Political Risk and Bank Capital Structure in Emerging Market Economies

by

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Abstract

This paper shows that banks play a crucial role (resource allocation) in the functioning of every economy, more so for developing economies where capital markets are not well developed and, in some cases, non-existent. Drawing from existing literature, we show that capital structure is an important determinant of bank performance and that political risk influences the choice of how much and what sort of debt banks employ. We show that heightened political risk increases the cost of debt, especially long-term debt thereby influencing the amount of employed debt versus equity, that is, capital structure. This paper shows that, relative to developed economies, developing economies experience more political risk. Another important finding is that, contrary to common belief, banks do rely on non-deposit debt to finance their activities, to an extent that, factors such as political risk, that affect the availability and cost of debt, directly impact banks' decisions, performance and efficiency. We precisely explain how capital structure affects performance and demonstrate the exact channels through which political risk influences the debt-equity mix.

Keywords: Political Risk, Banks, Capital Structure, Developing Economies

Declaration

I declare that this research is my work. The research is a partial fulfilment of the requirements for the degree of Master of Management in Finance and Investment at the Wits Business School, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other university. I further declare that I have obtained the necessary authorization and consent to carry out this research.

Arthur Mukwapatira

Signed on 22 October 2020

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List of Acronyms and Abbreviations

BCBS	Basel Committee for Bank Supervision
BHC	Bank Holding Companies
CPI	Consumer Price Index
DME	Developed market economies
EME	Emerging market economies
GDP	Gross Domestic Product
GGM	Gordon's Growth Model
ICRG	International Country Risk Guide
IMF	International Monetary Fund
MENA	Middle East and North Africa
MERCOSUR	Southern Common Market *(Spanish abbreviation)*
MTB	Market-to-book
NPV	Net present value
OECD	Organization for Economic Co-operation and Development
PPE	Plant Property & Equipment
PRS	Political Risk Services
ROAA	Return on Average Assets
STD/TA	Short-term Debt to Total Assets
TD/E	Debt to Equity
TD/TA	Total Debt to Total Assets
US	United States of America
USTR	United States Trade Representative
USD	US Dollar
VIF	Variance Inflation Factor

Chapter 1 – Introduction

Literature suggests that a strong and sound financial system is at the heart of every economy, without which, it is difficult to develop and achieve economic well-being of the people of a nation (Bollard, 2011; Rajan & Zingales, 2001; Wurgler, 2000). The point is more important for emerging markets, which are often characterized by small and underdeveloped capital markets (Bollard, 2011; Etudaiye-Muhtar & Ahmad, 2015; Jain, Katsuki, Lal, & Pitsilis, 2017; Rojas-Suarez, 2013), implying that banks in such economies form the cornerstone of the financial system.

Central to the financial system and especially so for emerging markets, are banks. Banks play very crucial roles in the economy, among which is the efficient allocation of financial resources among competing projects (Bollard, 2011; Wurgler, 2000). Owing to their deposit-taking nature, banks pool together savings in the economy and can exploit economies of scale and avoid issues such as investment indivisibility. The inefficiencies of the capital markets in emerging economies stem from the relatively high costs of information asymmetry which banks help to reduce through their ability to access information that is otherwise private (Di Mauro, Hassan, & Ottaviano, 2018). Given the importance of banks, we believe it is worthwhile to further research and understand factors that affect bank performance.

Capital structure choice has been a major topic among academics and practitioners since the irrelevance theory of Modigliani and Miller (1958). The theory posits that using either debt or equity to finance a firm's capital needs should not have a bearing on the value of a company. Since then, a lot of effort and research has been expended trying to validate this claim. Many focused on the determinants of the capital structure choice (Gropp & Heider, 2010; Hoque & Pour, 2018; Lemmon, Roberts, & Zender, 2008). Yet further effort went into establishing the impact of the different capital structure choices on the firm's financial performance (Berger, 1995; Berger & Di Patti, 2006).

Factors such as tax benefits, agency costs, size, profitability, and collateral, among others, have been brought forward as prominent firm-specific determinants of capital structure choices. In addition to firm-specific attributes, other literature (Bradley, Jarrell, & Kim, 1984; Hoque & Pour, 2018) suggested industry- and country-level characteristics as other factors that help to explain the heterogeneous capital structure choices observed in practice. Institutional integrity, corruption, law enforcement, bankruptcy codes, level of development of the bond and capital

markets, growth prospects of the economy, among other factors, were found to have statistically significant explanatory power in capital structure choices.

Since adding value to shareholders is the raison d'être of firms, it follows that factors that affect a firm's performance are worth studying. Just like other factors, it has been shown that capital structure choices have an impact on firms' financial performance (Berger, 1995; DeAngelo & Stulz, 2013). This finding was not short of mixed conclusions, with some researchers finding a positive relationship between leverage and performance (DeAngelo & Stulz, 2013), with others concluding otherwise, for example, Berger (1995).

To the best of our knowledge, a greater part of the literature on capital structure focused on operating firms (non-banking) for various reasons. Top of the reasons is their deposit-taking nature which, if studied together with other non-banking firms, tends to distort observations and conclusions. Another prominent reason is the view that banks' levels of equity are mainly determined by regulation such as the Basel capital adequacy requirement (Mishkin, 2000, p. 227), such that market forces have no impact on debt-equity mix.

According to Gropp and Heider (2010), contrary to the much-held belief that determinants of bank capital structure choices are much different from those for non-banking firms, most of the factors for non-banking firms also hold true for banks. The possibility that capital structure has a bearing on the financial performance of banks (Berger, 1995), makes it an interesting factor and one of the main considerations of this paper.

Studies have shown that emerging economies behave and respond differently (economically) to the same political and economic events (Choi & Shim, 2018; Diamonte, Liew, & Stevens, 1996; Harvey, 1995; Wu, Guo, Chen, & Jeon, 2019), one example being the impact of political risk on economic activities. According to a study by Diamonte et al. (1996), compared to developed markets, political risk had a significant impact on stock returns such that if one could predict the expected level of political risk, one could tell the expected returns on stocks. Unfortunately, less research has been devoted to studying and understanding emerging markets relative to developed countries. It is our hope that this paper will contribute to the existing body of knowledge on emerging markets, specifically their banking industry.

Political risk can be defined as the potential loss in returns of an investment due to changes in political decisions and/or policies. This risk is more pronounced for long-term investments. Studies have shown that political risk has an impact on various aspects of the economy, for example, stock returns (Diamonte et al., 1996), and investment decisions (Chevalier & Hirsch,

1981; Osabutey & Okoro, 2015). Examples of political risk manifestations include coups d'état, riots, sudden imposition of controls on prices and exchange rates, expropriation with or without compensation, restrictions on the free movement of capital, loss of ownership and control of firms, among others. All these events hurt the profitability of investment ventures in the host country. Given that emerging markets depend heavily on foreign investments, political risk is a major concern for the development and growth of emerging economies.

Political risk has an impact on the capital structure decisions of banks in emerging economies from two fronts, namely supply and demand. The supply front can be explained by considering that banks not only use deposits for their leverage but also non-deposit debt (Gropp & Heider, 2010). Political risk causes friction in the capital market and affects the cost of debt, directly feeding into capital structure choice. Alternatively, heightened political risk discourages investment and therefore the demand for loans and credit in the economy. The dampened demand will force a balancing adjustment on the financing side of the banks' balance sheet.

Current investment research by companies such as S&P Global and OECD Emerging Markets Network shows that much of the expected growth in the world economy is going to come from emerging markets specifically in Asia, Africa, and Latin America (see Figure 1). It is therefore worth devoting more effort to understanding factors affecting key industries in emerging markets, with banking playing a pivotal role.

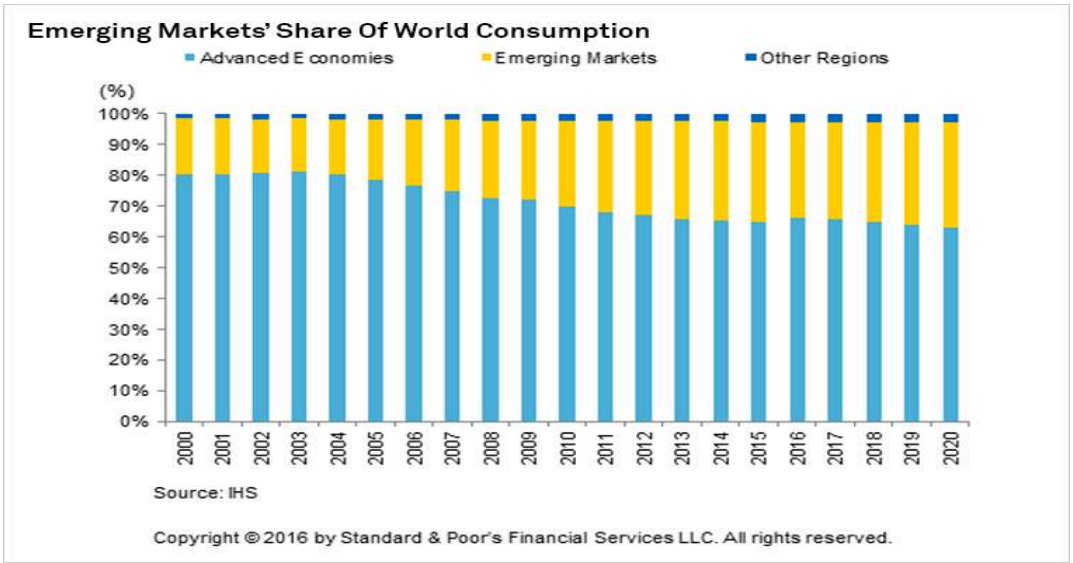

Figure 1: Expected world consumption

Source: S&P Global (2016)

The lack of clarity on the relationship between leverage and firm performance, the exclusion of banks in most capital structure studies, the relatively small volume of literature covering emerging markets, and the unclear effect of political risk on bank capital structure, are the main drivers of this research work. This paper aims to contribute to existing literature and knowledge in the following ways:

- By establishing that political risk has an impact on bank capital structure decisions, through both the demand and supply side
- Showing that political risk can explain capital structure choices, and which channel (supply or demand), has the most explanatory power
- How different capital structure choices affect bank performance
- Help macroprudential policymakers understand how bank capital structure reacts to their policies in the face of different levels of political risk.

To make this contribution, we analysed financial data for publicly listed banks in all emerging economies that have complete financial data for the period 2006 to 2018. This paper will progress in the following manner: Chapter 2 discusses existing literature on the various focus areas of this paper; Chapter 3 explains the methodology used; Chapter 4 focuses on data and statistical analysis and interpretation of the results, and Chapter 5 concludes and provides recommendation for further research.

Chapter 2 – Literature Review

2.1 Introduction

In this chapter, we are going to look at what literature has to say concerning the major aspects of this paper. Specifically, we are going to look at capital structure (what it is and why it matters), the important role that banks play (especially in the context of emerging economies) and what factors affect their performance, political risk in emerging markets, and finally, why focus on emerging markets, what is so special about them.

2.2 Importance of Capital Structure

Capital structure has been a topic of great interest to many within finance since Modigliani and Miller (1958, 1961) brought forward the irrelevance theorems. These theorems have become the foundation upon which modern corporate finance theory is built. In the first theorem, Modigliani and Miller (1958) claimed that in a frictionless market, the choice of financing should not have an impact on the value of a firm. A frictionless market, according to Miller and Modigliani (1961), is one where no single market participant is large enough to influence the going security price, where investors are rational (always prefer more wealth whether it comes as an increase in the market value of their holdings or cash payments), and where every investor is assured of the future investment programme and profits from those investments.

Capital structure can be defined as the utilization of the various mixes of securities by firms to finance investments. It has been noted that firms in different industries seem to settle on some optimal mix of debt and equity. Sadly though, literature has not come to a unanimous conclusion about the optimal mix; what is agreed upon, however, is that there is some attainable optimal mix.

An important aspect to note about the financial policy irrelevance theorem is that it is grounded on an idealized world, characterized by perfect market conditions. Given this, one ought to ask if real-world markets are anything close to perfection. The answer to this is, not surprisingly, no. The violation of the underpinning assumption may well mean that capital structure matters in the real world. This realization prompted a lot of research work into the matter, notably, a correction to their very own model by Miller and Modigliani (1961) when they took into consideration the benefits of the tax shield on debt. Since interest on debt is a tax-deductible expense, the firm value therefore increases by the net present value of the tax shield.

Given this benefit from tax, it then follows that firms will pursue a high leverage ratio to capitalize and increase firm value through the tax shield benefit. Strangely though, reality does not seem to agree with this. In practice it is often observed that firms employ much lower levels of leverage in their financing, for example, Kim (1978) observed that non-financial firms in the United States between 1963 and 1970 employed on average only one-third debt.

Many possible explanations were offered, and the most prominent view is that, as debt levels increase, the risk of bankruptcy rises, and lenders start to demand higher returns on debt, and this reduces the benefits of the tax shield (Solomon, 1963). The increased debt premium will raise the weighted average cost of capital which, in turn, reduces the value of a firm through a larger discount factor on projected future cash flows. To minimize the cost of capital, firms drop the "all debt" financing policy and instead seek some optimal debt-to-equity mix.

Bankruptcy costs (transactional costs associated with liquidation or debt reorganization) have been found to be significant in discouraging borrowing by firms (Myers, 1977). High leverage increases the chances of defaulting on interest payments, thereby resulting in bankruptcy. Firms, therefore, aim to maximize the tax benefit from high leverage and minimize the costs of bankruptcy, and this balancing act proves that financial policy matters.

The importance of bankruptcy costs was emphasized by Stiglitz (1972). Stiglitz (1972) concluded that, even in the absence of transactional costs, the possibility of bankruptcy raises nominal rates on debt, making the firm's bonds risky. This in turn reduces the firm's value and prompts managers to carefully consider the level of leverage they employ in financing their projects.

Fazzari, Hubbard and Petersen (1987) concluded that capital structure choice matters, noting that different forms of capital are priced differently owing to information asymmetry. They noted that due to market imperfections, firms do not have the same access to external financing, whether debt or equity. Owing to this uneven playing field in the capital markets, external funding is more expensive (sometimes unavailable) than internal funding, especially for growing firms. The key view is that, when the cost of external finance is high, managers often abandon investments that otherwise have a positive net present value, therefore affecting the value of the firm, which dismisses the irrelevance theorem.

In line with Fazzari et al. (1987), Myers and Majluf (1984) explained why asymmetric information induces new investors to demand a higher required rate of return. This higher premium results in retained earnings (internal financing) becoming cheaper than external

funding. Given this, firms develop a "pecking order" or financing hierarchy, starting with retained earnings, then debt, and lastly equity. This addresses the existence of some optimal capital structure and discards the capital structure irrelevance theorem. In this light, capital structure choice does have an impact on the value of the firm, via the cost of capital.

Some studies have looked at the linkage between capital structure and profitability. There seems to be a granger causality relationship in either direction (Berger, 1995; Lemmon et al., 2008). For starters, let us consider the effect of capital structure on profitability. Highly profitable firms are valued more than less profitable firms; examples include Gordon's Growth Model (GGM) and the stream of dividends approach. The stream of dividends approach in firm valuation states that the value of a firm can be considered as the sum to perpetuity of the present value of expected dividends. The GGM approach, on the other hand, values the price of a firm's stock as a sum to perpetuity of the present value of expected future dividends that are expected to grow at a constant rate. In both these very popular and practical methods, we can see that profitability affects the stockholder value such that factors that influence profitability must be studied well, and capital structure happens to be one of them (Berger, 1995).

One of the most notable studies that tried to link capital structure to profitability was that of Berger (1995), in which it was concluded that capital structure has an impact on profitability. In the study, bank stock returns were analysed over ten years between 1983 and 1992. The findings in the study were quite puzzling, as the same explanatory variables had different relationships with profitability over the study period. Notably, the period of 1983 to 1989 showed a positive relationship, while the 1990 to 1992 period showed a negative relationship. In explaining this observation, Berger (1995) focused on leverage. He noted that when the leverage was quite high, banks were considered riskier and therefore attracted a higher premium on their unsecured debt. This higher cost of debt resulted in the observed decrease in profitability, which improved as banks responded by increasing equity. The reduced leverage started improving recorded profits and this continued until a certain threshold when this decrease in leverage started eating into the profits. This observation lead to the conclusion that capital structure has a significant impact on profitability and supported the belief by managers that there exists an optimal capital structure.

Since the work by Modigliani and Miller (1958), several theories have been brought forward to try and explain the observed variations in capital structure. These theories include the trade-off, information costs, and agency theories.

The trade-off theory suggests that managers seek to strike a balance between the present value of the tax shield and the costs of possible bankruptcy costs. This theory is based on the premise that increased leverage obscures the benefit emanating from the tax savings, suggesting the existence of an optimal capital structure. The theory predicts that firms with more tangible assets are less likely to suffer bankruptcy costs as they use their assets as collateral and are expected to borrow more.

Another implication of the trade-off theory is that firms exposed to higher marginal tax tend to borrow more to maximize the benefits from the tax shield, while firms with lower marginal tax tend to issue more equity. One last prediction of the trade-off theory is that firms that have a small non-debt tax shield (such as depreciation and investment tax credits), tend to borrow more to benefit from debt's tax-deductible interest, while the opposite holds, i.e. firms with high non-debt tax shields should use less debt.

Under information costs theory are two important theories, signalling theory and pecking order theory. Information cost theories stem from the informational differences between managers and investors, also known as information asymmetry. Because information is costly, managers often possess more knowledge about the investments and firm real worth than outside investors, such that the pricing of debt and equity is not perfect.

Ross (1977) first came up with the signalling theory, which postulates that managers' choice of capital structure has a signalling effect in the markets. He posits that when managers think that their firms are undervalued, they issue debt instruments because they are confident that their investments will comfortably meet debt interest obligations. The opposite is true, that is, when managers feel that their firms are overvalued, they issue equity because in that way, if their investments do not meet the shareholders' expectations, shareholders simply walk away. This signalling effect of capital structure is also supported by Myers and Majluf (1984).

Because leverage is a firm commitment by managers to make repayments, failure to do so would lead to bankruptcy; it is a sign to the market that managers are confident of their investment cash flows. This was empirically tested by Smith (1986), who found that share prices show an average 3 percent reduction whenever an announcement of a new share issue is made. On the other hand, there was a very negligible decline in share value observed when firms announced new debt issuance. In fact, an appreciation in share prices of about 14 percent was observed after firms replaced equity with debt.

The pecking order theory by Myers and Majluf (1984) develops the signalling theory further by suggesting that managers will issue securities that have the least informational costs, and only when they have exhausted the cheapest sources, will they consider other options. Myers and Majluf (1984) proposed this after demonstrating that new issuances of shares are generally perceived negatively by investors. This theory is based on the precondition that managers feel that their firms are undervalued.

Put simply, the pecking order theory suggests that managers use retained earnings since it carries the least informational cost, if any. Only when they have exhausted retained earnings will they issue debt until it no longer makes economic sense to do so, and only as a last resort will managers issue equity (Barclay & Smith, 1999). In conclusion, what has happened since the inception of the irrelevance theorem is that studies have moved from analysing the topic in a restrictive framework to viewing it through real-world lenses.

2.3 Political Risk

In this section, we take a look at political risk and establish why it should be a concern. We define what political risk is, the significance of political risk in an economy, its impact on the various aspects of the economy, especially capital market elements. All this, drawing arguments and observations from existing literature.

2.3.1 Definition

Political risk can be defined as the possibility of changes in the profitability of some economic activity due to changes in political decisions. According to Chevalier and Hirsch (1981), political risk includes actions such as revolts, the imposition of price and exchange controls, restrictions on the free flow of capital, expropriation, interference in the ownership structure of firms, and additional or discriminatory taxation, all of which adversely affect the profitability of investments within a country. A real-world example of such is the 25% tariff hike on all non-MERCOSUR imports by Brazil in response to the Brazilian stock market crash of 1997 (USTR, n.d.).

Another definition of political risk is from Miller (1997), where she defines it as the uncertainty about who will be in power the next period and their political orientation relative to the incumbent. This speaks more to the uncertainty of the political policies and decisions that a ruling leader and party might take that will have an impact (negative or positive) on business and their investments.

Robock (1971) suggested that a distinction be made between micro-risk and macro-risk. He defined macro-risk as political risk that affects all firms operating within a country, and micro-risk as political risk targeted at firms with specific attributes or within certain industries. Considering this distinction, we are only going to be concerned with macro-risk in this paper.

2.3.2 Why be concerned with political risk

Political risk is a major concern for any economy. Many studies have shown that economies that have unstable political systems are plagued by unfavourable economic outcomes, such as high levels of unemployment, high inflation, sometimes hyperinflation, and low economic growth. According to a paper by Kwasi Fosu (1992), political risk can cause a reduction in the availability of the factors of production. He explained that in economies experiencing high political risk, investment in physical capital will diminish because of the increased potential in capital loss (Kwasi Fosu, 1992). The potential capital loss comes from the increased uncertainty in future net returns, lowering expected real returns from investment projects. This increased risk will raise the cost of capital, citing the increased likelihood of loan defaults. This, in turn, will discourage both domestic and international capital (flight-to-safety/flight-to-quality).

Kwasi Fosu (1992) went on to say that in times of high political risk, skilled labour will migrate to economies with greener pastures, reducing both the quality and quantity of labour. This has a direct hit on the growth prospects of the economy. Kwasi Fosu (1992) adds that ceteris paribus, increased political instability will introduce unnecessary starts and stops in the investment planning and this on its own means the economy will not attain the optimal growth path that it would otherwise have attained.

Given the current trend in the investment arena, more and more firms are not only investing and doing business in their country of domicile but also conduct business beyond borders (Chevalier & Hirsch, 1981). This international trend makes political risk and its outlook a very important aspect for firms when making investment decisions. According to Chevalier and Hirsch (1981), companies that conduct business internationally take political risk seriously, as it can be the difference between success and failure.

According to a 2013 report by the World Bank titled *World Investment and Political Risk*, investors have, for years in a row, regarded political risk as their main concern when it comes to investing beyond borders. According to the report, firms have been using political risk insurance to try and mitigate some of the adverse effects of political risk. This is supported by the emergence and steady growth of the political risk insurance industry.

2.3.3 Impact on cost of capital

Cukierman, Edwards, and Tabellini (1992) posit that political risk is directly related to seigniorage citing inefficient tax structures; this was after they considered 79 countries in their study. Miller (1997) expanded on the findings of Cukierman et al. (1992), saying that the heavy reliance on seigniorage in countries that experience high political risk causes inflationary uncertainty. Miller (1997) further goes on to say that the generated inflationary uncertainty causes the yield curve to steepen as risk-averse investors start to demand more compensation when lending for longer periods, thereby increasing the cost of capital.

Belkhir, Boubakri, and Grira (2017) concur with the view that political risk increases the cost of capital. In their study, they focused on the impact of political risk on capital costs in the Middle East and North Africa (MENA) region and found evidence that political risk increases the cost of equity. They even concluded that an increase in political risk by one standard deviation from its average resulted in a 450 basis points rise in the cost of equity (Belkhir et al., 2017). Cashman, Harrison, and Sheng (2015) also found the same effect when they considered the effect of political risk for real estate investment trusts in the Asia-Pacific region.

In the study of Butler and Joaquin (1998), it was found that during a time of high political risk, investors require higher returns on their investments. They argued that only the undiversifiable part of the risk is priced, but also noted that for most emerging economies, the capital markets are not well integrated, making most of the domestic political risk systematic and eligible for pricing (Butler & Joaquin, 1998).

According to Miller (1997), the increased cost of capital, especially over long periods, encourages project managers to prefer short-term debt over long-term debt. The reduction in average debt maturity is argued to be undesirable since the cost of future debt servicing becomes highly uncertain when debt is refinanced frequently, for example, projects with long gestation periods.

The increased cost of capital due to political risk implies that firms will reconsider their investment projects and are most likely to put on hold or even discard some, otherwise profitable projects, since they will have to discount expected cash flows using a higher discount factor. The reduced investment drive should see a reduction in demand for bank loans, which implies reduced profitability for banks. This reduced profitability should see more usage of debt by banks relative to equity because of reduced retained earnings.

In summary, the impact of political risk on the cost of equity means that during times of heightened political risk, investors require a higher return, making equity pricier and debt a better option, and vice versa. This clearly should influence the capital structure decisions of banks.

2.3.4 Impact on availability of capital

Closely related to the previous section is the effect of political risk on the quantity of capital available for firms. As financial globalization increases, one would expect that more capital should flow from developed to less developed economies and boost productivity and economic output in those economies. Instead, the opposite seems to be observed, and this is termed the Lucas paradox. Slesman, Baharumshah, and Wohar (2015) explained this paradox by citing institutional and political stability as the major reasons for the observed pattern. They further went on to explain that political risk and institutional instability lower the risk-adjusted returns on investments and lead to net capital outflows. The same view was shared by Gourio, Siemer, and Verdelhan (2016), who found that increased political risk in the form of expropriation results in net capital outflows as foreign investors take precautionary measures. It is evident from these example studies that political risk has an impact on the amount of capital available in an economy, which according to the laws of demand and supply, should have a bearing on the price.

2.3.5 Impact on debt maturity

Miller (1997) is among the early studies to look at political risk and debt maturity choices. In her study, Miller (1997) demonstrated that political risk creates inflationary uncertainty due to the increased likelihood of seigniorage in such environments. This results in lenders demanding higher compensation when lending for longer periods. This increases the marginal cost of debt financing using long-term bonds and makes it optimal for cost-minimizing financial managers to employ short-term debt.

Another reason why lenders prefer short-term debt during heightened political risk is that they would want the option to pull out in case borrowers start defaulting due to a deteriorating investment environment. This point speaks to the reduction on the supply side of long-term debt.

According to Kwasi Fosu (1992), the increased use of short-term funding may, due to the maturity matching principle, lead to the sacrificing of otherwise more productive projects with

longer gestation periods. This outcome certainly reduces the growth and value of firms and has an adverse impact on the overall economy, as the economy will not be on the optimal growth path.

Other undesirable effects of the reduced average debt maturity include maturity mismatch, debt rollover risk, and interest payment contingency. These costs of reduced debt maturity are well explained by Mehl and Reynaud (2005), who observed that, especially for emerging economies, these costs are significant and make those economies prone to a financial crisis.

2.3.6 Impact on returns

In the paper by Diamonte et al. (1996), it was discovered that political risk more significantly affected stock returns in emerging markets than in developed markets. They found a significant inverse relationship between stock returns and political risk. They even suggested that for emerging markets, analysts should focus on predicting political risk to forecast stock returns (Diamonte et al., (1996).

The findings of Diamonte et al. (1996) imply that political risk influences capital structure decisions. For instance, according to the pecking order theory (Myers & Majluf, 1984), the reduced profits during high political risk times force firms to employ external finance, starting with debt, and if not enough, issue equity. It is evident that political risk, through its adverse effect on performance, influences capital structure decisions.

Contrary to the findings by Diamonte et al. (1996), Erb, Harvey and Viskanta (1996) found that political risk alone does not help explain portfolio returns. Rather, they concluded that financial risk and economic risk have better explanatory powers on observed returns. This contradiction in findings creates an opportunity for further study, which is one of the goals of this study.

2.4 Banks

2.4.1 Role of banks

Banks are very important in any market-based economy. Banks provide essential services such as maturity transformation, transactional services (payments, settlement, and clearing) that enable trade, reallocation of risks, providing liquidity (Diamond & Dybvig, 1983; Diamond & Rajan, 2001), and arguably the most important, efficient allocation of financial resources from savers to borrowers (Bollard, 2011; Drigă & Dura, 2014; Wurgler, 2000).

According to Diamond and Dybvig (1983), without financial intermediaries such as banks, investors will be locked in long-term illiquid contracts whose yields are only enjoyed at the end of such investments. Banks and the financial market help in making such investments more liquid by providing securities that investors can hold and dispose of quite easily; examples include stocks and bonds. This function is quite important as it encourages savers to release otherwise locked funds for better use in the economy.

2.4.2 Efficient Resource Allocation

Stiglitz (1998) mentioned that a well-functioning financial system is responsible for the selection of the most productive projects, ensuring the employment of financial resources in high return uses. On the contrary, a less developed financial system allocates resources to less productive projects. It was concluded that the difference in terms of economic growth between these two arrangements can be quite huge. In other words, a well-developed and efficient financial system is central to the long-run economic development and growth. Wurgler (2000) confirmed that countries with a developed financial sector allocate resources better than those with less developed financial sectors. The study mentioned that this is achieved through increasing funding for performing industries while decreasing funding for declining industries. Besides, the financial sector helps in the effective redistribution of risks.

In the paper by Drigă and Dura (2014), one of the hindering factors, especially in emerging markets, is the level of imperfect information. Investors often do not have adequate information about firms and are hesitant to invest their money in those firms. Banks help the situation by improving ex-ante information about possible investments, monitoring, and enforcing good governance on firms, all of which help in the efficient use of resources and, ultimately, the growth of the economy.

Banks are not the only agents that can allocate resources efficiently. In developed economies with well-developed and efficient capital markets, firms utilize capital markets more than banks when raising capital. Emerging markets are often characterized by underdeveloped and inefficient capital markets (Bollard, 2011; Jain et al., 2017; Rojas-Suarez, 2013). Bollard (2011) suggested that while an economy is still developing, banks are better suited to allocate resources efficiently and this view is supported by a report by Jain et al. (2017) in which it is reported that capital markets in emerging Asian countries are underdeveloped and inefficient in allocating resources. This leaves banks with the important task of identifying the most profitable investments and allocating resources efficiently among them.

2.4.3 Banks and economic stability

To further stress the importance of banks, the study by Acharya, Drechsler, and Schnabl (2014) highlighted how bank defaults induce bailouts, whose cost is increased sovereign risk which, in turn, exacerbates bank credit risk through the weakening of treasury instruments that banks hold as assets. In another study, Joyce and Nabar (2009) studied the impact of capital reversals ("sudden stops") on emerging market economies and concluded that sudden stops had a significant and prolonged negative impact on domestic investment only when they are coupled with a bank crisis. It was also concluded that bank crises alone could cause a fall in investment and hurt the economy for a long period.

The studies by Acharya et al. (2014) and Joyce and Nabar (2009) alone make a good case of why banks are of paramount importance to an economy, especially in emerging markets where capital markets are inefficient or non-existent. The fact that governments are willing to get into debt and use every resource at their disposal to save failing banks, speaks volumes about the importance of banks in an economy.

2.4.4 Regulatory view

A lot of studies around capital structure determinants have excluded banks simply because they believe that studying bank capital structure is "boring". Such studies believe that the large portion of the banks' capital is made up of customer deposits and the equity held is simply regulatory capital adequacy levels. Unfortunately, data and other studies have shown a significant deviation from this view (Gropp & Heider, 2010).

Figure 2 shows that Tier 1 capital ratios vary significantly between countries, refuting the fact that, besides customer deposits, banks only hold the minimum regulatory required equity. Further, data has shown that more and more banks are using non-deposit debt to finance their operations. In the study by Gropp and Heider (2010), they even found some large banks financing their operations entirely on interest-bearing debt.

Figure 3 shows that over time, less customer deposits are being used to fund banks in developing economies. This warrants a deeper look into the capital structure determinants of banks.

2.4.5 Market view

Another school of thought around bank capital structure is that of the market view. A paper that discusses this view in detail is that of Flannery and Rangan (2008). They were motivated

by the unusually high capital ratios that banks were holding. They were of the view that since the US government at the time reviewed and removed the implicit deposit insurance afforded to banks, creditors felt the need to price the uncovered bank credit default risk. For banks to avoid the increased risk premium, they responded by raising their equity levels.

Flannery and Rangan (2008) discovered evidence of banks aligning their portfolio risks to their capital structure, something they did not observe before 1993 when the US government made the reforms. It is evident that market forces alone can have a significant impact on bank capital structure.

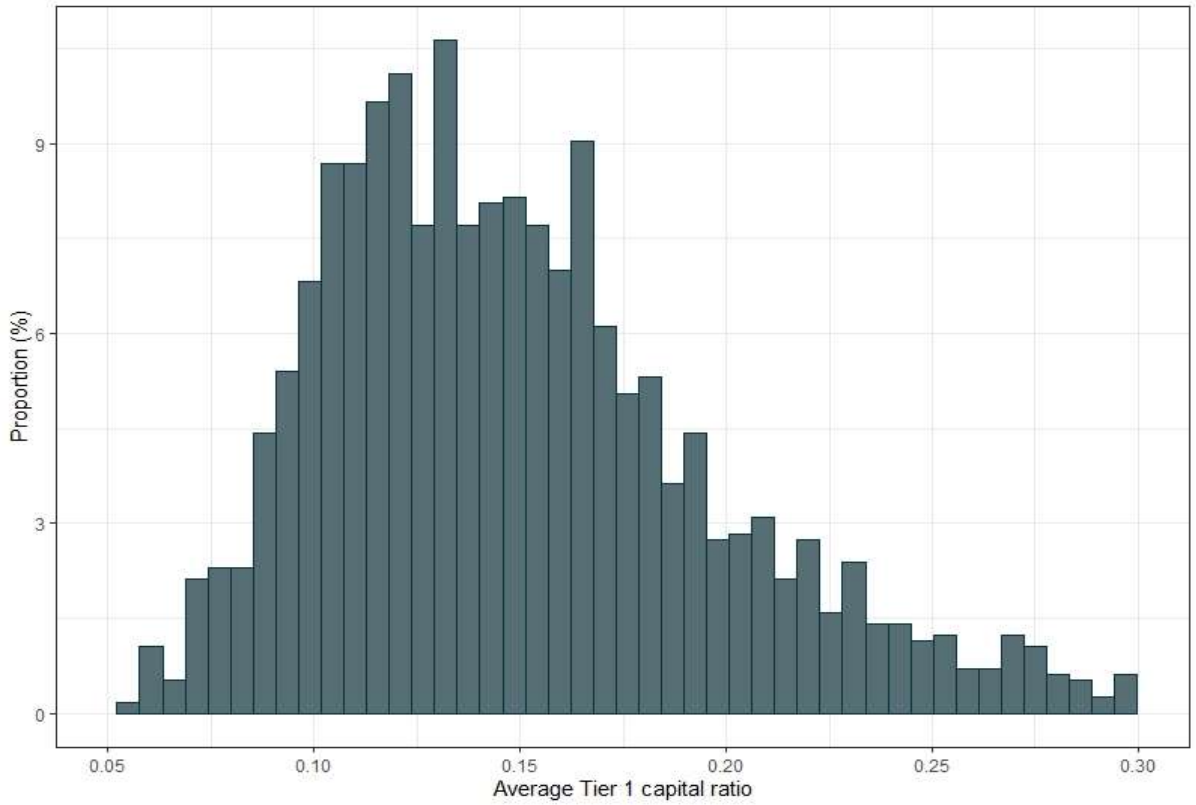

Figure 2: Tier 1 capital ratio distribution in developing economies

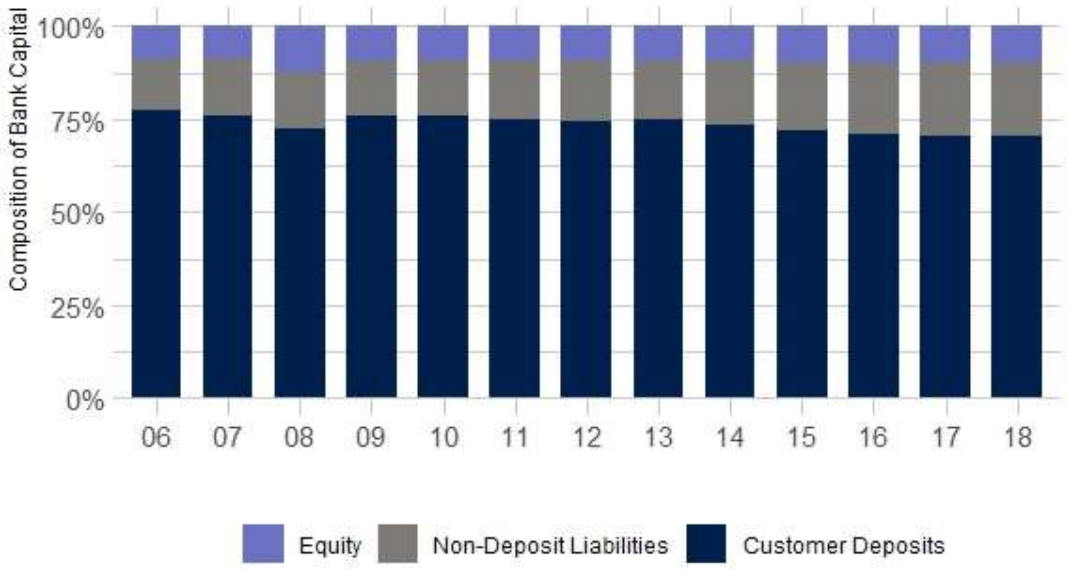

Figure 3: The capital composition of banks in emerging markets over time (2006 – 2018)

2.4.6 Buffer view

Literature also suggests that the amount of bank capital employed is driven by the cost of falling below the regulatory requirements when returns fall below expectations (Ayuso, Pérez, & Saurina, 2004; Furfine, 2001; Shim, 2013). Due to the costly nature of the supervisory intervention, banks prefer to rather have capital levels much higher than the regulatory requirements to serve as a cushion for any losses that they may incur, especially if their shares are not selling at a premium.

Often than not, banks cannot readily and easily raise capital when they breach the regulatory minimum and therefore prefer to build buffers well above the threshold. This view is somewhat related to the regulatory view with the exception that it expects banks to go beyond the minimum required.

In concluding this section, given the important role that banks play in the economy and to some degree, the contradicting views on what drives bank capital structure decisions, we shall progress to learn more about the factors that affect bank performance and stability, of which capital structure is one (DeAngelo & Stulz, 2013). By extension, studying factors that affect capital structure decisions, helps in the realization of these goals and is the focus of this work.

2.5 Why Emerging Economies

Emerging markets have of late received a fair amount of attention, both from a scholarly and practice perspective. Researchers and practitioners have realized that emerging markets offer an eccentric set of dynamics that are worth exploring. Rejeba and Boughrara (2013) agree with this view by noting that more financial literature has paid attention to the informational efficiency of emerging markets because they realized that emerging markets offer good investment opportunities, probably because lately more emerging economies have been moving away from closed markets towards open markets, allowing global investors to include them as part of their portfolios.

According to Rejeba and Boughrara (2013), emerging markets differ from developed markets in that they are often characterized by a high degree of asymmetrical information, low trade volumes, and poor accounting standards. As such, special attention must be given to understanding these markets and their financial institutions, meaning that much of the financial theories might need some adjustment when viewed under emerging markets. Bekaert, Erb, Harvey, and Viskanta (1998) agreed with the view that emerging markets are quite different from developed markets to the extent that some global investors treat emerging markets as a separate asset class.

Some of the distinguishing features of emerging markets are high and predictable returns, susceptibility to political crises, low correlation with developed market returns (Bekaert et.al., 1998; Harvey, 1995). The high returns and low correlation of the returns with returns in developed markets, according to the portfolio theory, make emerging markets an attractive investment destination as it allows the improvement of returns and reduction of risk through diversification. This aspect explains the observation by Rejeba and Boughrara (2013) that emerging markets are good investment destinations.

Early works on emerging markets include that of Harvey (1995), who focused on risk and returns in emerging markets, finding that growth and better returns can be realized in developing markets. He found that risk and returns in the developing economies were more predictable compared to developed economies. He also noted that returns in emerging markets were not correlated to returns in developed markets and offered better diversification opportunities to global investors (Harvey, 1995).

Bekaert et.al. (1998) recommended that portfolio managers need to be mindful of the unique aspects of emerging market returns when formulating global portfolios that include

investments in emerging markets. They observed that the market returns from emerging markets cannot easily be analysed using standard mean-variance analysis due to excess kurtosis and skewness that is evident from their sample data. This observation and recommendation add to the literature that suggests that emerging markets should be explored further.

To further emphasize the fact that emerging economies differ from developed economies, Agenor, McDermott, and Prasad (1999) carried out an empirical study on how output in emerging economies is related to economic variables such as wages, money, exchange rate, inflation, and interest rates. They also compared their results to those obtained from developed countries. Even though they observed some similarities between the two levels of economic development, they also found some striking differences; specifically, they did not find the procyclical behavior of monetary variables as was the case with developed economies. Upon this realization, they suggested that different approaches to monetary and regulatory policy formulation be used when dealing with emerging economies compared to developed economies (Agenor et al., 1999).

Choi and Shim (2018) had a similar motivation to Agenor et al. (1999) upon realizing that very little research had gone into establishing the effects of various types of uncertainty on real output in emerging markets as compared to the US and other developed economies. They carried out their study on six (6) emerging market economies (EME) using the newly created uncertainty indices by Baker, Bloom, and Davis (2016). Choi and Shim (2018) found differences in how financial and policy uncertainty have an impact on these two classes of economies. Choi and Shim (2018) concluded that financial uncertainty had more impact than policy uncertainty in EMEs and the opposite was true for developed market economies (DMEs).

Another striking and important difference between developed and emerging economies is the depth and development of the capital markets. Developed markets have developed and deep capital markets (in terms of capitalization, number, and complexity of securities), whereas emerging economies feature underdeveloped and inefficient capital markets. According to Bollard (2011), capital markets in emerging economies are quite small and most of the resource allocation is handled by banks. Bollard (2011) further went on to say that, as economies continue on their development path, more and more firms employ financing obtained through capital markets because capital markets tend to be better and more efficient than banks in allocating financial resources.

The view by Bollard (2011) was confirmed in studies by Rojas-Suarez (2013) and Jain et al. (2017), who confirmed that capital markets in emerging economies are not deep and that emerging markets stand to benefit more if their capital markets are deepened, for example, Jain et al. (2017) estimated that about USD800 billion could be freed if capital markets are developed further in Asia alone. Jain et al. (2017) continued to posit that capital markets in emerging economies are very inefficient in allocating resources, imposing a significant cost on the livelihood of the people in those countries. Jain et al. (2017) also mentioned that emerging markets are significantly behind developed markets in terms of capital market development. As such, banks need to fill the void left by underdeveloped capital markets in emerging economies.

2.6 Chapter Summary

In this chapter, we detailed the importance of political risk, capital structure, and banks in emerging economies. Because developing economies have inefficient and underdeveloped capital markets, banks in such economies provide the last line of hope to allocate scarce financial resources efficiently. It is therefore of paramount importance that we get to deeply understand factors that affect bank performance, especially for developing economies. It has been established that capital structure is an important performance determinant and we shall continue to focus on bank capital structure determinants.

It has also been established that political risk causes friction in the capital markets, which in turn influences the cost of capital. The resulting changes in the cost of capital will, in turn, affect the choice by managers about which instruments to use to finance projects with positive net present value and increase owners' wealth. We also learned that political risk has a more pronounced impact on capital markets in emerging markets and that political risk is a major determinant of financing policy.

We have also established that emerging economies have special attributes that make them different from developed economies and special attention needs to be given to their analysis. Emerging markets are of interest to investors because of their high returns and very low correlation with returns in developed markets, offering an opportunity to increase returns and lowering risk through portfolio diversification. In the next chapter, we shall continue to look at factors that affect capital structure choices and create models that we shall adopt for analysis.

Chapter 3 – Methodology

3.1 Introduction

The purpose of this chapter is five-fold: Firstly, develop hypotheses that allow us to establish the link between political risk and the various elements of capital structure; secondly, justify and describe the variables we used in our econometric models. For this, we rooted the choices on existing literature and other empirical studies that looked at capital structure determinants; thirdly, formulate econometric models for testing the established hypotheses and explain why they are suitable for the purpose.

The fourth purpose of the chapter is to develop and describe measures that were employed to make sure the models are robust. By robust we mean ensuring that parameter estimates are stable and that any potential structural breaks that are inherent in time series data are properly detected and treated. Finally, we explain the reasons behind the choice of banks, countries, sample size, and period of the analysis.

3.2 Hypotheses Development

The discussion thus far has provided grounds for the development of hypotheses that can be tested empirically. It is without doubt that literature has some gaps that need to be filled. In this section, we consider all the discussions until now and consolidate them into a framework of testable hypotheses. After careful consideration, the entire discussion condenses into the following hypotheses:

Hypothesis 1. The first hypothesis that we developed was one that tested if standard corporate finance theory, regulatory and buffer view alone could explain the observed variations in capital structure satisfactorily. According to the empirical evidence produced by Gropp and Heider (2010), literature accepted firm-level variables (Frank & Goyal, 2009; Rajan & Zingales, 1995) have the same effect on banks. Following their findings, our first hypothesis formulation was as follows:

> **H_0 = Bank level variables fully explain the observed variations in capital structures.**
>
> **H_1 = Bank level variables do not adequately explain capital structure variations.**

Hypothesis 2. The basis of this hypothesis was the realization that political risk influences the cost and availability of funding[1]. According to literature and empirical evidence, political risk increases the cost of equity, meaning that debt becomes cheaper[2]. This increase in the cost of equity should imply a movement in the leverage ratio.

The changes in the cost of capital have implications for the economy, for example, it could see the rejection of capital projects that otherwise would have had a positive net present value (NPV). This means lost investment opportunity and growth for the economy. Based on this analysis, the second hypothesis read:

> **H_0 = Political risk has no significant impact on leverage ratios for banks in developing economies.**
>
> **H_1 = Political risk has a significant impact on leverage ratios for banks in developing economies.**

Hypothesis 3. The third hypothesis was based on the premise that high political risk discourages lenders from extending long-term debt or they do so at a higher cost (Miller, 1997). According to literature, political risk raises the marginal cost of long-term debt, thereby forcing firms to use short-term debt even for projects that have a long period of gestation and causes issues associated with maturity mismatch[3]. Given the influence that political risk has on debt maturity choice, we expected heightened political risk to be associated with an increase in short-term debt ratios and a matching drop in long-term debt ratios. Based on this, the third hypothesis was as follows:

> **H_0 = Political risk has no significant impact on the choice of debt maturity by banks in developing economies.**
>
> **H_1 = Political risk has a significant impact on the choice of debt maturity by banks in developing economies.**

Hypothesis 4. The last hypothesis was more of a derivation of the second hypothesis. Given what we have learned from existing literature and empirical studies[4] concerning frictions in capital markets caused by political risk, we expected political risk to cause a noticeable change in managers' preferences between debt and equity. If political risk increases the cost of debt

[1] See Belkhir et al. (2017), Butler & Joaquin (1998), Miller (1997), and the discussion in section 2.3.3.
[2] Specifically, the studies of Belkhir et al. (2017) and Cashman et al. (2015).
[3] See section 2.3.4 of this paper for a detailed discussion of the topic.
[4] See sections 2.3 and 2.3.3.

more than the cost of equity, we should expect to see more equity being used compared to debt, and the opposite holds. Based on this argument, our fourth hypothesis was:

H_0 = Political risk has no significant impact on the preference of debt over equity by managers of banks in developing economies.

H_1 = Political risk has a significant impact on the preference of debt over equity by managers of banks in developing economies.

3.3 Variable Definitions

The topic of capital structure has been contentious for quite some time and has attracted a significant amount of attention from practicing professionals and academics. This has allowed us to build our research upon already established knowledge. Going with the school of thought that believes that capital structure is not by coincidence or simply circumstantial, but a deliberate effort by managers to attain an optimal mix of debt and equity, there has been a set of variables that have proved to be consistent over time and studies, in explaining the choice between debt and shareholder equity by managers (Frank & Goyal, 2009).

3.3.1 Dependent variables

To test the developed hypotheses, we needed to come up with dependent variables to be used in the formulated econometric models (detailed later in this chapter). The following set of variables were chosen as the dependent variables in the estimation models.

- **Total Debt to Total Assets (TD/TA)**

  This measure is obtained by summing up all debt, which is both long-term and short-term and expressing it as a proportion of total assets. This metric will tell us how much of a bank's assets are financed through debt; the higher the value of this ratio, the more leveraged the bank is. Given that banks are generally highly leveraged due to their deposit-taking nature, we adjusted this ratio and stripped out customer deposits so that we only have non-deposit debt. This measures the deliberate action by management to raise debt, which is the focus of this study. We used the book values since capital regulation is imposed on book values and regulation effects were also considered in this study.

- **Debt to Equity (TD/E)**

  The other measure we used was the debt-to-equity ratio. This measure is obtained by summing interest-bearing debt and expressing it as a ratio of equity. An increase in this

value can be interpreted as preference of debt over shareholders' equity by managers to fund projects.

- **Debt Maturity (STD/TA)**

  When the managers of a firm decide to use external finance in the form of debt, they are faced with yet another choice to make between using short-term or long-term debt. The right choice depends on the capital project(s) at hand. It is best to use long-term debt for long-term projects and vice versa, a concept known as maturity matching. Frictions in capital markets cause a mismatch between project lifespan and debt maturity and present a challenge to management.

  In this study, we used the ratio of short-term debt to book value of total assets to measure the choice of debt maturity employed by a firm, due to the prevalence of short-term debt in developing economies (Ojah & Kodongo, 2014). An increase in this ratio means that more short-term debt is being employed relative to long-term debt.

In this study, we tested the models using book measures for leverage. Many studies have made a distinction between using market values and book values when measuring debt. The issue with market values of debt is that, it can be erroneous, considering that some debt is linked to variable rates of interest and some have special conditions and restrictions, for example, convertible bonds (Bowman, 1980). According to Prasad, Green, and Murinde (2001), market values of debt are subject to factors outside the control of the firm and thus changes in those conditions will move leverage ratios. Such movements do not necessarily reflect deliberate decisions by management on debt ratios and can lead to wrong estimates. To save the risk of introducing incorrect values, we opted to employ the book values of debt. Besides, Bowman (1980), among other researchers, found a high correlation between market and book values of debt, so much that any model misspecifications using book values, did not have a significant impact on accuracy.

3.3.2 Independent variables: Bank-specific

The main challenge in modelling capital structure decisions is that some suggested variables are not observable (such as the superiority of managers' information and managers' preferences) and ensuring that all confounding factors are considered. It is not practical to consider every possible attribute when modelling such a topic. Instead, we settled on employing a subset of the suggested attributes from literature. We therefore chose from literature, variables that proved to be consistent in their influence on capital structure decisions. Literature has

generally grouped these attributes into either firm-specific or macroeconomic variables. We shall consider firm-specific attributes first and then macroeconomic variables.

Size. Firm size has been shown to have a significant influence on the choice of level of debt employed in financing investments. Larger firms are expected to employ more debt relative to smaller firms. One explanation for this likelihood is that large firms can negotiate loans at favourable rates, making debt relatively cheap compared to smaller firms. Another reason could be that large firms are considered less risky than small firms. The risk of default for large firms is low, making creditors more willing to extend loans to them; this speaks more to the availability factor mentioned in Fazzari et al. (1987).

On the contrary, Drobetz and Wanzenried (2006) argue that size should have a negative relationship with leverage, explaining that large firms do not suffer informational asymmetry costs the same way small firms do because they are critically analysed by many market analysts. The reduced information costs, therefore, imply that large firms should be able to issue equity much cheaper. This argument was supported empirically by the findings of Rajan and Zingales (1995), who found a negative relationship between leverage and size in France and Germany.

Despite the directional differences in the findings of the effect of the firm's size on capital structure, it is evident that size is a key determinant of capital structure. To measure firm size, some studies used the natural logarithm of sales, while others used a natural logarithm of total assets. Since our focus in this study is on banks, sales figures are not applicable; we used the natural logarithm of total assets as a measure of firm size.

Profitability. Various literature suggested firm profitability as another leverage choice explanatory attribute. The arguments here are mixed in terms of the direction profitability influences leverage. According to Myers and Majluf (1984), managers will prefer internal funds from retained earnings over any external sources. This implies that profitable companies should have less debt since they depend on retained earnings to finance their capital projects. In short, this view predicts a negative relationship between profitability and profits.

According to the trade-off theory, profitable firms are in that position because they would have employed a lot of debt, thereby maximizing the interest tax shield benefits. To support this expectation, the free cash flow theory suggests that profitable firms should employ more debt to force managers to distribute free cash flows to debt holders rather than waste it by investing

in projects with negative net present value (overinvestment). These theories, therefore, expect a positive relationship between leverage and profitability.

Rajan and Zingales (1995) analysed the impact of profitability on leverage and found a negative relationship between the two and this confirms the pecking order theory. In estimating firm profitability, we made use of the return on average assets (ROAA).

Asset Tangibility. Literature postulates a positive relationship between leverage and asset tangibility. In the event of bankruptcy, lenders will liquidate a firm's assets to recover their money. If a company has very little tangible assets, creditors stand to lose a lot compared to when a firm has a higher proportion of tangible assets. In the former case, lenders are not willing to extend credit unless if they can raise the default risk premium which discourages firms from using debt. Given this, it makes sense that asset tangibility should be directly related to leverage.

Empirical evidence came from Rajan and Zingales (1995) as well as Booth, Aivazian, Demirgüç-Kunt, and Maksomovic (2001), who analysed the impact of asset tangibility on leverage and found a significantly positive relationship. In this study, we employed the ratio of net plant, property and equipment to total assets as a measure of asset tangibility. The higher the ratio, the more tangible assets a bank uses.

It is worth noting that asset tangibility is also affected by some other institutional factors, such as bankruptcy codes and soundness of the legal framework in a country (Claessens, Djankov, & Mody, 2001). If the legal framework and bankruptcy codes are weak, it becomes difficult for creditors to make a claim on the assets of a firm going through liquidation, thereby weakening the explanatory power of asset tangibility.

Expected Growth. The generally held view is that growing firms are less leveraged than mature firms. According to Myers (1977), high growth firms use less debt to avoid the cost of underinvestment associated with bankruptcy costs. Barclay and Smith (2005) summarized the relationship between growth prospects and leverage as negative because growth potential is intangible and therefore cannot be provided as collateral. Another explanation of the negative relationship comes from Eriotis, Vasiliou, and Ventoura-Neokosmidi (2007), who argued that growth brings changes to firm value. These changes in firm value could be interpreted as a risk by the markets and will create a challenge for the firm to access external finance at favourable rates.

Using the ratio of market to book values of assets as a proxy for growth, Rajan and Zingales (1995) found a significant and negative relationship between growth prospects and leverage, in line with Myers (1977). For this study, we followed Rajan and Zingales (1995) and used the same measure to approximate the growth rate.

Dividend Policy. Further to the capital structure irrelevance theory, Miller and Modigliani (1961) proposed that dividend pay-out does not matter. They explained that whether free cash flows are paid out as dividends or as debt interest, it does not change the shareholders' wealth, it is just different ways of slicing the same pie, whose real value is determined by investment policy alone.

Pursuant to this proposition, Lintner (1962) and Gordon (1963) refuted the dividend irrelevance theory, saying that investors value a dollar received today more than the uncertain future capital gain. In that regard, a company that is paying dividends is viewed as less risky; the reduced risk means that investors will discount future cash flows from investments by the company using a lower discount factor, thereby increasing the value of the firm. The reduction in perceived risk implies a lower required return on equity and should make equity less costly than debt. Going by this view, we should expect a negative relationship between dividend payout and leverage.

Miller and Rock (1985) proposed yet another function of dividend policy, the signalling theory. They posit that because managers have more and superior information than investors, the paying out of dividends carries with it signalling power. They support this by saying that the current earnings contribute significantly to the expected future earnings of the firm on which the value of the firm depends. This means that an increase in current earnings through dividend payout signals better future earning potential, thereby increasing the stock prices and lowering the cost of equity.

Having established these views about dividend policy, it becomes apparent that dividends have an impact on capital structure decisions. The question then becomes which measure should we use to approximate dividends? Some literature use dummy variables to indicate dividend pay-outs (0 for none and 1 otherwise)[5]. In this literature, we used the ratio of paid dividends to earnings attributable to ordinary equity, instead.

[5] See Gropp & Heider (2010) and Hoque & Pour (2018).

Taxation. After their 1958 irrelevance theory, Modigliani and Miller (1963) revisited the proposal and adjusted for tax benefits. In their 1963 paper, they admitted that there are benefits to be enjoyed from using debt since interest on debt is tax deductible. This implies that firms will use more debt to gain on the tax shield affordable from debt. This implies that we should see very high leverage ratios in practice. Strangely enough, non-financial firms do not use a lot of leverage (Kim, 1978). One reason being that, as leverage increases, so does the chances of defaulting on debt interest payments, prompting lenders to require increased interest rates such that beyond a certain debt level, it becomes uneconomical to raise debt.

Despite the limits to the benefits of using leverage, tax seems to hold significant explanatory power when deciding on capital structure and we considered it in this study. We expected a positive relationship between tax and leverage. The issue then becomes how to measure the applicable tax benefits accurately. The task is made difficult considering that some countries employ progressive tax systems. To keep this research simple, we decided to use an approximate used by other studies calculated as a ratio of paid tax to earnings before taxes.

Regulatory Capital. The Basel Committee for Bank Supervision (BCBS) was established to help create and maintain a healthy and stable global financial system. At the heart of the global financial system are banks. BCBS, since its inception, has come up with a comprehensive set of requirements aimed at making the global financial system robust. Part of these requirements is that banks maintain a minimum amount of capital so that they can be able to absorb some shocks emanating from financial losses and prevent financial crisis.

Subsequent to the capital regulatory requirements, some literature[6] argue that banks maintain the minimum required capital and that only the regulatory requirements determine the capital structure. Although the observed values vary greatly[7] and suggest a deviation from the regulatory view, we chose to control for the possible explanatory power of regulatory requirements. In fact, Gropp and Heider (2010) found regulatory capital requirements to have some explanatory power, even though it was of second order. For this measure, we chose to use the Tier 1 ratio as a bank-specific independent variable, which is calculated as Tier 1 capital divided by the value of risk-weighted assets.

[6] For example, Mishkin, 2000, p. 227.
[7] Hoque and Pour (2018) show that Tier 1 ratios vary greatly between banks of the same size and within the same country.

3.3.3 Independent variables: Environmental

Besides the firm-specific variables, there are environmental and institutional factors that help explain capital structure heterogeneity. De Jong, Kabir, and Nguyen (2008) stressed the importance of considering the direct impact of environmental factors on capital structure decisions, such that ignoring them results in erroneous conclusions being drawn. As such, the next discussion is going to focus on the operating environment factors that were considered in our econometric models.

Debt Market Development. Following De Jong et al. (2008), the level of development of the debt market influences the choice and cost of debt. Countries that have well-developed and deep debt markets, make debt easily accessible to firms at competitive prices. The more competitive the debt market is, the more debt is expected to be cheap relative to equity. This implies a positive relationship between debt and leverage. To measure the level of development of the debt market of a country, we used the ratio of publicly issued debt to gross domestic product (GDP).

Stock Market Development. De Jong et al. (2008) also mentioned that the competitiveness of a country's stock market has a bearing on the capital policy adopted by firms within a country. If stock markets are more competitive than debt markets, equity becomes cheaper than debt and prompt managers to prefer equity over debt and the opposite happens otherwise. One should therefore expect a negative relationship between the level of development of stock markets and leverage. To measure the level of stock market development within a country, we used the ratio of total market capitalization to GDP.

GDP Growth. The growth prospects of an economy should determine the level of activity with the economy. The effect of growth on leverage is not a straightforward one but is plausible. On one hand, GDP growth is expected to stimulate investment activity within an economy through improved expected cash flows from projects and reduced uncertainty in those cash flows. This results in more investment opportunities with positive net present values (NPV), which should lead to an increase in demand for external finance. The increase in external funding should see an increase in debt and possibly equity, the size of which depends on other factors. So, going with this reasoning, growth should have a positive relationship with leverage.

Alternatively, economic growth improves the profitability and levels of free cash flows for firms. This means that firms will have more financial slack available to them, in the form of

retained earnings, and when considering the pecking order theory (Myers & Majluf, 1984), we should expect a reduction in firms' appetite for external finance. Viewed this way, one would expect a negative relationship between GDP growth and leverage.

Despite the obscure impact of GDP growth on leverage, it is evident that it should have some significant impact on leverage, and for that reason, we took it as one of the country-level controlling variables. To measure GDP growth, we used the year-on-year growth of GDP as provided by the International Monetary Fund (IMF).

Inflation Rate. The cost of debt can roughly be broken down into several sub-components, namely pure time value of money (risk-free rate), credit risk, liquidity premium, and inflation. The effect of an increase in inflation, holding other things constant, would be to increase the required rate on debt, with two possible outcomes. The first is that the nominal cost of debt will rise and could potentially mean that debt becomes more expensive and should discourage the use of debt for financing.

Alternatively, the increase in interest payments on the debt could see more tax benefits accruing to the firm and ultimately to the shareholders' wealth, all this without an increase in bankruptcy costs. This therefore should encourage firms to use more debt, especially if there is a mismatch between inflation rates and marginal tax rates.

Following the above analysis, we found it worthy to take the levels of inflation into account when modelling capital structure determinants. We used the year-on-year changes in the consumer price index (CPI) of each country under study for an approximation of the inflation rate.

Financial Crisis. It has been shown that firms behave differently during times of financial crisis. During a crisis, banks tend to contract their lending activities, citing higher default rates; an example is the global financial crisis of 2007 to 2009. The reduction in lending activity should imply an adjustment on the financing side of banks' balance sheets, by usually reducing their leverage ratios so that they have more room to absorb losses before they become insolvent. One should expect a negative relationship between bank leverage and crisis periods.

As can be noted from this analysis, financial crisis periods should have a bearing on capital structure decisions, different from normal times. We employed a dummy variable to denote whether the year had a financial crisis (1) or not (0).

Corruption. Several studies (Fan, Titman, & Twite, 2012; Hoque & Pour, 2018) have concluded that corruption levels influence the financing choices of firms. According to Fan et al. (2012), the perceived levels of corruption reflect the enforceability and integrity of the law in that country, such that higher perceptions of corruption mean weaker effectiveness of the legal system. Fan et al. (2012) observed that firms operating in countries with high levels of corruption tend to use short-term debt because of the lack of protection of their investments required when using long-term debt. Both studies (Fan et al., 2012; Hoque & Pour, 2018) observed that countries with high corruption use debt more than countries experiencing low corruption levels. We should therefore expect a positive relationship between corruption and leverage. For corruption measures, we used the corruption perception index; the higher the value, the higher the perceived corruption in the country.

Bank Concentration. Studies such as that of Bourke (1989) suggest a positive relationship between bank performance or profitability and bank concentration. If this finding holds in emerging markets, considered under the pecking order theory, we expect to see a negative relationship between concentration and leverage since higher profitability means managers will have some financial slack. For this measure, we employed data from the World Bank's financial development database.

Government Debt. Banks hold government debt instruments on their balance sheets in addition to other risky assets. As governments continue to get more debt relative to GDP, the value of government issued debt instruments deteriorate (drop in credit ratings), resulting in the shrinking of bank assets' value. When this happens, there should be a corresponding adjustment on the funding side of the balance sheet in the form of a contraction in shareholders' equity and this should lead to a rise in the leverage ratio. We, therefore, expected to see a positive relationship between leverage and the ratio of government public debt to GDP. We obtained this measure from the World Bank's financial development database.

Political Risk. As has been discussed at length in this paper and as the main motivation of this study, we believe that political risk has the power to influence the financing decision of managers of a bank. As we have established, political risk causes friction in the capital market, affecting the cost of equity and/or debt, and we expected that adding the political risk variable to the regression model would help reduce the power of the unexplained term and improve the adjusted $\boldsymbol{R^2}$ value of the model.

To capture the level of political risk, we used the PRS Group's International Country Risk Guide measure for political risk. The higher the value, the safer the country is regarded, politically. To make the values more intuitive, we will subtract the values from 100 so that the safest countries will have the lowest values.

3.4 Data

This section is concerned with the selection of the data that we used for analysis in this study. We are going to explain the data sources and the reasons for the sample size and period.

3.4.1 Scope

The study focused over the period 2006 and 2018 and the choice of the period is two-fold. It allows the sample size to be big since we are going to be using yearly observations; this longer period enhances our chances of drawing accurate conclusions. The other reason is that it includes a major financial crisis; the global financial crisis of 2007 to 2009 which allows us to do pre- and post-crisis analysis. We would have wished to cover the 2000 to 2018 period but due to the availability of data, we had to start in 2006.

As for the countries of study, we included all countries around the globe classified as developing or transitioning according to the IMF classification system as of 2019. Only countries that have full sets of country level data were considered.[8]

We also considered banks and bank holding companies (BHC) from the mentioned countries that are publicly listed in their countries of domicile. The decision to only use publicly listed banks and BHCs is so we can trust the financials of those companies and make our analysis and results more reliable. Only banks and BHCs that have full sets of details over the study period were considered.[9]

3.4.2 Data sources

Bank financial data was retrieved mainly from BankFocus and augmented by data from Bloomberg. BankFocus maintains a database of standardized financial data for banks around the globe. This saves us the trouble of reconciling financial statements from countries using disparate accounting and financial reporting standards. Since BankFocus hardly has financial data for developing countries pre-2010, we sourced data for that period from Bloomberg and

[8] See section 3.3.2 environmental variables.
[9] See section 3.3.2 firm-specific variables.

took care to make sure the currency and denominations were properly aligned. We collected financial data for both active and inactive banks.

Political risk data was obtained from the PRS Group's International Country Risk Guide (ICRG). This is a weighted measure of political risk calculated from 12 aspects of risk of a country. These aspects are law and order, government stability, religious tensions, socioeconomic conditions, internal conflict, external conflict, investment profile, military in politics, democratic accountability, corruption, bureaucracy quality, and ethnic tensions. The higher the score the lower the political risk.

Macroeconomic and environmental data, such as GDP and inflation, was be obtained from the IMF website. Financial development data such as bank concentration, levels of government debt to GDP, total stock market capitalization, among others, was retrieved from the World Bank's financial development database. Corruption perception index data will come from Transparency International's website. We could have used the ICRG's political index, as it has a high correlation with the Transparency International's perception index.

3.5 Model Specifications

In this section, we are going to describe the formulation of the econometric models that enabled us to empirically test the hypotheses defined earlier in this chapter. We employed the variables defined in the previous section. The models are an adaptation of models used in other studies (Gropp & Heider, 2010; Hoque & Pour, 2018) which employed panel data. Panel data analysis is suitable for this study as it allows us to gain insights about capital structure in different countries observed over a timespan. To test the earlier defined hypotheses, the following regression models were developed.

Model for Hypothesis 1

$$Lev_{i,j,t} = \alpha_{i,j} + \beta_1 \mathrm{Size}_{i,j,t-1} + \beta_2 \mathrm{Prof}_{i,j,t-1} + \beta_3 \mathrm{Coll}_{i,j,t-1} + \beta_4 \mathrm{MTB}_{i,j,t-1} + \beta_5 \mathrm{Div}_{i,j,t} + \beta_6 \mathrm{Tier1}_{i,j,t-1} + C_j + \mathrm{C}_t + \varepsilon_{i,j,t} \quad \textbf{(1)}$$

Here the dependent variable is leverage defined as the ratio of non-deposit debt to total assets. The explanatory variables are, *Size* defined as the natural logarithm of total assets, *Prof* defined as ROAA (return on average assets), *Coll* is the ratio of tangible assets to total assets, *MTB* is the market-to-book ratio and *Div* is a dummy variable with 1 indicating that the bank paid dividends and 0 not, *Tier1* is the ratio of Tier 1 capital to total risk-weighted assets, for bank ***i***

in country ***j*** at time ***t***. All the variables are lagged by 1 year except the dividend dummy variable. In this equation, we controlled for country (C_j) and time (C_t) fixed effects to account for the unobserved country and time heterogeneity. $\varepsilon_{i,j,t}$ is the unobserved error term for bank ***i*** in country ***j*** at time ***t***. To account for heteroscedasticity and serial correlation of errors, the standard errors are clustered at bank level.

Model for Hypothesis 2

Next, we developed the model that builds upon equation (1) by adding macroeconomic variables (Fan et al., 2012; Hoque & Pour, 2018), and environmental/country variables (De Jong et al., 2008). This model aimed to determine the significance of the various macroeconomic and country-wide variables in explaining capital structure heterogeneity. Equation (2) below defines the proposed relationship.

$$Lev_{i,j,t} = \alpha_{i,j} + \beta_1 \text{Size}_{i,j,t-1} + \beta_2 \text{Prof}_{i,j,t-1} + \beta_3 \text{Coll}_{i,j,t-1} + \beta_4 \text{MTB}_{i,j,t-1} + \beta_5 \text{Div}_{i,j,t} + \beta_6 \text{Tier1}_{i,j,t-1} + \emptyset CountryLevelVars_{j,t} + \theta_1 \text{Pol}_{i,j,t-1} + \varepsilon_{i,j,t} \quad \textbf{(2)}$$

The dependent and bank level independent variables are the same as in equation (1). The $CountryLevelVars$ is a vector of macroeconomic and country level variables. *Pol* is the measure of political risk according to the ICRG. All these variables are defined in Table 1. $\varepsilon_{i,j,t}$ is the unobserved error term for bank ***i*** in country ***j*** at time ***t***. To account for heteroscedasticity and serial correlation of errors, the standard errors are clustered at the country level.

Model for Hypothesis 3

$$DMat_{i,j,t} = \alpha_{i,j} + \beta_1 \text{Size}_{i,j,t-1} + \beta_2 \text{Prof}_{i,j,t-1} + \beta_3 \text{Coll}_{i,j,t-1} + \beta_4 \text{MTB}_{i,j,t-1} + \beta_5 \text{Div}_{i,j,t} + \beta_6 \text{Tier1}_{i,j,t-1} + \emptyset CountryLevelVars_{j,t} + \theta_1 \text{Pol}_{i,j,t-1} + \varepsilon_{i,j,t} \quad \textbf{(3)}$$

This model tests if political risk has an impact on the debt maturity choice. The dependent variable is debt maturity defined as the ratio of short term to total assets. The choice of the ratio is explained in detail in section 3.3.1. The explanatory variables are the same as in equation (2). As in equation (2), we use the clustering of standard errors at the country level as suggested by Petersen (2009) to cater for heteroscedasticity and serial correlation of errors.

Model for Hypothesis 4

$$TDE_{i,j,t} = \alpha_{i,j} + \beta_1 \text{Size}_{i,j,t-1} + \beta_2 \text{Prof}_{i,j,t-1} + \beta_3 \text{Coll}_{i,j,t-1} + \beta_4 \text{MTB}_{i,j,t-1} + \beta_5 \text{Div}_{i,j,t} + \beta_6 \text{Tier1}_{i,j,t-1} + \emptyset CountryLevelVars_{j,t} + \theta_1 \text{Pol}_{i,j,t-1} + \varepsilon_{i,j,t} \quad \textbf{(4)}$$

The dependent variable in this model is the ratio of total non-deposit debt to total equity as detailed in section 3.3.1. The independent variables are as in models (**2**) and (**3**) and are defined in Table 1. If the coefficient of the *Pol* variable is significant, it means political risk plays a significant role in the choice between debt and equity.

Table 1: Variable definitions

Variable	Definition	Description
Dependent Variables		
Lev	Total Debt/Total Assets	Leverage
TDE	Total Debt/Equity	Preference of debt over equity
DMat	Short-Term Debt/Total Assets	Debt maturity measure
Firm-specific Variables		
Size	Natural Log (Total Assets)	Indication of firm size
Prof	ROAA (Return on Average Assets)	Measures the profitability of the firm
Coll	Net PPE/Total Assets	Asset tangibility
MTB	Share Market Value/Share Book Value	Growth prospects
Div	Dummy variable	1=Dividends paid; 0=No Dividends
Tax	Paid Tax/Earnings before Tax	Approximation of marginal tax rate
Tier1	Tier1 Capital/Risk-Weighted Assets	Amount of regulatory equity

Table 1 (continued): Variable definitions

Environmental Variables		
DMkt	Public Debt/GDP	The development of the debt market
CMkt	Natural Log (Listed Companies)	The development of the capital market
GDP	Year-on-Year change in GDP	GDP growth rate
Inf	Year-on-Year change in CPI	Inflation change rate
Concen	Bank concentration	Percentage of assets owned by the top 3 banks
Gvt_Debt_GDP	Government debt ratio	Government debt to GDP ratio
Pvt_Debt_GDP	Private debt ratio	Debt to private firms to GDP ratio
Corrupt	1 – Corruption Perception Index	Levels of corruption in the country
Pol	1 – Political Risk Index	Levels of political risk

3.6 Robustness Checks

To guard our analysis against spurious results, we took the following measures:

Sample Size. We chose a large sample size so that we reduce the error margin and allow us to identify outlier values that could skew our results.

Outliers. To guard against the effect of outlier values, we winsorized our values at 90% level. That way we prevented a few too small or too large values from influencing our observations and conclusions.

Structural Breaks. One important ill that affects time series data is structural breaks. Failure to detect and consider significant breaks in trends can render the regression results spurious. To treat our models of structural breaks, we conducted formal tests following the method suggested by Zeileis, Leisch, Hornik, and Kleiber (2002), in which fluctuations in the residuals are compared to fluctuations in the process itself. If the fluctuations in the residuals exceeded those observed in the process, it would be concluded that a structural break exists and needs to be treated accordingly.

Multicollinearity. Since our models are multivariate, there is a possibility that some predictor variables are correlated such that we end up not having accurate coefficients for such variables. We made use of tools available in our statistical analysis package to detect and treat for such; an example is the Variance Inflation Factor (VIF).

Clustered Standard Errors. Panel data is prone to the issue of clustered standard errors owing to some common group traits or characteristics. This is highly probable given that our data has some regional elements, for example, countries from Sub-Saharan Africa might show some characteristics unique to the region. We leveraged the statistical analysis package's capabilities to detect and treat for such a possibility.

3.7 Summary

In this chapter, we developed different hypotheses drawing on widely accepted theories and discoveries from other studies within the corporate finance field. We went on to define the dependent and explanatory variables based on the most popular from literature. In addition to those variables, we added political risk to establish how much explanatory power it carries on the various dependent variables. To test the hypotheses empirically, we developed and defined econometric models. Lastly, we considered the various issues that could hinder our models from drawing the correct estimations and we suggested ways to counter them.

In the next chapter, we are going to present the data statistics and analysis summary. We will explain the observed trends and try and link them to theory.

Chapter 4 – Empirical Results

4.1 Introduction

In this chapter, discusses the execution of the regression models that have been discussed and formulated in the previous chapter. We are going to detail all the steps and care taken in estimating the models to ensure that the results are robust and free from bias that could skew drawn conclusions. Firstly, we are going to give some descriptive statistics of the data. Next, we show the results of running the various models. We then conclude the chapter by discussing the ways taken to ensure that the models were robust and free from bias.

4.2 Descriptive Statistics

We used a sample of a total of 7541 bank year observations coming from 836 banks across 63 countries from all continents. Table 2 shows the distribution of these figures. As can be seen from Table 2, most of the observations came from Asia and a significant number came from Africa. This gives us confidence that African nations, which are all developing, have a fair representation even though only 50% (22 out of the 54 nations) had data.

Table 3 gives a summary of the descriptive statistics of the observations. The statistics show a great level of heterogeneity, for example looking at the average total assets, the smallest is just under a million, whereas the largest bank is about US$4 trillion, which is a staggering 4000 times bigger. The mean of total assets is US$23,091m, whereas the median is just US$1,512m, attesting further a high level of heterogeneity.

The statistics suggest that banks in developing countries seem to use relatively low non-deposit debt (median of 12%). This could largely be due to the level of development of debt markets in those economies.

Another interesting fact to draw from the descriptive statistics is that, generally, there is a high bank concentration in developing economies evident from the fact that on average 53% (50% median) assets are owned by the top three (3) banks. This in a way can lead to inefficiencies in the banking sector. This view is highly probable given that the average profitability, measured in terms of the return on average assets (ROAA) is quite low, measuring 1.5% on average and median. Oddly, banks in developing countries seem to frequently pay dividends, 66% of the time.

Contrary to the general perception, the data seems to suggest that the level of government debt to GDP in developing countries seems to be very low, averaging about 1%. This unusual phenomenon can be explained by looking at the development of the public debt market and stock markets. From the statistics, debt markets in developing countries are very small and, in some cases, almost non-existent. This could explain why government debt relative to GDP is that low on average, even though some economies have very high ratios (maximum 80%). Stock markets seem to be better developed compared to debt markets, having an average total market capitalization to GDP of 44%, even though the variance is sizeable.

In line with the view discussed in Chapter 1, developing economies seem to be growing quite fast, having an average year-on-year growth in GDP of about 7%. This further warrants the need for investors to focus on emerging markets.

In terms of political risk, generally, their risk levels are around 39% which, in a way, is lower than the general perception. Corruption seems a prominent risk in such countries, averaging 58% (3.5/6.0).

Table 4 gives the correlation matrix of the variables to be considered in this study. Some interesting points around leverage and other variables can be noted from the matrix. For one, there is a negative relationship between the size of the bank and leverage.

Views such as that of Fazzari et al., (1987), suggest there should be a positive relationship between size and leverage since such companies are viewed by creditors as less risky and willing to extend credit to them. The observation seems to align with the view that size makes bigger firms immune to the asymmetrical information problem and can access equity more cheaply (Drobetz & Wanzenried, 2006; Rajan & Zingales, 1995).

Profitability has a negative relationship with leverage, supporting the pecking order theory from Myers and Majluf (1984), which suggests that managers chose internal finance over external sources.

Asset tangibility has a positive relationship with leverage and is in line with the view by Rajan and Zingales (1995) and Booth et al. (2001), which suggests that lenders are more willing to lend at cheaper rates if there is collateral.

Table 2: Unique bank observations across the globe

Continent	Country	Banks	Bank Years		Continent	Country	Banks	Bank Years
Africa	Botswana	2	20		Asia	Oman	20	241
Africa	Burkina	1	3		Asia	Pakistan	32	290
Africa	Côte d'Ivoire	2	22		Asia	Philippines	12	92
Africa	Egypt	36	338		Asia	Qatar	10	117
Africa	Ghana	7	65		Asia	Saudi Arabia	12	144
Africa	Kenya	9	108		Asia	Sri Lanka	38	334
Africa	Malawi	1	8		Asia	Thailand	26	257
Africa	Mali	1	3		Asia	United Arab	27	293
Africa	Morocco	11	132		Asia	Vietnam	19	151
Africa	Namibia	2	18		Europe	Armenia	1	3
Africa	Niger	1	13		Europe	Bulgaria	6	52
Africa	Nigeria	24	236		Europe	Croatia	19	149
Africa	Senegal	1	5		Europe	Kazakhstan	11	53
Africa	South Africa	2	13		Europe	Moldova	2	8
Africa	Sudan	1	7		Europe	Poland	5	35
Africa	Tanzania	5	37		Europe	Romania	3	27
Africa	The Gambia	1	5		Europe	Russia	22	138
Africa	Togo	1	13		Europe	Serbia	16	110
Africa	Tunisia	19	214		Europe	Turkey	27	272
Africa	Uganda	3	29		Europe	Ukraine	14	61
Africa	Zambia	3	31		North America	Costa Rica	2	5
Africa	Zimbabwe	4	29		North America	Jamaica	7	69
Asia	Bahrain	17	158		North America	Mexico	6	56
Asia	Bangladesh	51	446		North America	Panama	6	55
Asia	China	71	435		North America	Trinidad and Tobago	3	38
Asia	India	50	463		Oceania	Papua New Guinea	1	4
Asia	Indonesia	48	392		South America	Brazil	20	197
Asia	Iraq	9	65		South America	Chile	6	77
Asia	Jordan	21	226		South America	Colombia	11	109
Asia	Kuwait	30	351		South America	Ecuador	3	10
Asia	Lebanon	5	58		South America	Peru	6	16
Asia	Malaysia	4	45					
						Africa	137	1349
						Asia	502	4558
						Europe	126	908
						North America	24	223
						Oceania	1	4
						South America	46	409
						Grand Total	**836**	**7451**

Table 3: Descriptive statistics

	Mean	Median	Std.Dev	Min	Max
Leverage (Debt/Assets)	0.195	0.124	0.206	0	0.927
Debt-To-Equity	1.296	0.871	1.333	0	4.82
Debt Maturity	0.093	0.037	0.136	0	0.853
Retained Earnings/Total Liabilities	0.057	0.024	0.113	-0.092	0.436
Total Assets (US $m)	23,091	1,512	18,402	0.671	4,027,000
Size - Log (Total Assets)	7.191	7.322	2.341	-0.399	15.209
Profitability (ROAA)	0.015	0.014	0.037	-0.786	0.075
Asset Tangibility	0.037	0.014	0.102	0	0.906
Growth Prospects	0.015	0.012	0.010	0	0.041
Paid Dividends	0.657	1	0.475	0	1
Tax Rates	0.179	0.195	0.147	0	0.461
Tier 1 Ratio	0.049	0	0.072	-0.16	0.209
Debt Market Development	0.04	0	0.199	0	4.1
Stock Market Development	0.437	0.112	1.184	0	14.934
Bank Concentration	0.531	0.497	0.173	0	1
Gvt Debt to GDP	0.006	0.001	0.020	0	0.803
GDP Growth	0.068	0.071	0.115	-0.354	0.447
Inflation Change	0.057	0.049	0.044	-0.049	0.487
Corruption	3.586	3.5	0.605	1.5	6
Political Risk	38.72	39.167	9.022	18.25	64.208
Bank Crisis	0.017	0	0.130	0	1

Debt market development has a positive relationship with leverage since the bigger the debt market, the more competitive and attractive debt becomes. On the contrary, there exists a negative correlation between the level of stock market development and leverage, suggesting that equity becomes more attractive than debt in competitive equity markets.

The correlations also suggest that banking crisis discourages debt. This is plausible considering the findings of Acharya et al. (2014), in which they concluded that banking crises trigger bailouts. Clearly, during such times, lenders would not want to lend to the very entities in crisis; an example is the 2007 to 2009 global financial crisis.

Political risk has a notable negative correlation with leverage, suggesting that during high political risk, banks use less leverage. Considering that the source of debt could be foreign, and that government is the ultimate guarantor of the banks' debt, a rise in political risk should command a higher risk premium on debt, making it unattractive to banks. This view is shared by Belkhir et al. (2017), Cashman et al. (2015) and Miller (1997).

Table 4: Variable correlation matrix

		1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*
1	Leverage	1.00																			
2	Debt-to-Equity	**0.79**	1.00																		
	(t-stat)	(0.00)																			
3	Debt Maturity	**0.62**	**0.45**	1.00																	
	(t-stat)	(0.00)	(0.00)																		
4	Retained/Liabilities	-0.02	**-0.19**	-0.03	1.00																
	(t-stat)	(0.83)	(0.00)	(0.91)																	
5	Size	**-0.05**	**-0.21**	-0.01	-0.25	1.00															
	(t-stat)	(0.00)	(0.00)	(0.32)	(0.87)																
6	Profitability	-0.02	-0.06	**-0.01**	**0.35**	**0.03**	1.00														
	(t-stat)	(0.09)	(0.49)	(0.04)	(0.00)	(0.00)															
7	Asset Tangibility	**0.16**	0.07	**0.08**	0.01	**-0.15**	**-0.03**	1.00													
	(t-stat)	(0.00)	(0.25)	(0.00)	(0.69)	(0.00)	(0.01)														
8	Growth	**-0.02**	**-0.05**	-0.02	**-0.01**	**0.03**	0.13	**0.00**	1.00												
	(t-stat)	(0.01)	(0.00)	(0.06)	(0.00)	(0.00)	(0.336)	(0.00)													
9	Dividend	**0.10**	**0.13**	0.06	**0.10**	**0.34**	**0.18**	**0.00**	0.03	1.00											
	(t-stat)	(0.00)	(0.00)	(0.19)	(0.00)	(0.00)	(0.00)	(0.01)	(0.75)												
10	Tax Rate	0.00	**0.13**	**-0.11**	**0.01**	0.10	**0.12**	**-0.03**	**0.08**	**0.13**	1.00										
	(t-stat)	(0.44)	(0.00)	(0.00)	(0.00)	(0.10)	(0.00)	(0.00)	(0.00)	(0.00)											
11	Tier 1 Ratio	**-0.12**	**-0.01**	-0.04	**-0.13**	**0.39**	**0.01**	**-0.12**	**-0.01**	**0.16**	**0.05**	1.00									
	(t-stat)	(0.00)	(0.00)	(0.18)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)										
12	Debt Market	0.06	**0.03**	**-0.03**	**-0.04**	**0.05**	**-0.03**	**-0.03**	**-0.06**	**-0.03**	**0.00**	**-0.02**	1.00								
	(t-stat)	(0.67)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)									
13	Stock Market	**-0.03**	**-0.02**	**0.11**	**-0.09**	**-0.07**	**0.01**	**-0.01**	**0.03**	**0.02**	**-0.04**	**0.00**	**0.02**	1.00							
	(t-stat)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)								
14	Bank Concentration	0.00	**-0.09**	**0.15**	**-0.08**	**-0.03**	**-0.02**	**0.10**	-0.02	**0.04**	-0.26	**-0.02**	**-0.03**	**0.36**	1.00						
	(t-stat)	(0.07)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.13)	(0.00)	(0.34)	(0.00)	(0.00)	(0.00)							
15	Gvt Debt to GDP	**-0.02**	**-0.02**	0.03	0.01	**-0.07**	0.02	**0.00**	-0.01	**0.03**	**0.05**	0.01	**0.13**	**0.25**	**0.25**	1.00					
	(t-stat)	(0.00)	(0.00)	(0.78)	(0.32)	(0.00)	(0.10)	(0.00)	(0.29)	(0.01)	(0.00)	(0.34)	(0.00)	(0.00)	(0.00)						
16	GDP Growth	**-0.05**	-0.03	-0.03	-0.06	0.02	**0.01**	0.00	**0.13**	0.02	**0.06**	**0.01**	-0.01	**0.03**	-0.03	**-0.03**	1.00				
	(t-stat)	(0.00)	(0.68)	(0.87)	(0.29)	(0.34)	(0.00)	(0.07)	(0.00)	(0.11)	(0.00)	(0.00)	(0.40)	(0.00)	(0.09)	(0.01)					
17	Inflation Change	-0.05	-0.01	**-0.08**	**0.00**	**-0.18**	**-0.03**	0.02	-0.01	**-0.07**	**0.10**	**-0.10**	**-0.07**	**-0.04**	**-0.15**	-0.01	**0.04**	1.00			
	(t-stat)	(0.41)	(0.54)	(0.00)	(0.00)	(0.00)	(0.00)	(0.10)	(0.06)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.42)	(0.00)				
18	Bank Crisis	**-0.01**	**-0.03**	**0.00**	**-0.07**	**0.03**	**-0.05**	**0.01**	**-0.03**	**-0.03**	**-0.01**	**0.04**	**-0.03**	**-0.04**	**-0.07**	**-0.03**	**-0.01**	**0.25**	1.00		
	(t-stat)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)			
19	Corruption	**-0.04**	**-0.01**	0.01	0.00	**-0.02**	**0.03**	**0.04**	0.00	**-0.03**	0.07	**-0.11**	**0.13**	**-0.09**	**-0.08**	**0.10**	**0.01**	**0.23**	**0.16**	1.00	
	(t-stat)	(0.00)	(0.02)	(0.93)	(0.07)	(0.00)	(0.00)	(0.00)	(0.07)	(0.00)	(0.51`)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
20	Political Risk	**-0.09**	**-0.04**	**-0.14**	**0.09**	**-0.17**	**-0.02**	**0.03**	**-0.09**	**-0.12**	**0.31**	-0.07	**0.04**	**-0.27**	**-0.34**	-0.03	**-0.02**	**0.32**	**0.10**	**0.46**	1.00
	(t-stat)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.01)	(0.00)	(0.00)	(0.00)	(0.09)	(0.03)	(0.00)	(0.00)	(0.25)	(0.01)	(0.00)	(0.00)	(0.00)	

Notes: Correlation coefficient matrix of the various variables to be considered in this study with significance values in brackets.

4.3 Regression Results

4.3.1 Leverage and Corporate Finance Theory

Firstly, we estimated equation (1) to check the applicability of the financial theory to the determination of leverage ratios, controlling for time C_t and country C_j fixed effects. Unlike in Gropp and Heider (2010) and Hoque and Pour (2018), we are using the non-deposit part of leverage as the dependent variable. To control for possible serial correlation and heteroscedasticity of errors, we employed the technique suggested by Petersen (2009) to cluster standard errors at bank level. Table 5 gives the outcome of running this regression side by side with other studies that looked at bank capital structure.

Table 5: Corporate finance theory variables and capital structure

	Book Leverage	***Gropp and Heider (2010) (Table IX)***	***Hoque and Pour (2018) (Table 8)***
MTB (s.e) *t-stat*	1.376* (*0.023*) *2.28*	-0.011 (*0.077*)	0.524** *2.36*
PROF (s.e) *t-stat*	0.013 (*0.401*) *0.87*	1.772*** (*0.553*)	2.741*** *3.72*
Log(SIZE) (s.e) *t-stat*	1.231*** (*0.012*) *6.79*	0.035*** (*0.005*)	0.062*** *11.64*
COLL (s.e) *t-stat*	0.921** (*0.073*) *2.67*	0.125* (*0.065*)	0.006 *0.07*
DIV (s.e) *t-stat*	-0.042** (*0.104*) *-2.87*	-0.005 (*0.028*)	-0.082*** *-4.08*
RISK (s.e) *t-stat*		-0.009 (*0.010*)	-0.040*** *-3.16*
TIER1 (s.e) *t-stat*	-1.261 (*0.027*) *1.07*		
Constant (s.e) *t-stat*	-0.305*** (*0.097*) *10.34*	-0.447*** (*0.115*)	-1.401*** *-5.90*
Observations	7451	2,408	5,205
Adj. R^2	0.23	0.35	0.37

Notes: This table presents regression results of Equation (1) for the effects of bank-level corporate finance theory variables on the capital structure for publicly traded banks in developing countries. Included in the regression are dummy variables to control for time and country fixed effects. In parenthesis are the standard errors. *, ** and *** represent the significance levels 10%, 5% and 1% respectively.

As in Hoque and Pour (2018), the market-to-book ratio is significant and is positively related to leverage. Unlike in the corporate finance theory, where the market-to-book ratio is expected to have a negative relationship with leverage, the evidence seems to support the buffer view which expects companies with a lower cost of raising capital to use more leverage.

Collateral and size are positively and significantly related to leverage, supporting standard corporate finance that bigger companies and companies that have collateral in the form of fixed

assets can access cheaper capital because they are known and unlikely to default (big) and creditors have something to hold on to if the bank goes under (collateral).

As in other studies of comparison, profitability, even though not significantly so, is positively related to leverage, suggesting that lenders trust firms that are profitable as chances of such firms defaulting are minimal. Dividends have a negative sign, with leverage supporting the theory that dividend-paying companies are known to the market and therefore can raise equity much cheaper than debt (Gordon, 1963; Lintner, 1962).

The goodness of fit of the model is quite low judging by the value of the adjusted R^2 which is only about 21%. This means the standard corporate finance theory variables alone do not sufficiently explain the observed variations in leverage ratios for banks in developing economies.

4.3.2 Leverage and Macro Variables

This lead us to add country-wide variables as discussed in Chapter 3. Table 6 provides details for estimating equation (2) with macroeconomic variables added in place of country fixed effects. Column 2 records values for the various explanatory variables without political risk, while column 3 shows the values with political risk added.

In estimating equation (2), care was taken to ensure the chance of having heteroscedasticity and serial correlation of errors was kept to a minimum by clustering the standard errors at the country level, as suggested by Petersen (2009). Most bank level variables maintained their signs from equation (1), except for profitability that became negative, suggesting that managers of profitable banks use less debt and more capital, supporting the view by Myers and Majluf (1984) of the pecking order.

At the bank level, we added the Tax and Tier 1 capital ratios. Tax is shown to positively affect the use of non-deposit debt even though only at 10% significance level at best when considered together with political risk. This observation is in line with the standard corporate finance theory, like that found by Hoque and Pour (2018). Tier 1 capital ratios are negatively related to leverage, as expected, and in line with the regulatory and buffer view. The more Tier 1 capital a bank holds, maybe because they hold risky assets and need a sufficient buffer to cushion them from shocks that might see them fall below the minimum capital requirements, the less debt it employs, a result that can be found even in the study by Hoque and Pour (2018).

Table 6: Effects of political risk on leverage

	Book Leverage (No Political Risk)	***Book Leverage (With Political Risk)***	***Book Leverage (With Political Risk)***
MTB (s.e) *t-stat*	0.855* (*0.007*) *1.68*	0.387 (*0.012*) *1.41*	0.301 (*0.010*) *1.32*
PROF (s.e) *t-stat*	-0.013** (*0.002*) *-2.26*	-1.072** (*0.003*) *-2.17*	-1.231** (*0.001*) *-2.47*
Log(SIZE) (s.e) *t-stat*	1.376*** (*0.014*) *2.87*	1.132*** (*0.009*) *2.73*	1.270*** (*0.006*) *2.93*
COLL (s.e) *t-stat*	0.022 (*0.012*) *1.39*	0.125* (*0.10*) *1.67*	0.413* (*0.022*) *1.76*
DIV (s.e) *t-stat*	-0.031* (*0.017*) *-1.74*	-0.007 (*0.028*) *-1.33*	-0.010 (*0.013*) *-1.37*
TAX (s.e) *t-stat*	0.017 (*0.107*) *1.43*	0.103* (*0.097*) *1.71*	0.137* (*0.087*) *1.81*
TIER1 (s.e) *t-stat*	-1.603* (*0.023*) *1.67*	-0.946* (*0.004*) *1.72*	-0.759 (*0.011*) *1.49*
DMKT (s.e) *t-stat*	0.019 (*0.002*) *0.98*	0.003 (*0.004*) *1.07*	0.007 (*0.003*) *1.23*
CMKT (s.e) *t-stat*	-1.051* (*0.010*) *-1.69*	-1.108* (*0.103*) *-1.78*	-1.093* (*0.097*) *-1.81*
GDP_CHG (s.e) *t-stat*	-0.879* (*0.004*) *-1.82*	-0.962** (*0.007*) *-2.18*	-1.301** (*0.003*) *-2.27*
CRISIS (s.e) *t-stat*	0.572* (*0.115*) *1.71*	0.407* (*0.103*) *1.67*	0.371* (*0.112*) *1.74*
INF (s.e) *t-stat*	0.001 (*0.124*) *0.97*	0.002 (*0.131*) *1.01*	0.004 (*0.121*) *1.26*
CONCEN (s.e) *t-stat*	-1.037** (*0.043*) *-2.14*	-0.801* (*0.061*) *-1.77*	-0.973* (*0.052*) *-1.83*
GVT_DEBT_GDP (s.e) *t-stat*	0.437* (*0.102*) *1.87*	0.302* (*0.097*) *1.75*	0.417* (*0.087*) *1.91*
CORRUPTION (s.e) *t-stat*	-0.007 (*0.005*) *-1.54*	-0.014* (*0.009*) *-1.67*	-0.023* (*0.003*) *-1.74*
POL (s.e) *t-stat*		-1.203** (*0.010*) -1.98	-1.437** (*0.008*) *-2.23*
BANK FIXED EFFECTS	No	No	Yes
Constant (s.e) *t-stat*	-0.476*** (*0.154*) *-7.32*	-0.503*** (*0.115*) *-7.83*	-0.627*** (*0.091*) *-8.47*
Observations	7451	7451	7451
Adj. R^2	0.51	0.57	0.86

Notes: This table presents regression results of Equation (**2**) for the effects of bank-level, macroeconomic, and environmental variables on the capital structure for publicly traded banks in developing countries. Column 1 shows results for the equation omitting the political risk variable but not controlling for bank fixed effects. Column 2 shows results for equation (2) having added political risk but not controlling for bank fixed effects. The last column contains results for equation (2) with political risk while controlling for bank fixed effects. In parenthesis are the standard errors. *, ** and *** represent the significance levels 10%, 5% and 1% respectively.

Looking at the macroeconomic variables in equation (2), the level of development of the debt market has a positive impact on non-deposit leverage. This result is in line with the expectation that deeper debt markets increase the availability and lowers the cost of debt, encouraging firms

to employ more debt (De Jong et al., 2008). On the other hand, the development of capital markets enables firms to source equity more easily and cheaply relative to debt. As reported in Table 3, capital markets in developing economies are relatively more developed than debt markets and this can be seen in the fact that the effect of capital market development is much more significant (at 10%) than that of debt markets.

Countries with growing economies (positive GDP change values) use less leverage, probably because in such times, firms are generally profitable and therefore have some financial slack which, according to the pecking order theory, results in less debt being used. Another observation to make is that banks during crisis tend to borrow more. This could be driven by investors requiring more returns for the increased risk on equity than creditors. Like Hoque and Pour (2018), we failed to find any significant impact of inflation on the use of leverage.

Bank concentration has some noticeable negative impact on leverage. Following the observation made by Bourke (1989), it seems that when concentration is high, banks are more profitable, and considering the pecking order theory (Myers & Majluf, 1984), it means that bank managers will use internal sources in the form of retained earnings before considering external sources such as debt.

In our sample, leverage seems to respond positively to an increase in the level of indebtedness of the government, and this observation is significant at 10%. One possibility could be that increasing debt levels devalue government debt instruments that banks often hold as safe instruments on their portfolios. The falling value of such assets, holding everything else constant, means the ratio of debt to assets will increase.

Corruption has a negative impact on leverage, as observed in Fan et al. (2012) and Hoque and Pour (2018), but not as significant as in those studies. In our sample, corruption seems to have a much weaker impact on leverage. When we added political risk to the equation, we could find a significant negative relationship with leverage. This suggests that political risk has much more explanatory power than corruption alone. This is highly likely since the measure includes many more variables that investors are likely to consider, such as the degree of involvement of the military in politics, internal and external conflict, among others (see section 3.4.2 for details). Our observation supports the view by Belkhir et al. (2017) and Miller (1977) that political risk raises the cost of capital, at least in emerging economies.

It is important to observe that adding political risk to the estimation improved the level of explained variation by 6%. It's also interesting to realize that standard corporate finance theory

variables alone had very low explanatory power (21%) compared to macroeconomic variables. This suggests that the standard corporate finance view is of second-order in explaining variations in capital structures for banks.

Upon this realization, we put to test the claim by Lemmon et al. (2008), that much of the variation in capital structure is explained by some time-invariant firm fixed effect. Column 3 of Table 6 shows the result of estimating equation (2) but controlling for bank fixed effects. As can be seen, the value of the adjusted R^2 increased significantly, by almost 30%. This observation was also made by Gropp and Heider (2010). This suggests that banks seem to settle on some level of leverage that remains unchanged over quite some time, perhaps because of managers' choice (Frank & Goyal, 2007), or simply some bank-wide choice (Lemmon et al., 2008).

4.3.3 Pre- and Post-Crisis Results

One of the reasons why we chose the period of study was to establish whether the global financial crisis of 2007 to 2009 and the changes in regulations that ensued had a significant impact on the capital structure decisions by banks. Formal tests (reported in section 4.4.5) denied the existence of structural breaks in the dataset that would otherwise have warranted the splitting of the dataset into pre- and post-crisis.

In the spirit of learning, we went ahead and did regressions on the split dataset and the results were rather surprising. Of note was the lack of significance of almost all explanatory variables except for ***Size*** before and during the crisis. After the crisis period, in addition to size, changes in GDP, stock market, and bank crisis had a significant impact on capital structure choices. The observation that bank crisis is highly significant in the choice of debt levels is proof that a bank crisis has a profound impact on markets and the economy in general, which is in line with Acharya et al. (2014).

Another fact of interest is that after the crisis, the significance of bank fixed effects reduced by about 5%, which seems to suggest that managers were actively managing their capital structures rather than picking and maintaining a certain debt structure. See Table 8 in Appendix 1 for the results of this analysis.

4.3.4 Debt Maturity and Political Risk

Following the discussion in section 2.3.5, it is suggested that another impact of political risk is on the choice of debt maturity. Literature has it that during inflationary times and political

instability, the availability of long-term debt becomes scarce as creditors become uncertain about long future periods. Table 7 gives the results of estimating equation (3) to establish the relationship between political risk and the choice of debt maturity. In the equation, the dependent variable is the ratio of short-term debt to total assets.

The results of estimating equation (**3**) show that very few bank level variables have a significant influence on the debt maturity choice. From the results, banks with high growth ratios (MTB) and those that are quite profitable use short-term debt more than long-term. This is in line with the underinvestment theory which is quite pronounced for high growth firms (Stephan, Talavera, & Tsapin, 2011). To deal with the underinvestment problem, Myers (1977) suggested that firms must reduce their debt maturity structure.

Large banks and banks with more collateral use more long-term debt, a finding in line with those by Etudaiye-Muhtar, Ahmad, & Matemilola (2017). The reason for the observed relationship could be because larger firms do not suffer information asymmetry costs as much as small firms, making creditors more confident to extend debt even for longer periods. Like Stephan et al. (2011), larger firms have less chance of incurring bankruptcy costs and therefore can access debt more cheaply. The same can be said about collateral (Myers, 1977); the more collateral a bank holds, the more comfortable lenders are to extend credit, even for longer periods. Other bank level variables are of no significance on the choice of debt maturity.

The development of debt markets and the size of the credit to private firms have a significant negative relationship with short-term debt. This suggests that economies with deeper debt markets can flatten the yield curve and make long-term debt much more affordable and available. The opposite can be said about deeper capital markets even though the influence is not significant in our model.

Table 7: Effects of political risk on debt maturity

	Debt Maturity (No Political Risk)	***Debt Maturity (With Political Risk)***
MTB (s.e)	0.073* (*0.006*)	0.065* (*0.002*)
t-stat	*1.81*	*1.67*
PROF (s.e)	0.921** (*0.013*)	1.006** (*0.006*)
t-stat	*1.98*	*2.02*
Log(SIZE) (s.e)	-0.147*** (*0.018*)	-0.193*** (*0.011*)
t-stat	*-2.87*	*-2.94*
COLL (s.e)	-0.102* (*0.010*)	-0.131* (*0.022*)
t-stat	*-1.67*	*-1.78*
DIV (s.e)	0.001 (*0.028*)	0.003 (*0.031*)
t-stat	*1.02*	*1.13*
TAX (s.e)	-0.013 (*0.069*)	-0.017 (*0.053*)
t-stat	*-0.25*	*-0.37*
PVT_DEBT_GDP (s.e)	-0.206* (*0.074*)	-0.372* (*0.091*)
t-stat	*-1.68*	*-1.73*
DMKT (s.e)	-0.071** (*0.014*)	-0.080* (*0.011*)
t-stat	*-1.97*	*-1.93*
CMKT (s.e)	0.410 (*0.012*)	0.393 (*0.009*)
t-stat	*0.94*	*0.89*
GDP_CHG (s.e)	0.712* (*0.011*)	0.831* (*0.013*)
t-stat	*1.67*	*1.76*
CRISIS (s.e)	0.407* (*0.005*)	0.371* (*0.002*)
t-stat	*1.89*	*1.84*
INF (s.e)	0.674** (*0.021*)	0.593* (*0.008*)
t-stat	*1.98*	*1.95*
CONCEN (s.e)	-0.071 (*0.031*)	-0.073 (*0.017*)
t-stat	*-1.21*	*-1.27*
GVT_DEBT_GDP (s.e)	0.037 (*0.009*)	0.041 (*0.004*)
t-stat	*1.47*	*1.51*
CORRUPTION (s.e)	0.104* (*0.019*)	0.073* (*0.011*)
t-stat	*1.72*	*1.69*
POL (s.e)		1.079** (*0.018*)
t-stat		*2.37*
Constant (s.e)	-0.113*** (*0.071*)	-0.127*** (*0.063*)
t-stat	*-7.54*	*-8.03*
Observations	7451	7451
Adj. R^2	0.27	0.46

Notes: This table presents regression results of Equation (**3**) testing the effects of bank-level, macroeconomic, and environmental variables on the choice of debt maturity. Column 1 shows the impact of the variables except for political risk. Column 2 shows the effect of the variables including political risk. In parenthesis are the standard errors. *, ** and *** represent the significance levels 10%, 5% and 1% respectively.

Growth in GDP has a positive effect on the use of short-term debt, an observation that is also confirmed by Etudaiye-Muhtar et al. (2017). This could be linked to the same reason for profitable banks discussed earlier in the sense that during economic growth, a lot of firms in the economy record profits.

Macro environmental variables, such as crisis and inflation, have a positive relationship with short-term debt. As explained by Miller 1977 and discussed fully in section 2.3.5, inflationary times result in the yield curve steepening, making short-term debt the cheaper option. Etudaiye-Muhtar et al. (2017) also observed the same effect in their study.

Corruption can be shown to promote the use of short-term debt over long-term debt. As was explained in the studies of Claessens et al. (2001) and Demirgüç-Kunt and Maksimovic (1999), corruption weakens the effectiveness of the legal system which is required to enforce bankruptcy codes. This causes creditors to be unwilling to lend for longer periods.

Political risk can be seen to be significantly and positively related to the use of short-term debt. This observation is expected, given the composition of our variable for risk; legal system, rule of law, regulatory quality, among others (see section 3.4.2). According to Fan et al. (2012), if such institutional features are sound, creditors are willing to lend for longer periods as they will be confident that their assets are not exposed to the risk of expropriation. Generally, for developing economies, factors described by Fan et al. (2012) are weak (Etudaiye-Muhtar et al., 2017), thereby discouraging the issuance of long-term debt as observed. Heightened political risk encourages lenders to prefer short-term debt contracts.

The effect of political risk on debt maturity is also in line with the explanation by Miller (1977) that political risk encourages lenders to seek an option to pull out when borrowers start defaulting given a deteriorating investment environment. Also, it has been found that short-term debt is less sensitive to risk as it enforces the continual monitoring of the borrower by the lender (Alcock, Finn, & Tan, 2012; Stephan et al., 2011).

4.3.5 Debt vs Equity and Political Risk

Equation (4) was also estimated more as a robustness check than anything. We did not find significant differences from those obtained when estimating equation (2). As expected, political risk reduces the employed non-deposit debt, given that equity can only drop to a certain level due to regulatory requirements, while debt can drop further depending on market conditions. The results are documented in Table 9 in Appendix 1.

4.4 Robustness Checks

In carrying out the regressions, we took several steps to ensure that our results are robust and can be trusted. Below we detail the set of actions taken to ensure the robustness of the regressions.

4.4.1 Sample size and accuracy

To try and get close to the true population, we considered all publicly traded banks in countries classified as developing or transitioning whose full dataset was available. The choice to cover 13 years (2006 to 2018) was sorely motivated by the availability of data. Years before 2006 hardly had data available. In the end, we managed to have 7451 bank year observations, which is a good size to trust the sample to represent the true population. Choosing publicly listed companies only, gave us the confidence that the figures were audited and correct. Additionally, we took care to only include observations for banks that have at least three (3) consecutive years of observations.

4.4.2 Outliers

To treat our models from the confounding effects of outliers, we winsorized our data values at 5% on the lower end and 95% at the upper end. Also, for values that tend to vary significantly, such as total assets, we used the natural log of those values to reduce the variance in the data.

4.4.3 Fitness of the Regression Method

There are several estimation models that we could have adopted to run our regression models. Among these competing models were Pooled OLS, Combined OLS. To make an informed decision on which one to adopt, we made use of both literature and scientific testing methods.

We dropped the Pooled OLS method since it assumes no variation among banks and over time. This did not fit our data as there is evidence in literature that banks follow an optimal capital structure unique to an individual bank (Diamond & Rajan, 2000; Gropp & Heider, 2009). Formal tests (Lagrange Multiplier) rejected Pooled OLS for either Fixed or Random effects models. Also, Figure 3 shows that over time the composition of bank capital has been changing.

The tiebreaker between Fixed and Random Effects models was running the Hausman test on the results of the two models, resulting in Fixed Effects being chosen as the best model for our estimations.

4.4.4 Serial Correlation and Heteroscedasticity of Errors

It is a well-known fact that for OLS to be correct in estimating the true variability of the coefficients, the residuals must be independent and identically distributed; failure of which, the estimates are either under- or overestimated. When working with panel datasets as we did in our study, there is a significant chance that the standard errors cluster, making the results

biased. To cater for that, we employed the clustering of errors method suggested by Petersen (2009) at the bank and country level, depending on the equation.

We also ran AR(2) and Hansen test and the results were not significant, suggesting that there was no second-order serial correlation in the first difference of the residuals and that the variables used for regression are valid.

4.4.5 Structural Breaks

One ill that often plagues time series regression models is the failure to detect and treat structural breaks. We suspected that there would be structural changes in our dataset, especially given that it covers a pre- and post-crisis period of 2007 to 2009. As discussed in section 3.6, we employed the tests suggested by Zeileis et al. (2002), and surprisingly, we did not detect a structural break in the dataset even though there was some disturbance in the average debt ratios around the crisis period. This could be because of the weak contagion between developed and developing markets during the period. After running the tests, we concluded at more than 95% confidence level, that the disturbances were not significant enough to cause a structural break (see Figure 4).

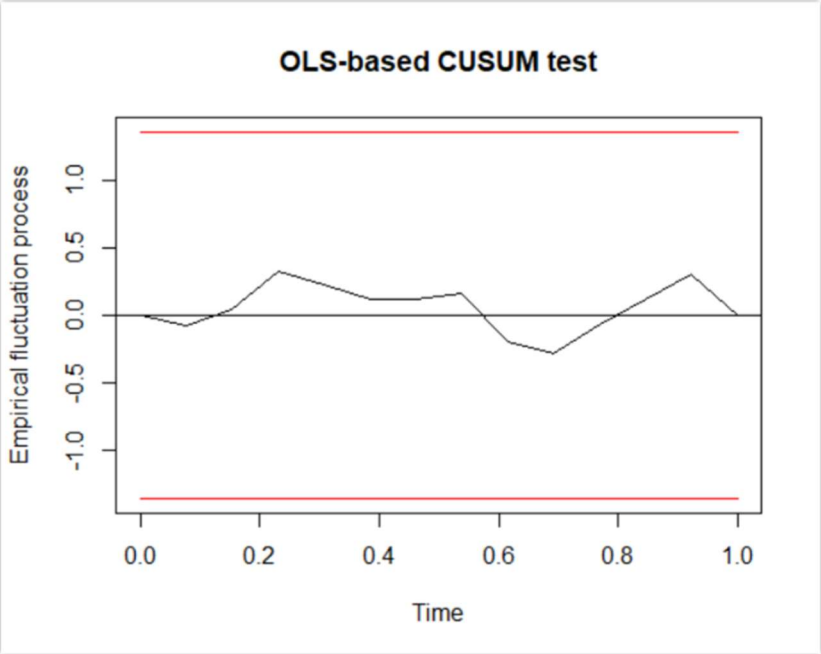

Figure 4: Structural break test results, fluctuations in residuals between 2006 and 2018

Chapter 5 – Conclusion

5.1 Overview

Motivated by the increase in political instability in most developing economies and realizing that banks are one of the key institutions of every country, especially so in developing economies where capital markets are mostly underdeveloped, we set off to find the impact of increased political risk on banks from the capital structure side. The motivation of focusing on the capital structure was the realization that banks are highly leveraged, and that leverage is vital for banks' health (DeAngelo & Stulz, 2013). This chapter condenses all that we have learned and discovered about political risk and bank capital structure.

5.2 Contribution to Literature

The findings in this paper shed some light on the inner workings of banks in developing economies and how they settle on the various levels of capital structure that are observed. Our findings are in line with most of the existing literature that focused on bank capital structure but with some notable differences.

The first observation is in line with the findings of Gropp and Heider (2010) that banks seem not to employ capital structures that are solely determined by regulation. There is evidence that capital structure varies greatly from the minimum levels dictated by regulation. This raises the question, what drives the variations?

One reason why this is so for developing economies is the high levels of political risk. We have established that political risk introduces friction in the markets that drive the cost and availability of debt (Belkhir et al. 2017; Butler & Joaquin, 1998; Cukierman et al., 1992; Miller 1977). Our analysis has shown that political risk has a significant negative impact on the levels of leverage that a bank can employ which can adversely affect its operations and efficiencies.

Another contribution to literature of this study is the adverse effect that sustained political risk has on debt maturity and the effects of debt mismatch (Kwasi Fosu, 1992; Mehl & Reynaud, 2005; Miller, 1977). During periods of increased political risk, creditors tend to be reluctant to lend for longer periods, while banks' assets are usually long term driven by the nature of most projects that have long gestation periods. This mismatch can severely affect the performance and profitability of banks and ultimately slow down the rate of economic development of a country.

In this paper, we observed that even after factoring macroeconomic and environmental variables, the explanatory power of our models remained quite low and improved significantly when we added bank fixed effects. This agrees with the findings of Gropp and Heider (2010) and Lemmon et al. (2008). The observed large bank fixed effects could be a result of managerial preference (Frank & Goyal, 2007). Our data seems to suggest that managers in developing economies do not actively manage their leverage ratios but instead settle on some time-invariant structure. This, however, seems to have changed beyond 2010 as we observed more variances in the level of non-deposit debt being employed across the board. A possible reason for this could be the increased integration of markets as more developing economies open their markets to international players.

Another finding of this paper is that factors that are generally accepted to have a consistent influence on capital structure choices (Frank & Goyal, 2009) also have the same impact on banks in the developing economies, even though their explanatory powers are weaker compared to developed economies, such as what was established in the studies of Gropp and Heider (2010) and Hoque and Pour (2018). This means standard corporate finance theory factors should be considered when studying banks despite them having a peculiar capital structure compared to non-financial firms.

Surprisingly, corruption has very little impact on the choice of level of debt in developing economies. A possible reason could be that, generally, developing countries are associated with high corruption levels (at least relative to developed countries) such that it becomes sort of "normal". This suggests that corruption is not an important factor to consider when analysing capital structure for banks in developing countries.

In summary, political risk has a profound negative impact on bank leverage and this can be an impediment to bank efficiency and slows down the economic development given the role banks play, especially in emerging economies.

5.2 Advice for Managers and Regulators

This paper has brought to highlight some lessons that we believe will be of value to both managers and regulators. Firstly, when bank managers plan financing options, they need to consider the political outlook, as failure to do so will see them having either to employ expensive options or instruments with wrong maturities, in sum, increasing financing costs. This would hurt profitability and efficiency. This implies that managers need to actively

manage their capital structures and adjust them appropriately in relation to the prevailing and expected political climate.

Political risk affects the behaviour of banks when deciding on the amount of debt or capital to employ. This can stand in the way of regulators and therefore the effectiveness of their policies. For example, consider a period when regulation is trying to stimulate the economy by encouraging banks to lend more through reduced capital requirements. Such endeavours might have a lower than expected impact in the face of heightened political risk, as creditors will not be willing to lend money due to increased uncertainty. Regulators therefore need to consider the political climate when they formulate their regulations.

Investors also need to consider political risk when making decisions on where to invest and the expected returns. As discussed in the paper, political risk affects the cost of financing and therefore the returns from such investments. It is therefore advisable that prudent investors need to consider the political outlook when forecasting returns or deciding where to invest.

5.3 Further Research

Even though we have established some interesting facts about the relationship between political risk and capital structure choices for banks in developing countries, there remain some unanswered questions. As established in Gropp and Heider (2010), and Lemmon et al (2008), corporate finance theory and regulatory views do quite little in explaining the variations in capital structure compositions. Macroeconomic and environmental variables help to some degree but still leave a gap that needs further exploration.

There exists a significant level of variability that is accounted for by some unobserved bank-specific time-invariant effects. It will be a good research basis to further explore this element. A suggestion towards solving this puzzle is to consider the role and impact of managers in the choice of capital structure. It will be of great interest to separate managers' influence from bank fixed effects.

Another aspect that is worthy of exploring further is to establish which specific element of political risk bears the most weight in causing disturbances on the capital structure since the variable we used is made up of 12 elements, as discussed in section 3.4.2. That way, we will have a much-refined understanding of which element(s) of political risk to look out for.

In this paper, we only used book values for leverage. This might have rendered some variables insignificant that would otherwise be significant had we employed market values. It is recommended that future studies should consider market values and do a comparison.

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Appendix 1

Table 8: Pre- and Post-Crisis Analysis

	Debt to Equity (Pre-Crisis 2006 - 2009)	***Debt to Equity (Post-Crisis 2010 - 2018)***
MTB (s.e) *t-stat*	0.002 (*0.002*) *0.83*	0.005 (*0.002*) *1.58*
PROF (s.e) *t-stat*	-0.049 (*0.094*) *-0.52*	-0.037 (*0.064*) *-0.57*
Log(SIZE) (s.e) *t-stat*	0.028** (*0.015*) *1.97*	0.039*** (*0.004*) *8.99*
COLL (s.e) *t-stat*	-0.021 (*0.070*) *-0.30*	-0.072 (*0.062*) *-1.19*
DIV (s.e) *t-stat*	0.005 (*0.010*) *0.47*	0.003 (*0.005*) *0.72*
TAX (s.e) *t-stat*	0.019 (*0.040*) *0.48*	0.003 (*0.016*) *0.22*
TIER1 (s.e) *t-stat*	-0.036 (*0.057*) *-0.63*	0.015 (*0.022*) *0.71*
DMKT (s.e) *t-stat*	-0.025 (*0.087*) *-0.28*	0.026 (*0.0239*) *1.14*
CMKT (s.e) *t-stat*	0.019 (*0.026*) *0.74*	-0.022** (*0.010*) *-2.13*
GDP_CHG (s.e) *t-stat*	-0.018 (0.032) *-0.58*	-0.038*** (*0.012*) *-3.09*
CRISIS (s.e) *t-stat*	-0.037 (*0.027*) *-1.36*	-0.042*** (*0.011*) *-3.63*
INF (s.e) *t-stat*	0.091 (*0.720*) *0.40*	0.108 (*0.050*) *1.16*
CONCEN (s.e) *t-stat*	0.314 (*0.0720*) *0.436*	0.018 (*0.017*) *1.01*
GVT_DEBT_GDP (s.e) *t-stat*	0.101 (*0.087*) *1.15*	0.132 (*0.299*) *0.44*
CORRUPTION (s.e) *t-stat*	0.004 (*0.094*) *0.20*	-0.002 (*0.005*) *-0.29*
POL (s.e) *t-stat*	0.002 (*0.004*) *0.52*	-0.001* (*0.001*) *-1.76*
Constant (s.e) *t-stat*	-0.186 (*0.185*) *-1.01*	-0.158*** (*0.046*) *-3.37*
Observations	7451	7451
Adj. R^2	0.31	0.37

Notes: This table presents regression results of Equation (**2**) testing the effects of political risk on leverage but having the data split into 2 periods, 2006 to 2009 and 2010 to 2018. In parenthesis are the standard errors and below are the t-statistic values.
*, ** and *** represent the significance levels 10%, 5% and 1% respectively.

Table 9: Effect of political risk on debt vs equity

	Debt to Equity (No Political Risk)	***Debt to Equity (With Political Risk)***
MTB (s.e)	0.863 (*0.013*)	0.074 (*0.011*)
t-stat	*1.59*	*1.37*
PROF (s.e)	-0.711** (*0.006*)	-1.102** (*0.004*)
t-stat	*-2.37*	*-2.49*
Log(SIZE) (s.e)	1.376*** (*0.003*)	1.132*** (*0.010*)
t-stat	*2.71*	*2.67*
COLL (s.e)	0.032 (*0.102*)	0.105* (*0.002*)
t-stat	*1.63*	*1.67*
DIV (s.e)	-0.131* (*0.021*)	-0.207* (*0.013*)
t-stat	*-1.73*	*-1.81*
TAX (s.e)	0.017 (*0.072*)	0.130 (*0.097*)
t-stat	*1.07*	*1.23*
TIER1 (s.e)	-1.313** (*0.023*)	-0.972* (*0.014*)
t-stat	*-1.98*	*-1.91*
DMKT (s.e)	0.069 (*0.012*)	0.053 (*0.009*)
t-stat	*1.44*	*1.57*
CMKT (s.e)	-1.025* (*0.013*)	-1.113* (*0.003*)
t-stat	*-1.67*	*-1.73*
GDP_CHG (s.e)	-0.807* (*0.017*)	-0.901* (*0.012*)
t-stat	*-1.69*	*-1.77*
CRISIS (s.e)	0.502** (*0.013*)	0.617* (*0.008*)
t-stat	*2.14*	*1.95*
INF (s.e)	0.003 (*0.124*)	0.001 (*0.137*)
t-stat	*1.43*	*1.37*
CONCEN (s.e)	-0.734* (*0.031*)	-0.851* (*0.017*)
t-stat	*-1.73*	*-1.87*
GVT_DEBT_GDP (s.e)	0.237* (*0.059*)	0.283* (*0.043*)
t-stat	*1.84*	*1.93*
CORRUPTION (s.e)	-0.017 (*0.094*)	-0.093* (*0.052*)
t-stat	*-1.62*	*-1.69*
POL (s.e)		-1.021** (*0.070*)
t-stat		*-2.31*
Constant (s.e)	-0.437*** (*0.124*)	-0.513*** (*0.106*)
t-stat	*-7.93*	*-8.13*
Observations	7451	7451
Adj. R^2	0.49	0.53

Notes: This table presents regression results of Equation (**4**) testing the effects of political risk on the ratio of non-deposit debt to equity. Column 1 shows the impact of all other variables except political risk. Column 2 shows the effect of the variables including political risk. In parenthesis are the standard errors and below are the t-statistic values. *, ** and *** represent the significance levels 10%, 5% and 1% respectively.