

Wide fiscal deficits, according to Marcela (2006), in environments with less budget transparency tend to be relatively extensive. Concurrently, countries with robust positive and significant associations between fiscal deficits and strikes exhibit higher levels of corruption. The IMF, for instance, note that fiscal transparency "is critical for effective fiscal management and accountability". The IMF (2015) reiterate that transparency regarding the variables related to the quality of a budget and its fiscal outcomes has a significant bearing on the broader governance and development outcomes of an economy. Corruption, in these countries may also have affected the influence of fiscal balances on bond market development through inadequate collection of taxes and rent seeking behaviour among government officials (Eslava, 2011). These results echo findings of Hallerberg, Scartascini and Stein (2009) that countries graded positively in terms of an institutional budget index have lower deficits. This study, thus, rejects the notion that the wide fiscal deficits prevalent in Africa are due to tax smoothing in favour of the political opportunism and corruption proposition because of the associations observed in the regressions and correlations. Corruption, thus, hinders bond market development by undermining transparency, which is vital for the advancement of local currency bond markets.

It appears, from the macroeconomic data collected, that the economies that led higher fiscal deficits have considerably higher levels of central government debt. According to Essers *et al* (2014), there is typically a stronger need to issue government bonds for countries that run fiscal deficits than those who run surpluses. However, wide, persistent fiscal deficits may demoralize potential investors and inhibit them from investing in a local currency bond market. Fiscal balance of an economy cannot be viewed in isolation. For instance, between 2008 -2012 the largest decline in fiscal balances occurred in frontier African markets contributing to an expansion of their public debts as a result of counter-cyclical measures in response to the 2008 Sub-prime crisis (Ncube and Brixiova, 2015). This demonstrates the intricate interconnected relationship between fiscal balance and the public debt of a country. A similar tendency occurs with GDP and bond issuance. Regression results suggest that, although not to the extent required, economies with lower GDP issue more debt in the form of government bonds, perhaps because of the need for income to fund capital needs. This is contrary to the supply-leading hypothesis of Fink *et al* (2003) who find that in highly developed economies GDP increases as bond market capitalisation increases.

Initiatives such as the HIPC contributed greatly to Africa's lowest debt levels in many years (Blommestein and Horman, 2007; Ncube and Brixiova, 2015). The sampled economies display mixed results about the external debt and bond market capitalisation interaction and indicate that economies with large public debt tend to have less developed local currency bond markets. External debt levels that are unsustainable pose a negative impression to investors and potential investors. It conveys the message that a country is not able to handle its debt practices well. It is highly likely that investors in these countries were deterred from bond market investment because of this. Bond markets and external debt have an intricate relationship.

The high levels of fiscal deficit as a share of GDP inherent in the sampled African countries are likely to bring about a rise in debt relative to GDP and influence the development of financial systems, more particularly bond markets, in Africa (Rangarajan and Srivastava,

2005). Central government debt, according to the World Bank (2015) comprises the all-inclusive stock of direct government fixed-term contractual duties due to distinct parties at a specific time. This, which includes both marketable and non-marketable debt, is employed as a variable in this study because of their huge influence on fiscal policy and the resulting economic outcomes of fiscal policy (Alfonso and Jalles, 2013; Vajs, 2014).

It may be that the negative relation of central government debt to bond market capitalisation in Sub-Saharan Africa is due to the accumulation of debt by sub-Saharan African governments. Concerns regarding possible policy measures that may be taken by governments to curtail this debt are likely to be the primary sources of this uncertainty (Mbate, 2013). Mbate (2013) supports this explanation and the findings of this study that a considerable stock of debt facilitates an ambiance of uncertainty in an economy. The sample that excludes the five strongest bond markets probably experienced debt accumulation, which improved the perceived creditworthiness in those environments with a lesser cost of information. The results of this study may be owed to the tax evasion, the low tax bases and rates prevalent in developing countries that pose a challenge for governments to finance fiscal deficits. As a result, public debt is sought usually leading increased inflation and an imminent increase in financial market uncertainty. The resulting inflation is detrimental to local currency bond market performance but, issuance of local currency bonds to the public offers a fiscal deficit-financing route that is neither inflationary nor detrimental to uncertainty in a market (Ishaq and Mohsin, 2015). Bond market capitalisation in the sampled countries, however, is typically not high enough to reap the fiscal financing benefits.

Bond markets in an environment shrouded by uncertainty are accepted by a myriad of authors as a major impediment to bond market and financial market development in its entirety (Knight, 1921; Kapingura and IIkhide, 2015; Sibanda and Dubihlela, 2013; Nelson and Katzenstein, 2014; Carriere-Swallow and Cespedes, 2013; Koeniger *et al,* 2004). The regression results present a further obstacle to bond market capitalisation, being corruption, which occurs in environments with relatively high information asymmetry. It

suggests that countries with higher corruption measures and therefore lower perceived access to information have higher levels of central government debt than those with lower corruption. Economies, such as Algeria and Angola, are found to have among the weakest bond market capitalisation to GDP ratio on this account. This finding contrasts that of Putunoi and Mutuku (2013) and Abbas and Christensen (2007) in their study on the impact of central government debt in Kenya and developing countries generally.

Comparable to Burger and Warnock (2006) the study finds that economies with stable inflation rates are inclined to have deeper and wider local currency bond markets. The literature has acknowledged low inflation as an imperative bond market development prerequisite, and outcomes of the regressions confirm this as significant across all aggregates of the sample (Teunissen and Akkerman, 2005; Bank of International Settlement, 2007; Sibanda and Dubihlela, 2013). Some benefits of high inflation exist, such as its ability to decrease the value of real debt outstanding; however, in the context of this study, the negative effects it has on local currency bond market development deem it an inappropriate variable (Hilscher, Raviv and Reis, 2014; Reinhart and Rogo, 2009). Appropriate motivation for investment support of debt markets are, according to Mihaljek *et al* (2000), essential attributes of low inflation.

Close inspection of data suggests that inflation applies a strong and consistent negative force on the size (capitalisation as a share of GDP) of local currency bond markets. This is consistent with Sunder-Plassmann (2013) that higher rates of inflation are usually related to higher inflationary volatilities thus increasing the propensity for African governments to inflate outstanding debt. It may be that, certain local currency bond markets in the sampled countries have modest local currency bond market capitalisation despite relatively low inflation rates due to a lack of governance. Senegal, for instance, has experienced a relatively steady inflation over the last decade; however, the country's bond market capitalisation remains among the lowest in the sample. Governance measures of the country imply an environment plagued with corruption. Results suggest that longer term investment, which is best for the demand for bond market financing, is likely to be

dissuaded in economies with high inflation and large fiscal deficits as these variables misrepresent economic behaviour toward speculative securities (Mihaljek *et al,* 2000).

The high inflation in many of the sampled countries may reduce the predictability and stability that should be inherent in bond markets because of the alteration of established costs of funds and returns in such conditions (Sibanda and Dubihlela, 2013). The high corruption may have bought about the high inflation that is prevalent in the sampled countries. Resources in such economies are typically not used efficiently nor are they distributed effectively. This is likely to have led to inefficient decisions, which lead to inflation uncertainty, and ultimately inflation in many of the countries in the sample with lower capitalisation ratios (Jiranyakul and Opiela, 2010). According to Akça, Ata and Karaca (2012) these ambiguities in economic activity are essential for the manifestation and dissemination of corrupt acts.

The self-reinforcing corruption- inflation relationship highlights the importance of the characteristics of income, such as the decreasing level of real wages and reductions in the purchasing power of money, in African countries as this may lead to the loss of income for portions of a country's population. This loss causes a further distortion in the distribution of income thus, resulting in various innovative means to generate revenue. Acts such as bribery and rent-seeking activities may have been part of the activities spurred by those wanting to preserve their economic existence in the sampled countries (Akça *et al* 2012).

The majority of the sample employs a floating exchange rate as opposed to a fixed or pegged regime. The fixed exchange rates are likely to spur bond investment by foreign investors thus supporting development of bond markets; however, the growth of domestic intermediation may be hampered by the subsequent foreign competition and any underestimation of exchange rate risks that will probably occur (Goldstein, 1998; Kamil *et al* 2012; Mu *et al* 2013). Volatility of exchange rate is found to be negative and significant with bond market development in comparable studies but results of the current study are mixed and lack significance, suggesting that other factors such as exchange rate misalignments

may be present. It is probable that exchange rates are internalised by investors and hedged against exchange rate risk causing movements of rates to translate into small real quantities in the African economies (Aghion *et al* 2009 and Gadanecz, Miyajima and Urban, 2014).

It is highly likely that, although not statistically significant, exchange rate has had a bearing on the performance of bond markets in African economies. Reputable reports state that bond markets in certain countries have suffered due to volatility in exchange rates, for example Ghana, South Africa and Zambia. Relative to other emerging economies, the exchange rates in African economies during the period of study display some volatility and few countries such as Ghana and Zambia, experienced sharp drops in currency (Bloomberg, 2015). The plunge in Ghana's cedi during 2014 compelled its government to take policy tightening measures. Inflation sat at 17% in December of that year in comparison to 13.5 the previous year. The increase in inflation was caused, partly, by exchange rate volatility. A policy response by the Ghanaian government was to halt subsidies to the petroleum and utilities sectors (World Bank, 2014). Zambia, the second biggest producer of copper in Africa, experienced 15% depreciation in its Kwacha, mainly due to a decrease in prices of commodities and other key occurrences in the country, including an election in January 2015.

The exchange rate depreciation in Ghana, South Africa and Zambia may have reduced the price of capital investment by foreign investors; however, it is questionable whether they are likely to invest in economies portrayed as unstable by market sentiment. Volatility of exchange rate, according to Alexander (1952), Obstfeld and Roggoff (1998) and Bahmani-Oskooee *et al* (2015) affects household and firm consumption through direct and indirect channels. Ghanaian households and firms, according to the direct channel, have an aversion for exchange rate variations. The exchange rate increases, particularly between 2008 and 2014, possibly prompted uncertainty and caused nervousness among households and firms thus, negatively influencing their choices regarding consumption and leisure activities (Bahmani-Oskooee *et al* 2015). Household and firm spending probably decreased as a response to depreciation of currency. Firms, likely decreased production to meet the

lessening demand and dwindling supply requirements. Interest rates probably increased in response to exchange rate depreciation. A short maturity dominates its government fixed income market, as investors are only willing to hold the bonds of the volatile exchange rate country for brief periods. Unfortunately such securities are not what Ghana and many African countries require for their pressing capital needs. Here, the drivers of bond market development may be different to those in a stable, efficient economy.

Trade openness is a standard measure of an economy's connection with the rest of the world, and is captured by the ratio of total exports of goods and services as a share of GDP (Eichengreen and Luengnaruemitchai, 2004, Gelos *et al,* 2011). It is logical to argue, that the extent of a country's trade openness is appropriate to the development of bond markets; however, the outcomes of the variables are ambiguous. Capital controls, for instance, may be a motivation for governments and corporations to seek funding from local markets, more specifically, domestic bond markets rather than external sources (Mu *et al,* 2013). An open capital account is likely to expose economies to market discipline thus causing an increased attention to bonds by domestic investors (Essers *et al,* 2014; Claessens *et al,* 2007). The findings reflect a weak, non-significant positive correlation among local currency bond market capitalization and capital account openness in accord with the neoclassical hypothesis of McKinnon and Shaw (1973). The authors suggest that greater trade openness leads to higher interest rates, which are likely to benefit bond market development as investors seek higher returns. Risky behaviour by banks may occur as a consequence of more open capital accounts and spark boom-bust cycles in countries with imperfect capital markets (Tornell and Westermann, 2005). Furthermore, borrowers may be persuaded by agency difficulties to employ bank loans to purchase risky assets during surges in lending resulting in banking crisis and recessions. Kaminsky and Schmukler (2008) claim that trade openness in economies with agency problems and weak institutions may ignite short run crises. The seemingly ambiguous result of trade openness and local currency bond markets may signify the risks of trade openness in economies that are not economically stable. Additionally, the ambiguous results may be owed to the legal and regulatory structure as suggested by Calderón and Kubota (2009) that rewards of trade openness can only be

reaped in countries with legal and regulatory environments that ensure astute accounting procedures, protection of property rights and enforcement of contracts.

A converse relationship appears to exist between the banking sector, proxied by the size of domestic credit to the private sector, and local currency bond markets. Outcomes of the models exhibit a positive link between bond market development and private sector credit of all aggregates of the sampled economies thus, suggesting complementarities between these two variables (Astrauskaite and Paškevicius, 2014). These findings are consistent with those of Bae, (2012) and Mu *et al* (2013) who observe that large, well-capitalised bank systems foster bond market development. The results indicate that economies with more developed financial systems have greater developed local currency bond markets. A plausible explanation is that this is a sign of better demand for such bonds in economies with a relatively better capitalised financial system.

The significant, positive relationship between domestic credit to the private sector and local bond market capitalisation, established in this study, suggests that as financial systems develop, bond market development follows closely behind. It may be that as the banking sector develops, less reliance on bond markets occurs. The findings in this study support the school of thought that private sector credit is subject to the crowding out effect when government debt is issued excessively, particularly in countries with shallow financial markets and low national savings, which include the bulk of the sample (Mbate, 2013; Buscemi and Yallwe, 2012). Similar results are found by Essers *et al* (2014) and may also signify that with a higher degree of domestic credit to the private sector, banks obtain deposits directly from markets and invest the funds into local currency bonds thus facilitating a larger local currency bond market. Furthermore, better distribution systems including primary dealer systems are afforded by more developed financial systems and may encourage investors to invest in local currency bond markets. More developed financial systems, however, may also be attributed to larger stock markets; therefore, a causal relationship between financial system development and local bond market development cannot be immediately assumed. These findings are consistent with Turner (2003) who

asserts a complementary relationship between bond markets and banks, and in opposition to Mu *et al* (2013) and Adelegan and Radzewicz-Bak (2009), in their examination of bond markets in sub-Saharan Africa. Mu *et al* (2013) and Adelegan and Radzewicz-Bak (2009) establish a strong negative link between the banking sector and local currency bond market development. The divergent findings between this study and Mu *et al* (2013) and Adelegan and Radzewicz-Bak (2009) may be due to complementarities. This occurs when banks provide short term funding, which they are best suited for, and long term investment needs are catered for by the local currency bond market.

The low ratios of private credit observed in the sample may indicate that many inhabitants of a country are unbanked. Countries such as South Africa and Mauritius display high ratios while others such as Algeria, Angola and Cameroon have smaller ratios of domestic credit to the private sector, offering only the most rudimentary banking services (Honohan and Beck, Demirgüç-Kunt, A. and Levine, 2007 and Beck, Demirgüc-Kunt and Peria 2011). Banks in countries such as Algeria, Angola and Cameroon may have faced common obstacles that prevented them from increasing their domestic credit to the private sector. First, economies of scale may not have been reached by credit providers in some of the smaller economies sampled thus, discouraging them from venturing more actively into some larger countries. Furthermore, a large part of the economy may have operated outside urban areas and may not possess the documentation that is required for financial transactions (Beck and Cull, 2013). The result is a part of the economy that is unbanked thus reflecting in the low ratios. According to Oji (2015) many unbanked Africans save their money in their homes giving rise to a loss of potential savings that may be utilised by bond markets for governments to better finance deficits. Banks may miss opportunities to benefit from this segment of society as they may use the increased deposits to make available credit to neighbouring communities to activate the local economy. The financing of deficits through savings and the investment into local communities signal development of efficiency in the economy, which is a positive sign to investors of bonds. Certain societies, however, may not wish to access funds from financial institutions and this may contribute, in part, to the lower ratios of credit to private sector. Demirguc-Kunt, Detragiache and Tressel (2008) find that

Muslims are considerably less inclined than non-Muslims to hold an account at a formal banking institution. This may have influenced the low ratio private credit observed in Muslim countries in relation to their non-Muslim counterparts.

All Islamic thinking is based on the Quran and that includes the feelings and judgement that applies to the economy and financial system which eventually infiltrates the way of life of a Muslim society (Iqbal and Mirakhor, 2013). According to Lewellyn and Boa (2014) institutions develop as individuals' reason and draw conclusions and interact with each other. The variation between the bond market development of countries of different religions stems from the divergent cultural and institutional practices dictated by religion. Islam, for instance, propagates a system that generally leads to the wellbeing of a society and encompasses the spiritual affairs of life. Conventional society, according to Iqbal and Mirakhor (2011), is mainly in pursuit of self-interest which causes a mismatch between the central tenets of practices and ways of life between Muslim and conventional non-Muslim societies. Religion affects bond market capitalisation through financial institutions which, in turn, are created by beliefs and traditions of a society (Acemoglu *et al* 2005; Ang 2013; Williamson, 2012).

Variables that represent the influence of colonialism on the present state of bond markets in Africa are significant in this study and offer insight into the nature of the bond market-colonialism relationship. Empirical results of the regression, in sum, suggest a pivotal role of colonial powers in shaping normative frameworks and informal institutions in their respective African countries and in the long run bond market development. Different experiences of colonialism were created by the various colonial powers in different African countries. The results confirm the propositions of Bossuroy and Cogneau (2009) that the legacies of various colonial powers affected the current level of education of particular African countries. For example Britain, unlike Belguim, France, Germany and Portugal and emphasised education and employed exhaustive means, such as missionaries, to educate the indigenous people, while being mindful of the cultural institution of the country. The values of colonial education influenced formal and informal institutions through the new

norms and expectations transmitted to indigenous people by the British colonisers. Belgium Germany, Portugal and particularly France exercised a different strategy by reserving education for a small selected group of indigenous people and neglecting the remainder of the population. This study argues that British colonial territories have been able to utilise technology, according to Veblen (1908,) due to the relatively substantial investment in education.

Bloom, Canning and Chan (2006) suggest that education can assist bond market development through technological catch-up as graduates are expected to be more cognizant of and relatively prepared and capable of employing these technologies. Applied to Veblen (1908), the investments in education received by British colonies equipped them with the ability to understand and apply this technology to financial markets in native countries. This created expertise and a grasp of technology to apply to bond markets as is evident in the higher bond capitalisation as a share of GDP ratios for those countries.

French colonialists actively controlled and rationed the provision of social welfare and took measures to ensure dissolution of the extended family (MacLean, 2002). Institutions further reinforced the solo way of life which bought about the tendency for information to be kept at an individual level and not extended to the family unit giving rise to moral hazard, adverse selection and ultimately information asymmetry which is precisely counter to the development of bond markets. British colonisers, on the other hand, stressed the safeguard of the extended family and used native chiefs as a conduit for providing social welfare (MacLean, 2002). The use of chiefs as custodians of social welfare, by the British, signify the relative respect and co-operation between colonializes and the indigenous people. This encouraged information sharing as a way of life which is conducive for bond market development.

Empirical evidence in this study suggests that the individualistic manner of the French colonialists perpetuated individualistic norms and traditions within the countries which led, in part, to their low bond market capitalisation. It appears, however, that the trend

identified above does not apply to certain economies. Namibia, in Southern Africa also departs from the established course by its relatively high bond market capitalisation despite being colonised by Germany.

Namibia, Egypt, Tunisia and Morocco, though colonialized by powers whose policies suppressed bond market development, exhibit among the highest capitalisations of the sample. Proximity and migration may be the cause of these findings. Rouis and Kounetsron (2010) suggest that migration and trade between Namibia and South Africa, and North Africa and Europe are viable portals of financial development for Namibia and the North African countries respectively. South Africa, however, has the second largest average bonds outstanding of the sample and also colonised Namibia, therefore the above may have occurred as a result of a spill over effect. A proposition of this thesis is that the North African countries may have stimulated trade with Europe due to the preference for indigenous country goods. This occurred as migrants in Europe from North Africa wanted goods from their native counties, thus increasing the demand for North African goods in Europe. A similar development occurred between immigrants in Namibia and South Africa.

French colonies, among the sample, display the highest levels of political unrest. More specifically, the North African countries of Algeria, Egypt, Tunisia and Morocco have among the highest levels of civil unrest of the whole sample. According to Hofstede (1984), Licht *et al* (2007) and Cieslewicz (2013) the disruptive effects of institutional reinforcement through learned behaviour inflicted by colonies are partly responsible for political unrest exhibited in those nations in the present day. Information asymmetry in the French colonies was probably reinforced by the division of native inhabitants of colonial territories (Valerio and Tjipilica, 2006). The assimilated natives, a very small part of the population who tended to be literate, were granted full citizenship and civil rights while the remainder of the population endured restricted rights. This study argues that this division, in conjunction with the individualistic norms and traditions enforced on former French colonial territories brought about a way of life that opposed the extended family, through which, sharing of information occurred less as individuals became less willing to disclose information to

others (MacLean, 2006). The result is poorly developed bond markets evident in their low ratio of bond market capitalisation as a percentage of GDP. According to Bharath *et al* (2009) and Gwatidzo and Ojah (2014) in the presence of information asymmetry, bond markets cannot function in an efficient manner.

6.2 Factors that influence bond issuance of the sampled African firms

The purpose of this section is to evaluate the firm level drivers of bond issuance in African economies, according to the empirical results of the previous chapter. In the previous section panel data and probit regressions were employed to establish the factors that hinder or promote bond market development, particularly in comparison with emerging counterparts. Together with the macroeconomic discussion of the previous section, the firm level factors of this section present a holistic account of bond market performance determinants. Specialised literature concerning factors that affect capital decisions of firms are typically categorized into external factors and internal factors. External factors include inflation, exchange rate, government debt and the GDP of a country. Internal factors that affect firm issuance of bonds, according to Serghiescu and Văidean (2014), concern internal variables that are particular to the firm, such as tangibility of assets, profitability and asset turnover. This section now turns to the internal factors that impact the financing decisions of the firm and include firm size, age, and growth, tangibility of assets, profitability, leverage and risk.

The book value of total assets is used as a proxy for size in studies such as Bhaduri and Majumdar (2005); however, this study follows that of Alzomaia (2014) and employs the logarithm of sales. The results indicate that size has a small positive influence on a firm's probability of bond issue. An increase in firm size is likely to increase the probability of the firm issuing bonds. Larger firms are likely to issue bonds, as they may possess ability to finance the costs of bond issuance more than smaller firms. Thus, a contributing factor of corporate bond supply is the presence of large firms in an economy, rather than smaller firms. It may also be that, in line with Coase theorem (1937) smaller firms are at a disadvantage because of the transaction costs associated with bond issuance. Smaller firms

may not have the capital needed to issue on the bond market. They may also require a sum of money that is significantly lower than the starting denominations of bonds because their scale of operations is less than that of larger firms. Furthermore, investors may be less inclined to invest in small firms' projects. Other studies on bond issuance and firm size including Rajan and Zingales (1995), Titman and Wessels (1998) and Ezeoha (2008), however, establish a negative influence of size on bond issuance. The studies were conducted in markets with differing contexts to those in most of the sampled economies. Rajan and Zingales (1995) reviewed major industrialised countries, Titman and Wessels (1998) considered firms in the U.S. and Ezeoha (2008) investigated firms in Nigeria, which at the time of the study was the second largest, and most liquid corporate bond market in Africa. Suggestions of Welter (2012); Kang (2014) and Kovala (2014) that context is an important factor in bond market development are pertinent to this variable as Rajan and Zingales (1995) and Titman and Wessels (1998) arrive at their findings from the developed market setting and Ezeoha (2008) from an African market.

Empirical results of this study are that, from a firm level perspective, there is a weak positive probability that an increase in the age of a firm influences the probability of the firm issuing corporate bonds. The number of years since the initial incorporation of a firm represents its age and, according to Carey, Prowse, Rhea and Udell (1993) captures unnoticeable credit risks. The positive and significant finding of this study may be clarified by the conclusions of Petersen and Rajan (1994) that firms of greater age have access to cheaper funds because of the quality reputation acquired through years of incorporation. Such firms are able to exploit opportunities related to experience and corporate status. One may argue that if this were the case, firms in the study would yield significant estimates between bond issue and age because of the variability of ages in the sample (between 5 and 161 years). It may be that firm age does affect the likelihood of bond issuance to a considerable extent, but the sampled firms have not formed strong reputational and experiential value to exploit the advantages of age. It is also plausible that, in agreement with Loderer and Waelchli (2009), asset decay and structural rigidity, which erode any collateral value or reputational

advantage that may have been developed through the years since the firm's incorporation, has occurred with the more mature firms.

This study follows Titman and Wessels (1988) in employing the share of a change of total assets as the indicator of growth, though contrasting accounts of growth have been used by authors such as Davidson and Wiklund (2000) and Gupta, Guha and Krishnaswami (2013). The negative results from the probit regression, although not significant at the specified levels, are insightful as they debunk the popular idea that by issuing securities managers possess strong incentives to transfer wealth from holders of bonds to holders of shares. This situation, therefore, may give rise to agency costs in firms with greater investment prospects. An inverse relationship also exists between a firm's high growth and the degree of debt because greater firm risk is associated with more opportunities for growth (Yousefzadeh, Aazami, Shamsadini and Abousaiedi 2014). The findings are inconsistent with the Pecking Order theory that predicts the accumulation of debt by growth companies over time. The findings are, however, consistent with the Trade-Off theory's prediction that firms with higher growth opportunities are likely to use less risky debt, which, in the case of this study, is through the issuance of bonds. High growth firms, therefore, according to the empirical findings of this thesis, are positive factors for local currency bond market performance.

Economic downturns of the African economies are highly likely to adversely affect the growth of its firms. According to the empirical outcomes of the fractional probit regressions, the sampled firms that exhibit volatility in their growth rates are likely to default more excessively should cash flows decrease severely due to economic downturns, or other unfavourable economic conditions. The negative relationship, although insignificant, is perhaps owed to the agency costs associated with debt, causing firms to rely more on retained earnings more willingly than debt (Alzomaia, 2014). The agency costs of debt lie in the sensitive information that is required to be shared with investors when firms are issued. Firms in the sample, with relatively high growth rates do not necessarily issue bonds as a

source of debt. This may be because firms are unwilling to share sensitive information or are unable to access local currency bond markets.

Tangibility, also denoted as fixed asset ratio, depicts the liquidation assessment of a firm (Bhaduri and Majumdar, 2005). The empirical outcomes of the previous section concur with Alzomaia (2014) regarding the positive relationship between the tangibility variable probability of bond issuance; however, unlike the previous study, the variable is not significant. Capital structure theories predict that high tangibility of assets is likely to increase the probability of debt capacity while volatility of assets decreases it. This is probably because tangible assets are less prone to information asymmetries; consequently, reducing agency costs associated with debt (Frank and Goyal, 2009). It acts as collateral for firms and mitigates problems that may be associated with contracts. The potential value that can be seized in cases of default is increased through tangible assets. Since firms with high tangibility of assets also possess lower transaction and agency costs of funding debt, it is probable that they will depend more on debt financing; however, the firms of the sample may find financing with banks easier than firms with lower ratios (Campello and Giambona, 2013).

The empirical evidence derived from the panel and fractional probit regressions suggest that high asset ratio firms may prefer bank financing over bond financing because of the expensive floating costs associated with bond issuance, particularly in Africa. Firms with high asset ratios tend to invest most of their funds in assets, making them sensitive to the costs associated with bond issuance; hence, firms in the sample with high ratios typically, are not bond issuers. The outcome of the study appears to oppose the Trade-Off theory that suggests a positive relationship between debt and tangibility of assets. The predicted probability for debt capacity may be increased by tangibility of assets; however, the underdeveloped local currency bond markets in which most of the firms operate may shift the debt preference, in this instance, from bond markets to banks. Volatility of assets is also a factor that may be present in the context of the sampled firms; thus, although a high tangibility of asset ratio exists the findings may not be significant because of asset volatility.

The negative estimate, -0.053, from the empirical evidence of this study, is in conformity with the Pecking Order theory that sizable tangible assets and low asymmetric information makes equity more economical for firms. Furthermore, the insignificant ρ-value may be due to the close relationships that many African firms forge with banks and the less collateral that the banks require of such firms because the relationships act as substitutes for physical collateral. This parallels the findings of Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001) that with an increase in tangibility of assets, total debt ratios decrease.

The performance of a firm, typically, is assessed by the profitability of the firm. Authors such as Handoo and Sharma (2014) use the operating profit rate of return; however, following Stewart and Watson (2012), Sadeghian, Latifi, Soroush and Aghabagher (2012) and Serghiescu and Vaidean (2014), return on assets is utilized in this study due to easier accessibility of the firm level information used to compute the variable. The empirical outcomes suggest that as firms become more profitable, they take out more debt and that profitability of firms increases the predicted probability of bond issuance. The Trade-Off theory suggests that this finding is due to debt financing being the preferred mode of funding for profitable companies because of the advantage of a tax shield. The Pecking Order theory contrarily implies that firms employ more debt as they become more profitable due to the information asymmetry and agency problems associated with underdeveloped bond markets in most of Africa. It is worthwhile to caution that the Trade-Off theory establishes leverage as the compromise between the current value of expected costs of financial disturbances and the present value of anticipated debt tax shields. Both the current value and the present value are conditional on anticipated future profitability and not on actual past profitability. Furthermore, prediction of the Trade-Off theory is not examined by measures built on past profitability. Moreover, a negative correlation between previous profitability and bond issuance may occur with modified costs of capital structure.

The literature suggests several definitions of leverage (Bhaduri and Majumdar 2005; Coles, Daniel and Naveen, 2008), however, the ratio of book value as a share of total debt is used

in this study. Book value, as opposed to market value is better suited for this study as markets in Africa, typically, are relatively volatile (Yartey and Adjasi, 2007; Alagidede, 2011). Market leverage is likely to yield deceptive results because of the volatility and mispricing of stock prices in the market; thus, book value is a more dependable measure here. Moreover, several empirical studies utilize long-term debt only, including Badoer and James (2015); however, close inspection of the data reflects the absence of long term debt in much of the sample and the predominance of short-term debt. The underdevelopment of bond markets in Africa may be partly due to this and the heavy reliance on expensive banks and financial institutions for short term funding. Both short and long term debt, therefore, are taken into account in the calculation of leverage ratio. The empirical outcomes from the sampled firms reflect very low levels of leverage, with some displaying no leverage at all and a positive association between firm profitability and leverage. The extensive interest margins in most of the markets may discourage organisations from taking bank loans and rather rely on retained earnings when possible. Results indicate that leverage of firms increases the probability of bond issuance by a very slight amount (0.04%).

Erraticism of the return on assets is used to assess risk. Empirical results from the entire sample suggest a negative association between leverage and risk particular to firms. A very strong negative and highly significant estimate of risk signals risk as the strongest contributor of bond market issuance of the study. The study finds that as a firm's risk increases the probability of bond issuance decreases substantially. Empirical outcomes of this study are in line with the Trade-off theory and concur with findings of Rijan and Zingales (1995) and Titman and Wessels, (1988), but are in disapproval of the Pecking Order theory. Financial distress may explain this inverse relationship. Doubt about probable cash flows is likely to have caused firms in the sample to employ less debt in their capital structures to reduce the cost of financial distress. This finding may appear counterintuitive in light of the elevated information asymmetry and agency costs encountered by many firms in Africa.

One may expect a positive link between risk and bond issuance due to a probable reduction in agency costs bought about by large risk (Myers, 1987); but, such findings may be

preliminary, because as suggested by Kale (1991) an upsurge in business risk occurs prior to an increase in debt. It may also be that, during the sampled period, firms faced poor economic conditions and as a result their amount of bonds outstanding decreased because of uncertainty about their ability to finance debt. For example, the Chairman of the Council of the Ghana Stock Exchange (GSE), Dr Sam Mensah, voiced his concern about the precarious macroeconomic environment in Ghana that had depressed the growth of the country's corporate bond market. According to Mensah, high inflation and interest rates within Ghana have increased significantly firm's ability to issue bonds for long-term capital. The volatile interest rates may have tapered the readiness of the public to purchase the long-term instruments, which complicates a firm's ability to market debt instruments with long-term maturities. Similarly, due to high inflation the public are worried about losing the value of their investments.

Tax advantages of debt are also lessened during erratic changes in macroeconomic conditions through the increase of discount rates and a decline of expected cash flows. The decline in tax benefits associated to debt causes it to be perceived as unattractive by firms and is thus decreased in firm's capital structures. Certain firm level factors of capital structure, such as future investment and growth opportunities, may fluctuate according to the highs and lows of an economy's business cycle. Firm specific factors that affect capital structure decisions, particularly bond issuance must be viewed against the backdrop of the wider economy.

6.3 Conclusion

The discussion has recovered many reasons for the current state of bond markets in Africa. Overall, no single class of factors is exclusively responsible for bond market performance. Macroeconomic and institutional determinants are intertwined in bond market development, and firms' decisions to issue bonds are largely dependent on macroeconomic and institutional variables of the countries where they operate. The study finds that the propensity of investors and firms to borrow from banks is a key impediment to bond market development. The preference for bank finance is due to the dominance of banks on the

continent, investor scepticism of African bond markets, the misconception of the relative price of issuing bonds and a confluence of factors relating to bond infrastructure and market perceptions. The lack of synergy between societal customs and cultures with the norms of market development is a likely contributor to the anaemic development of bond markets in Africa.

CHAPTER 7: CONCLUSIONS, IMPLICATIONS AND POLICY RECOMMENDATIONS

7.0 Introduction

This study has augmented the mainstream understanding of government and corporate bond market features in Africa. Government securities have supported African economies particularly, through fiscal deficits counteracting currency mismatches and lessening the overall vulnerability of African economies to shocks. Bond markets in Africa, while contributing to the development of African economies, have not received the attention merited in the literature, and this study argues for closer attention to their development. A heavy reliance on foreign and concessional borrowing is one of the consequences of the underdevelopment of bond markets in Africa and the resulting deficiency of long term funding instruments. Issuance of bonds by corporates also assists in the long-term investment prospects of firms in Africa. This study asserts that the combined government and corporate bond market development is beneficial to the macroeconomic and institutional development of African economies.

Macroeconomic and firm level determinants of local currency bond market performance have been identified and analysed in the empirical chapter (chapter five). These factors were then discussed in chapter six against the backdrop of the literature review. This chapter draws conclusions, implications and policy recommendations about local currency bond market performance drawing on the literature, empirical outcomes and the discussion of the previous chapter. A framework for the application of local currency bond markets in Africa is developed with an understanding of the African context.

7.1 Conclusions

The determinants of bond market development, using 26 African economies and 49 firms listed on various exchanges on the continent, are established and explored in this study. The econometric model for bond market performance determinants in African emerging economies employed accounts for the unique nature of African emerging markets. Analysis of a combination of data from various databases and annual reports of African firms suggest

that from a macroeconomic perspective, inflation, central government debt, GDP, external debt, GDP per capita and fiscal balance have an effect on local bond market development in African economies. Furthermore, political unrest, governance, religion, former colonial power and culture are institutional factors that exert a significant influence on local currency bond market performance. The study finds that firm level factors that significantly affect bond market performance, from the demand perspective are firm risk, size, profitability and age.

Bond markets in Africa have made wide strides towards increased efficiency and liquidity over the last decade. Liquid liabilities as a share of GDP in Africa as a whole, have increased from approximately 32% to 53% between 2005 and 2013. Most notable is the increase in liquid liabilities in Algeria and Cote d'Ivoire with increases of approximately 4% and 11% respectively. This translates into increased bank capital available to firms requiring funding. Financial development, denoted by domestic credit to the private sector continues to appear promising in African economies. The prevalence of banks in the continent's financial system persists and interest rates remain high with the exception of South Africa where interest rates are comparable to more developed countries such as Canada. The relatively depressed private credit to GDP and liquid liabilities to GDP reflect the small size of African banks in comparison to other emerging and more developed economies. The study attributes the deficient intermediation to weak enforcement of creditor rights and the relative lack of credit ratings. Trading platforms in African securities exchanges have progressed over the last decade. Securities exchanges vary from simple intraday systems in Uganda to more advanced trading systems in Nigeria where margin trading and the employment of the NASDAQ-QMX-X Stream Trading System is now in use. Faster payment, delivery of securities and more efficient clearing and settlement systems may have contributed to the increased performance in African trading platforms. The development of regional exchanges such as the Bourse Regionale Des Valeurs Mobiliers (BRVM) in Abidjan and the Bourse Régionale des Valeurs Mobilières d'Afrique Centrale (BVMAC) in Libreville has enabled a number of Francophone West and Central African countries that do not have functioning exchanges to trade bonds and stocks. Such arrangements have also made

available additional platforms other than country securities exchanges to boost the output of capital markets.

Credit ratings of African countries also indicate improvements. Angola, Cameroon and Zambia which previously, were not rated by credit agencies were rated in 2014. Kenya's rating progressed from B, BB to B1, B+, B+ from the three most widely accepted credit rating agencies. South Africa, however, dropped from a rating of A in 2010 to B in 2014. Compared to other emerging markets, and developed economies, African economies have far less domestic credit to private sector ratios; for example, the relatively developed Egyptian economy had an average ratio of 38 between the 2005 and 2013 period, while Japan and Brazil had respective ratios of 182 and 53 during the same period. Again, the only economy that is comparable with the more developed economies is South Africa. The firm information also suggests interest rates in Africa may be an inhibiting factor to bond market issuance. Countries that do not issue bonds have very low leverage, which may be due to the exorbitant costs in banking in most African countries. A further congruence between Africa and the emerging country sample is the variability and volatility among macroeconomic variables. The standard deviation and variance of African economies are consistently greater than in other emerging economies. The GDP per capita in the latter group is, however, more than double that of the African sample.

The sample suggests that growth rates of firms domiciled in countries with strong institutions perform better than those with weaker institutions. It is worthy to add that institutions have played an essential role in firm growth in the sample. A country's institutional condition is important in so far as companies that operate in robust regulatory environments with sound enforcement of property rights and neutral justice function better than those with weak institutions. Specifically, legal systems and measures that decrease agency costs such as shareholder protection are important drivers of firm growth.

The overall outcomes of the analyses of firms' habits regarding bond issuance suggests that bond issuers are more likely to borrow from banks than the firms which do not issue. Firms

that issue debt are found to have more risk than those which do not. Non-issuers have higher profitability and much lower growth opportunities than issuers. An important finding is the statistically significant difference between firms that issue bonds and non-issuers. Corporate bond issuers, from the sample, have higher risk, lower leverage, larger size and more growth opportunities, rely less on assets and measure lower profitability and age than firms that do not issue bonds. Risk and size of the firm exert the highest influence on the decision to issue bonds. Furthermore, the results imply that the desired form of financing for firms in African economies is equity. This finding supports the idea that high interest rates on bank loans and inhibitive requirements prevent many firms from using bank financing. Results also suggest that dominance of the banking sector and underdevelopment of bond markets impel firms to utilize equity, which may not always be the most efficient financing channel, especially given that most African markets do not yet have well-functioning and efficient equity markets. Based on the broad review of the literature and empirical results of the study, detailed policy recommendations suited to the African context are discussed below.

7.2 Implications and policy recommendations

Development of bond markets in economies with embryonic government securities and increasing performance is a task that requires the foremost dedication from government. A market-oriented government funding strategy with well-defined debt management strategies must be implemented to support development of local currency bond markets. Obstacles that inhibit the performance of bond markets are underpinned by the institutional character of a country. Prior to initiatives to develop bond markets, it is imperative that a government is viewed as credible by investors and that the political environment is stable.

The government must be viewed as a trustworthy issuer of securities, and the financial sector and macroeconomic fundamentals need to be sound. This is a continuous process where the government persistently instils practices that exhibit firm and thorough monetary and fiscal policies, efficient tax, legal and regulatory frameworks and streamlined and safe settlement provisions. Efficient legal and regulatory systems that are in line with the

prevailing institutional practices instilled by colonialist must be installed. These practices must filter down from governmental norms to the running of exchanges and sound monitoring of the regulations and laws for those practicing primary dealer systems and investments of government bonds. This ensures a streamlining of practices and expectations of participants. Critical areas that must be tackled include new regulations and operations that inform the methods and practices of indigenous people. Furthermore, policymakers and academics who analyse bond markets in Africa must do so against the theoretical backdrop of middle-range theory to establish a balance between grand theories and functional hypotheses that continually develop and evolve in the course of routine research. The rationale behind this recommendation is that the prevailing financial systems of the modern economy are rooted in the institutions of the colonial power. Religious practices must also be instilled to facilitate the cultural norms and practices of the most important investor base- the inhabitants of a country.

The interconnected relationship between external debt and central government debt must be set at a sustainable level, and government should be dedicated to its confirmation. This is important because investors translate such high levels of debt as the inability of governments to manage debt, which they interpret as high default risk. Sharp shifts in fiscal policy to accommodate external and central government debt is not a good signal to investors. Incorporation of a fiscal authority may be valuable in alleviating investor anxieties about debt sustainability in African economies with more developed bond markets.

Information regarding the debt structure must be open and available to investors and market participants. Debt management strategies and the funding requirements must be accessible to the public. This fosters transparency and trust among market participants. More importantly, the government needs to gain knowledge about the observations of primary dealers and investors to appreciate the forces of demand for government securities. Governments must commit to setting prices according to the market and not administratively. Acts such as this demonstrate government's commitment to transparency and the processes of bond market development.

Double digit and volatile inflation should be avoided for government bond markets to develop, as it deters investors from investing in long-term securities. Investors are unwilling to invest long-term, in environments where uncertainty about future inflation rates exist. Besides implying economic and/ or political obstructions within an economy, double digit and volatile inflation limit the development of an extended yield curve of the economy. Economies such as Ghana, with a continual inflationary environment would benefit from the issuance of inflation-indexed bonds during the early phases of bond market development. Such a strategy, coupled with firm monetary and fiscal policies is likely to also lessen government costs of funding over an extended period.

A yield curve must be developed from a controlled amount of newly issued bonds of varying maturities. This development provides more precise pricing of securities and government must adhere to market prices identified through the yield curve. It is advised that simple securities such as Treasury bills and bonds are issued and amalgamated under national issuance. Too many public issues promote market fragmentation; therefore, markets should endure to employ as few public issuers as possible. Use of standard marketable treasury bonds are best for African markets as more complex issues may be complicated at the formative stages of bond market development.

The structure of the financial system should be a foremost concern in bond market development at the initial stages. The investor base of government bonds must be heterogeneous for the market to develop. Varying risk preferences, trading objects and investment maturities must also compose the investor base to make certain a demand of bonds during alternate market situations. It is important that congruence between the amount of public debt and the market exists. Economies that are not able to reach critical mass of investor base must make use of regional exchanges such as the BRVM stock exchange and coordinate activities from a regional perspective. Should debt amounts be too small to match the market, government should issue treasury bills until capacity is increased.

The state of the banking system is of great consequence to bond market development particularly as a large segment of the investor base of bond markets are from the banking sector or act on behalf of clients. Macroeconomic stability in African economies is imperative as instability may hamper the functions of banks and dampen the development of the government securities market. Furthermore, banking systems must, periodically, be subject to stress testing and essential measures to evaluate banking sector environments required to ensure soundness of the banking system. This is essential as uncertainties about banking systems negatively affect government's capacity to issue new debt or roll over existing debt. Once sound banking system measures are instilled and fostered within a financial system, financial sector liberalization in the form of phasing in deregulation of a country's capital account is advised. The financial system needs to be liberal and intermediaries must exhibit healthy competition.

A prerequisite of bond market development, money markets, have materialized in the majority of African economies. The short-term markets are usually in place before the establishment of longer-term bond markets. Monetary policy, conducted by the Central Bank, through the money market may cause many overlays between policy makers and bond market operators. It is advisable that a designated coordinating committee be created to control the process of market development in view of the participation of many government bodies. Such committees are beneficial to make more efficient the coordination between bond market and monetary policy to facilitate constructive bond market development. The same instruments employed in monetary policy and treasury bill sales should be used in African economies, except South Africa, to evade fragmentation of markets due to their shallowness. The use of matching instruments is also suitable for African economies as it matches the few monetary instruments of such economies while promoting liquidity of government securities. Transparency is vital when using identical instruments and where instructions are not precise and expectations are ambiguous, failure may result. The economies with markets at nascent stages of development should rather

use the central bank to receive deposits and issue bills that are utilized as a market intervention tool. Efficient management of these operations is essential to prevent disputes.

Tap systems along with auctions are a suitable method to sell domestic government securities and necessitates prior knowledge of independent bidders. Syndicates will be beneficial to embryonic markets evident in many African economies; however, this system is best used in markets with relatively lower levels of corruption and information asymmetry and reduces placement risk. Wider and deeper investor reach can be attained through the use of technology and it is advised that exchanges in Africa utilise such methods more. A combination of sales methods that increases the competition among investors must be explored.

Regular, prearranged consultations between governments and primary dealers must occur so that the dealers are explicitly aware of their regulations and obligations. Use of primary dealers should be viewed as a complement to investor base expansion and efforts to broaden investor base must be carried out in parallel with primary dealer employment. Close inspection by the appointed committee must be carried out to ensure that primary dealers meet prerequisites. The primary dealer system is very attractive in ensuring the sale of government bonds; however, it is essential that regulatory and legal frameworks are established and implemented prior to their incorporation. Involvement of primary dealers without these frameworks and regulations can foster an environment of collusion and dampen competition, which conveys adverse messages to investors.

Establishment of sectors such as contractual savings and collective investment funds, for instance, mutual funds has large consequences for the investor base of a government bond market. Governments are thus encouraged to include incentives for such sectors to issue and trade in local bond markets. Both local and foreign contractual and collective investment funds must be catered for in a manner that will facilitate their entry and establishment in local bond markets. Non-tradable securities are a method to attract retail

investors and will assist government bond markets in achieving critical mass while broadening their scope.

The dominance of banks and high interest rate spreads suggest that greater transparency would benefit firms by lowering interest rate spreads and may accommodate more firms in need of financing. Further, more transparency and symmetry of information assists in the development of bond markets thus adding competition into the financing sector which drives down interest rates and fees charged by banks.

The provision of incentives to investment banks that provide services in the preparation and organisation of underwriting and other duties is recommended to African governments. It may be beneficial if these bodies are incentivised to lower their fees and rewarded for the amount of bonds they issue. Governments should implement schemes that educate firms and the public about the benefits of bond financing. The perception of bank financing as lower cost than bond finance may be lessened through such programmes. Furthermore, regulations that prevent banks from inappropriately pricing loans must be created. Once government bond markets have begun to develop the yield curve can be used to price the interest rates of loans and these rates must be adhered to by banks and financing institutions. Incentives to invest in domestic corporate bonds must also be offered to non-financial institutions to promote corporate bond investment and address the dominance of banks and banking institutions in African financial systems.

Progress must be made in the secondary corporate bond markets to attract investors. The extensive literature review, data and methodology of the study suggest that banks are the primary parties of the corporate bond markets thus they sell amongst themselves on the secondary market. Their liquidity, therefore, is higher than that of non-financial firms.

A principal element in the development of bond markets is the settlement system. It is vital that this component is taken seriously and addressed with the same importance as the macro elements of bond market development. These improvements must be applied to

both government and corporate bond systems. Implications regarding competition within the financial system, ease of access and risk are closely aligned to the settlement system.

Many African bonds are issued as paper; however, moves towards paperless issues need to be implemented for the efficiency of transactions. Replacement of paper issues with the paperless must occur during the initial stages of bond market development initiatives. Settlement of trades can then be decreased from a three day to a same day cycle. Custody arrangements in the majority of African exchanges, currently, are provided privately. This is not an issue of concern because of the size and early development stage; however, the governance and legal framework of the private providers must be ensured, transparency maintained and fee structures regulated. Delivery and payment of securities, preferably, should utilise cash. Cash accounts with the central bank will preserve timely payment of securities and a predetermined settlement cycle. This arrangement is preferable to the traditional system, which collects payment obligations over a period of time. The latter arrangement should be avoided as it may lead to unnecessary risk for all parties.

A huge consequence lies in the market administration of bond market arrangements, particularly in an OTC structure, which is the emerging procedure in African exchanges; therefore, the design should meet the legal and regulatory atmosphere of the economy. Minimally expected norms and standards must be met to streamline the settlement process with the recommended macroeconomic bearings set out in this study. A framework that facilitates the secured exchange of securities and funds need not be complex; communication instruments such as a phone or email are sufficient to carry out the processes provided that the exchanges occur with transparency and within the bounds of legal and regulatory decrees. Implementation of these policies in African economies will steer markets towards bond market development and provide an efficient portal for governments, firms and residents to obtain capital.

Most studies on the determinants of bond market performance rely on only one or two dependent variables thus limiting the scope of investigation (Claessens *et al,* 2007;

Bhattacharyay, 2013). Studies that employ a dependent variables, such as liquidity, are worthy of being considered as proxy for bond market development since larger, more developed bond markets tend to be more liquid than smaller bond markets (Eichengreen *et al,* 2008). Exchange rate, in this study, is not a significant explanatory variable; however, studies that include various measures of exchange rate volatility will be beneficial in extrapolating more information about the character of bond market determinants.

Consideration of the reasons why African bond markets have failed to develop at the rate of those in emerging and developed economies would be a beneficial area of research. The geographical scope of the study enriches one's understanding of colonialism and bond market development in Africa. A study that includes emerging economies that were colonized would give a deeper understanding of the institutional influences on bond markets and financial systems. Colonial experiences in countries outside Africa will provide a larger platform for such analyses. Industry leverage may be evaluated as a possible determinant of a firm's decision to issue bonds. Finally, sectorial analysis as a determinant will give an understanding of which variables, such as debt preference, within various industries cause them to issue bonds.

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9.0 APPENDICES

9.1 Countries used in the study

Country	Region
Algeria	North Africa
Angola	Southern Africa
Botswana	Southern Africa
Brazil	South America
Burkina Faso	West Africa
Burundi	Central Africa
Cabo Verde	West Africa
Cameroon	Central Africa
Cote d'Ivoire	West Africa
Egypt	North Africa
Gabon	Central
Ghana	West Africa
India	South Asia
Indonesia	South-East Asia
Kenya	Eastern Africa
Malawi	Southern Africa
Mauritius	Eastern Africa
Mexico	North America
Morocco	Northern Africa
Mozambique	Southern Africa
Namibia	Southern Africa
Nigeria	West Africa
Rwanda	East Africa
Senegal	West Africa
South Africa	Southern Africa
Tanzania	Eastern Africa
Tunisia	North Africa
Turkey	South-eastern Europe and Western Asia
Uganda	Eastern Africa
Zambia	Southern Africa

9.2 Companies used in this study

Company name	Country	Sector	Year founded
African Champion Industries	Ghana	Manufacturing	1967
African Copper Plc (AFCP)	Botswana	Mining	1998
Airtel Networks	Zambia	Telecommunication	1998
AngloGold Ashanti	Ghana	Mining	2004
Bata shoe co.	Zambia	Manufacturing	1937
Bralirwa Ltd	Rwanda	Brewing	1957
Cadbury Plc	Nigeria	Confectionery	1965
Ciel Textile	Mauritius	Textile	1999
Conoil plc	Nigeria	Lubricants	1927
East African Breweries	Uganda	Beverages	1922
Edgars	South Africa	Apparel	1929
El--Ezz steel Rebars	Egypt	Construction	1994
Fan Milk	Ghana	Beverage	1960
Flour Mills	Nigeria	Food	1960
Furnmart	Botswana	Furniture	1998
GSK	Nigeria	Pharmaceutical	1972
Guinness Nigeria Plc	Nigeria	Beverages	1963
Home Afrika	Kenya	Housing	2008
Kenya Airways	Kenya	Aviation	1977
Kenya Electricity Generating Company (KENGEN) Limited	Kenya	Electricity	1998
Les Ciments de Bizerte	Tunis	Construction	1953
Lux resort	Mauritius	Holiday resort	1985
Mauritius sugar syndicate	Mauritius	Manufacturing	1951
Nation media group	Kenya	Communication	1959
Netcare	South Africa	Healthcare	1996
Niemeth Pharmaceutical	Nigeria	Pharmaceutical	1957
Nigerian Aviation Handling Company Plc	Nigeria	Aviation	1979
Pick and Pay stores	South Africa	Supermarket	1967
Portland paints and products	Nigeria	Construction	2004
PUMA Energy	Zambia	Energy	1975
PZ Cussons Ghana Limited	Manufacturing	Ghana	1958
ReaVipingo plantains	Kenya	Crops	1966
SAFARICOM	Kenya	Telecommunication	1997

Sasol	South Africa	Fuel	1950
Servicom (SERVI)	Nigeria	Service delivery	2004
South African Breweries	South African	Beverage	1895
Starwin products Ltd	Ghana	Pharmaceutical	1960
Tatepa Ltd	Tanzania	Manufacturing	1995
Telecom Egypt	Egypt	Telecommunications	1854
Telecom Networks	Malawi	Telecommunications	2007
Telkom	South Africa	Telecommunications	1991
Transnet	South Africa	Rail transport	1990
Uchumi Supermarkets	Kenya	Supermarket	1975
UMEME	Uganda	Energy distribution network company	2004
Unilever	Nigeria	Manufacturing	1920
United Balsalt Products	Mauritius	Construction	1953
Vodacom	South Africa	Telecommunication	1994
Williamson tea	Kenya	Food processing	1972
Zambeef	Zambia	Agri-production	1994

9.3 Variables used in the study

Variable category	Unit of measurement	Frequency	Definition	Unit of Observation	Source
a)Dependent Variable					
Government bond market capitalisation	% GDP	Yearly	Natural logarithm of government bonds outstanding as a ratio of GDP.	Country	
Decision/ Likelihood to invest in bonds					
b) Exploratory Variables					
i) Macroeconomic factors					
Domestic credit (DomesticXb)	% GDP	Yearly	Domestic credit to the private sector as % of GDP.	Country	AFMI database
Economy size (GDPPPPXb)	International dollars (billion)	Yearly	Natural logarithm of GDP at PPP	Country	IMF database
Exchange rate (ExchangeXb)	Local currency per $US	Yearly	Standard deviation of nominal exchange rates' log 1st deference	Country	IMF database
Exports (ExportsXb)	% GDP	Yearly	Exports as proportion of GDP	Country	IMF database
External debt (ExternalXb)	% GDP	Yearly	Ourstanding payments to non-residents of the country	Country	IMF database, AFMI database
Fiscal balance (FiscalXb)	% GDP	Yearly	Three year moving average of total fiscal balance.	Country	IMF database, AFMI database
GDP per capita (GDPXb)	International dollars (billion)	Yearly	Natural logarithm of GDP per capita.	Country	IMF database
Central government debt (CentralXb)	% GDP	Yearly	Year-end outstanding marketable central government debt.	Country	IMF database, AFMI database
Inflation (InflationXb)	% change	Yearly	Yearly change in annual averaged	Country	IMF database, AFMI database

			consumer price index		
ii) Institutional & Social factors					
Colonial power (ColonialXb)	0 or 1	Constant	Dummy variables where: 1 if Britain 0 if other and 1 if France 0 if other and 1 if Portugal 0 if other.	Constant	Corfield (2008)
Control of corruption (GovernanceXb)	Number (score)	Yearly	Unweighted sum of normalised scores (0-1) of *four governance indicators	Country	World Governance Indicators (WGI)
Political stability (ProtestXb)	Number (score)	Yearly	Unweighted sum of normalised scores (0-1) of **four risk indicators	Country	World Governance Indicators (WGI)
Political stability (PoliticalXb)	Number (score)	Yearly	Unweighted sum of normalised scores (0-1) of **four risk indicators	Country	IMF database, AFMI database
Religion (ReligionXb)	0 or 1	constant	Dummy variables equal 1 for Christian and 0 for otherwise.	Country	World Bank Database
iii) Firm level factors					
Growth	% sales	Yearly	Percentage change of sales	Firm level	McGregorBFA Research (now listed under INET BFA)
Leverage	% total assets	Yearly	Ratio of total liabilities and total assets	Firm level	McGregorBFA Research, published company annual reports
Profitability	% total assets	Yearly	Net profits over total assets	Firm level	McGregorBFA Research
Risk	Unit	Yearly	Standard deviation of the return of assets	Firm level	McGregorBFA Research
Size	Unit	Yearly	Natural logarithm of sales	Firm level	McGregorBFA Research, published company annual

					reports
Tangible assets	% total assets	Yearly	Ratio of fixed assets over total assets.	Firm level	McGregorBFA Research, published company annual reports
Age	Unit	Yearly	Number of years listed	Firm level	McGregorBFA Research