THE DETERMINANTS OF CAPITAL STRUCTURE AND INTERNAL FACTORS THAT INFLUENCE THE PERFORMANCE OF COMMERCIAL BANKS IN BOTSWANA

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DECLARATION

I, BEAUTY MAPORORO, hereby declare that the work on which this dissertation is based my original work (except where acknowledgements indicate otherwise) and that neither the whole nor part of it has been, is being, or is to be submitted for another degree in this or any other university.

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ABSTRACT

The main objectives of the study are to empirically explore the determinants of capital structure for commercial banks in Botswana and to determine the internal factors that influence the performance of the banks. A study on what determines capital structure for banks and the factors that influence performance has never been done for Botswana, thus the study aims to add on to the existing literature. Quantitative approach, mainly multiple regression models and descriptive statistics, are used to find the relationship among the independent and dependent variables based on the five years data for the period 2012 to 2016. The dependent variables are the total leverage, short-term, and long-term leverage and the performance measure is the Return on Assets. The empirical results conclude that in accordance with the pecking order theory and the finance literature, debt has an overall negative relationship with banks performance, and the bigger the bank the less debt is employed. Further, this study proves efficiency theory for Botswana banks. That is the relationship between capital adequacy and liquidity with return on assets did not provide statistically-significant results. It is hoped that the results of the study will assist managers on employing the right balance of debt and equity to achieve desired performance.

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CHAPTER 1:

1.1 Introduction

The banking sector is an important sector in the economy of Botswana and plays a supporting role to the development of other sectors. Internationally, banks play a crucial role of promoting the growth of the economy by receiving deposits and using these deposits to finance the most productive sectors of the economy (Alkhazaleh & Almsafir, 2014). Commercial banks are therefore important to the financial sector in developing economies like Botswana where capital markets are not well developed. Furthermore, the sector has a significant role in the Botswana Stock Exchange (BSE) since it has been one of the main reasons for the growth of the BSE (Jefferies & Tacheba, 2009).

1.2 Research problem Statement

Banks are crucial for economic growth hence it is important that they are efficient. Banks in Botswana have already experienced a liquidity problem where the banks were granting loans but were not receiving adequate deposits from customers and this negatively affected their profits. Therefore, a study on what determines their performance is necessary. Findings of the study could prevent others risks from occurring.

1.3 Research objectives

Aim

The main aim of the study was to establish what determines the capital structure and what internal factor influence the profitability of banks in Botswana.

Objectives

This study is based on twin objectives which are;

- To establish the determinants of capital structure of Botswana banks.
- To establish the internal factors that influence bank performance in Botswana.

1.4 Research Questions

- Is there an association between each of the three proxies of leverage (total debt to total equity, total short-term debt to total equity and total long-term debt to equity) and the determinants of capital structure?
- Do factors internal to the bank influence its profitability?

1.5 Organisation of the study

The rest of the paper is organised as follows; chapter 2 provides an overview of the banking sector in Botswana while chapter 3 presents theoretical framework on capital structure and profitability respectively. Chapter 4 provides a review of literature on the determinants of capital structure and bank profitability while chapter 5 presents the methodology used in this study. Thereafter, chapter 6 discuss and provide a conclusion of the study.

CHAPTER 2:

Overview of banking sector in Botswana

2.1 Brief history of the banking system in Botswana

When Botswana gained independence in 1966, it was a member of the Rand Monetary Area and used the Rand as its legal currency. However, in 1974 Botswana decided to leave the Rand Monetary Area despite advice from the International Monetary Fund (IMF) which was against such a move. The IMF cited that Botswana was a small open economy and could not manage to sustain adequate reserves to counter instabilities of economic and financial environment. Nonetheless, the Bank of Botswana which is the country's central bank was established in 1975 and the then existing commercial banks (Barclays and Standard Bank, which were established in the 1950s) were locally incorporated. When Bank of Botswana was established it was faced with several issues that needed to be resolved, these included the exchange rate regime, characteristics of the Pula, the domestic interest rates, the development of domestic banks and banking supervision.(Bank of Botswana, 2017).

The local currency (Pula) was launched in 1976 to replace the Rand as the legal currency. In 1976 a clearing house was set up within Bank of Botswana for bank cheques. Unlike South Africa with a floating exchange rate, section 21 of Bank of Botswana Act stipulates that the exchange rate of the Pula be determined by the President of Botswana with advice from the Ministry of Finance and Development Planning after consultation with Bank of Botswana. Adhering to the Bank of Botswana Act, the Pula was pegged to the Rand and the IMF's Special Drawing Rights (SDR). The SDR is the official unit of account of the IMF and its value is based on a weighted basket of five major currencies; the US dollar, the euro, the Chinese renminbi (RMB), the Japanese yen, and the British pound sterling. The Pula was pegged to the Rand and SDR because of a decision in 1980 to take the Pula off the US dollar peg and instead the Pula basket (Rand and SDR) was introduced. The Pula basket is comprised of currencies of the countries that Botswana mainly trades with. This was to ensure stability of the Pula by minimising exchange rate fluctuations to

encourage economic diversification through exports. (Bank of Botswana, 2017).

The Bank of Botswana has evolved over the years and it is responsible for foreign exchange reserve management, administering exchange controls, implementing exchange rate, issuing bank notes, monetary policies, supervision of financial institutions and payments and settlements on behalf of the government (Bank of Botswana, 2017).

2.2 Development of the Banking sector in Botswana

Historically, the Botswana banking sector was small with Barclays and Standard Banks dominating the sector. The two commercial banks operated as branches with their head offices based in South Africa. At the time the other existing financial institutions were government owned. These institutions include National Development Bank, Botswana Building Society, Botswana Savings Bank and Botswana Development Corporation. For a while, the two commercial banks (Barclays and Standard) were the only ones offering banking services in the country. "The financial sector infrastructure was undeveloped and very small and money market products needed for the conduct of monetary policy were non-existent" (Khama, 2016). However, the banking sector has grown over the years, the country now has ten commercial banks and three statutory banks. Statutory banks are under the control of minister of finance and do not require banking licenses. However, under the Banking Act, the Bank of Botswana has power to supervise the statutory banks (Jefferies & Tacheba, 2009). Presently, there are no merchant banks operating as the only merchant bank, BancABC, reclassified as a commercial bank in 2008. Furthermore, the Botswana Building Society is currently undergoing demutualisation project with the intention to apply for a commercial bank license.[1]

The banking sector currently employs 5055 employees,120 commercial bank branches, 19 statutory bank branches, 440 commercial banks Automatic Teller

[1] "A society is an organisation owned by its members rather than external shareholders which pays interest on deposits and lends money to enable members to buy their own homes" (Botswana Building Society, 2018).

Machines (ATMs) and 15 statutory banks ATMs across the country (Banking Supervision report, 2016). Of the ten commercial banks, five are listed on the Botswana Stock Exchange (BSE) and the other five are unlisted.

In addition to their traditional services of accepting deposits, giving loans and offering basic investments, the commercial banks in Botswana continue to evolve and improve the range of services they offer. The new services include credit default swaps for institutional investments, offshore accounts and withdrawal of foreign currency, for example, the Rand from local ATMs.

Unlike in the past, banking sector is now relatively liberalised. There are no direct controls over product pricing, credit allocation or interest rates. Instead commercial banks determine their own interest rates. There are also technological advancements in the current banking sector, for example e-banking and cell phone banking.

2.3 International regulation

Like other countries, Botswana has adopted the Basel Accords. Basel is a set of guidelines and frameworks set by the Basel Committee on banking supervision to regulate the banking industry. The central bank of Botswana (Bank of Botswana) in consultation with the banking industry, decided to adopt Basel II and III on a phased basis commencing with a parallel run of Basel I and II in 2013-2014.In January 2016 Basel II capital framework was implemented. Banks in Botswana under the supervision of Bank of Botswana adopted a gradual approach to Basel II implementation, commencing with Pillar 1 (Simple Approaches) and Pillar 3 (disclosure requirements). The implementation of Pillar 2 and the Advanced Approaches have been deferred to a later stage. All the commercial banks have adopted the Basel II accords. Bank of Botswana opted to adopt Basel II and some selected enhancements under Basel III. Bank of Botswana adopted the definitions of capital elements (excluding buffers and leverage ratio) as set out in Basel III capital framework which focuses on common equity (Bank of Botswana Banking Supervision Annual Report,2015). The Bank stated that instead of the eight percent (8%) minimum regulatory capital requirement recommended by Basel Committee on

Banking Supervision (BCBS), they have instead retained the fifteen percent (15%) prudential minimum capital adequacy ratio applicable in Botswana since 1995.

2.4 Challenges in the sector

Though the banking sector in Botswana is sound and profitable it has its own challenges. In 2015, the commercial banks were faced with a liquidity problem. The banks did not have enough deposits, and this limited their ability to generate new loans, the deposit growth was slower than credit growth. The banks were lending to each other and the Bank of Botswana injected P2.3 billion into the sector by relaxing the Primary Reserve Requirement from 10% to 5%. “Primary reserves are the commercial banks’ deposits held in a special non-interest earning account at the Bank of Botswana, the maintenance of these deposits at the Bank contributes to the absorption of excess liquidity in the banking system” (Bank of Botswana, 2017).

2.5 Conclusion

Botswana`s banking system has evolved since exiting the Rand Monetary Area in 1974.The number of commercial banks has increased as well as banking services and products offered by banks. Botswana uses the Pula currency which is pegged to the Rand and IMF`s SDR. Like other international banks, banks in Botswana adopted the Basal accords.

CHAPTER 3:

Theoretical framework

3.1 Capital structure and theories of capital structure

Capital structure choice is among major decisions companies face. However, the debate on whether to finance using equity or debt has been ongoing for many years in corporate finance literature and it is yet to be resolved. Several researchers investigated the topic and different and sometimes opposing conclusions have been reached. Determinants of capital structure received considerable attention in finance literature, (see for example, Sheikh & Wang, 2011; Abor, 2005; Marsh, 1982; and Jong, Kabir & Nguyen, 2008). Other studies focused on firms on various sectors of the economy, like manufacturing sector (see for example, Titman & Wessels, 1988), property sector (Ooi, 1999) and electric utility companies (Modigliani & Miller, 1966). However, the subject has received limited attention in the context of banking industry (Taani, 2013). It is equally imperative to understand what determines capital structure for banks, as it is for non-banks firms.

The capital structure of a firm is the distribution of debt (short-term and long-term), preferred stock and equity the firm uses to fund its operations and capital investments (Brealey and Myers, 2003). According to Myers (2001), the theory tries to explain how firms mix securities and financing sources when financing real investments. Deciding between equity and debt is one of the most important financial decisions faced by most firms globally to maximise the wealth and interest of their shareholders (Glen & Pinto, 1994). Making nonoptimal decisions on what combination of debt and equity to employ may have negative impact on the firm's performance. However, Modigliani & Miller (1958) stated that under perfect competitive capital market conditions, firm value is not influenced by capital structure decisions. In the real-world perfect capital market conditions do not exists because of the presence of taxes, bankruptcy costs and signalling effect which leads to some optimal capital structure. As a result, there are some useful theories used to explain capital structure. The theories discussed in this study are, the pecking order framework and the trade-off theory.

3.1.1 Pecking order theory

The pecking order theory which is an alternate to Modigliani and Miller's theory, states that firms have a preferred hierarchy when it comes to financing decisions. Firstly, firms usually fund projects with profit reserves. Once the reserves are depleted, firms then finance with debt and only use equity as the last resort. According to the theory, firms work the order starting with the cheapest finance and move to more expensive finance. That is, they start with internal financing and move to external financing.

Frank & Goyal (2003), state that the pecking order is based on information costs and adverse selection issues. Information costs arise because managers know better about their firm's prospects than outside investors. The information asymmetry between the investors and management leads to higher financing costs. As a result, retained earnings are preferred first, followed by debt with lower information costs. Lastly equity due to its high information costs.

Pecking order theory therefore concludes that firms do not target a certain ratio of capital structure instead they have a preferred hierarchy (Myers, 1984). Different from the pecking order theory is the trade-off theory which suggests firms will choose a preferred capital structure. The theory is discussed below.

3.1.2 Trade-off theory

According to Frank & Goyal (2005), the trade-off theory states that the capital structure decision is based on a trade-off between the benefits and costs associated with each source of funds. The theory suggest that the firm must find a balance between marginal benefits and marginal costs of each funding method when deciding the capital structure. The trade-off theory states that earnings can be protected from high taxes using debt capital (Siddik, Kabiraj & Joghee, 2017). That is, companies will seek out levels of debt that balance the gains received from tax advantages that accrue from additional debt against the cost of possible financial distress (Myers, 2001). These costs include bankruptcy and agency costs.

3.1.3 Bankruptcy costs

Bankruptcy costs are the cost of financing with debt that is incurred when it is likely that the firm will default. As the level of debt increases, the probability of bankruptcy increases because the company might be incapable of producing sufficient profits to repay the loans and the interest on the loans (Abor, 2005). Another form of bankruptcy costs arises from other stakeholders such as suppliers, employees and customers. For example, if it is evident that the firm is about to be bankrupt, purchases on credit will no longer be allowed by suppliers. They would be concerned that the firm may default. Furthermore, employees seek employment stability, therefore, they may be less willing to work for a business that is about to go bankrupt. Additionally, customers may not purchase goods and services due to the risk that the firm may not honour the warranties. Therefore, firms with high distress costs would be motivated to lower these costs by decreasing debt financing (Amidu, 2007).

3.1.4 Agency costs

Jensen and Meckling (1976) explain agency costs as costs that arise because of the relationships between shareholders and managers and those between debt-holders and shareholders. These are the expenses incurred by the principals in monitoring their agents. Shareholders own the company while managers control it. This leads to different priorities. Managers pursue policies that suit their own interests while shareholders want them to run the company in a way that increases shareholder value (Khan, 2012).

The trade-off theory asserts that firms can use debt to reduce the agency problem between shareholders and managers or increase the percentage of shares owned by managers. However, using debt introduces another agency problem between shareholders and debtholders. Different priorities also exist between shareholders and debtholders, shareholders will prefer riskier projects to increase their benefits and prefer dividends to be paid while debtholders will prefer strategies that increase the likelihood of recovering their loans.

3.2 Profitability and theories of bank profitability

"Profitability is the degree of which a business or activity yields profits or a financial gain" (Oxford dictionary, 2018). It is an important performance indicator for investors and other stakeholders. It also indicates the success of management in converting firm resources to profits. Banks being profitable is important not only for the banks but for the economy, because banks performance affects firm expansion, capital allocation, industrial growth as well as economic development. Therefore, it is important that banks are profitable since profitability is connected to the soundness of the whole economy. When the banking sector is profitable it is better placed to endure negative economic shocks (Ally, 2014).

Most of banks' profits come from fees that it charges for its business and interest it earns on assets. Profitability can be measured by return on assets and return on equity. Return on assets (ROA) is an indicator of profitability relative to total assets. For banks, this shows bank managers efficiency in using resources or assets to generate income (Sehrish, Irshad & Khalid, 2011). A high ROA ratio is a clear indicator of banks performance or profitability. Return on equity measures the firm's ability to generate profits from the shareholders investments' in the firm. It is a measure of the effectiveness of the bank`s management in using equity to fund the bank`s operations.

The performance of banks can be influenced by external and internal factors. However, this study focuses only on internal factors. Several researchers have investigated factors that influence banks profitability for developed countries. Menicucci & Paolucci (2016) investigated determinants of banks profitability from European banking sector and Garcia & Guerreiro (2016) studied the internal and external determinants of banks' profitability for Portuguese banks. This study adds on to the existing literature by focusing on internal determinants for Botswana as a developing country. Since most of the evidence has been gathered from developed countries, the results are expected to be different for a developing country.

The study of factors that influence bank profitability is important for the success of bank management and for existing and potential investors. Compared to other sectors the banking sector has experienced major changes mostly due to technological innovations, and the unstoppable forces of globalisation have continued to create expansion opportunities as well as challenges to bank's managers to ensure their bank remain profitable and competitive (Scott & Arias, 2011). Since commercial banks are important for the growth of the economy, a study of the internal factors that influence the performance of banks could assist managers, investors, and government to plan and deal with the rising uncertainty of globalisation. Managers will use the results to improve cost efficiency, deciding on the amount of equity sufficient to absorb shocks and deciding the level of liquidity. Investors will use the information in deciding whether to invest in Botswana's banking sector.

3.2.1 The market power theories

Tregenna (2009) states that according to the Market Power theory, the market structure of the industry influences the performance of a bank. Two approaches are studied within the market power theories. The theories are the Structure-Conduct Performance (SCP) and the Relative Market Power (RMP). The SCP states that when the concentration in a banking market is high, market power rises which may lead to higher profits. This theory emphasizes that increased market power yields monopoly profits, i.e. banks affect their profits through pricing behaviour (Tregenna, 2009). The banks will set prices that favour them instead of the customer. For example, lower deposit rates and higher loan rates, thus increasing their profits by taking advantage of competitive imperfections in the market (Berger, 1995). "The relative-market- power hypothesis (RMP) asserts that only firms with large market shares and well-differentiated products are able to exercise market power in pricing these products and earn non-competitive profits" (Berger,1995:405).

3.2.2 Efficiency theory

According to the efficiency theory, banks that are more efficient than others earn more profits. Within the efficiency theory, there are two diverse approaches, those being the X-efficiency and the Scale-efficiency hypothesis. According to the X-efficiency theory, efficient firms with lower costs are more profitable (Tregenna, 2009). Prior studies argue that less costs improve the efficiency and hence increase the profitability of a bank (Bourke, 1989). The scale efficiency emphasises economies of scale rather than differences in management or production technologies. Through economies of scale larger firms can gain larger profits through lower costs. According to Athanasoglou, Delis & Staikouras (2006), larger firms tend to have larger market share hence more concentration and ultimately more profits.

3.2.3 The balanced portfolio theory

The balanced portfolio theory implies that decisions by bank management have an impact on desired portfolio composition and portfolio diversification of commercial banks. (Nzongang & Atemkeng, 2006).

3.2.4 Risk-Return trade off theory

Like other organisations banks maximise shareholder wealth, hence banks sometimes increase risk by increasing leverage and lowering equity-to-asset ratio which leads to a higher expected return. This is known as the risk-return trade off.

3.2.5 Conclusion

Capital structure and its theories were discussed. The study explores the pecking order theory by Myers (1977) which postulates that optimal capital structure does not exist and that every firm has a hierarchy for preferred financing decisions. It further focuses on the trade-off theory which presumes that firms target a certain debt ratio that balance the tax advantages of additional debt against the costs of possible financial distress (Myers, 2001).

Furthermore, the measures and theories relating to profitability were also discussed. Profitability theories discussed include the market power, the efficiency theory, the balance portfolio and the risk-return trade off. The market power states that the market structure of the industry influences bank performance, while the efficiency theory postulates that efficient banks are more profitable than the less efficient banks. Portfolio states that decisions by management influence portfolio diversification and the risk return emphasizes that banks increase expected returns by increasing leverage.

CHAPTER 4:

Literature Review

The chapter critically reviews the work of other researchers on the related topic. The chapter begins by analysing the determinants of capital structure, which were identified as profitability, tax, growth, and asset structure and bank size. Moreover, cost to income ratio, equity to total assets, bank loans to customer, loan loss reserves to gross loans and bank size are reviewed as the internal factors that influence the performance of banks. Lastly, it will conclude with the rationale for the study and contribution to literature.

4.1 Empirical evidence

4.1.1 Profitability

Several studies have been conducted on how profitability affects a firm's capital structure. Most of the studies suggest that profitability and leverage are negatively associated. This is in accordance with the pecking order theory which states that firms prefer to use internally generated funds (profitability) when available and use debt over equity when external funding is required. Supporting the pecking order theory, in the study of how firms choose their capital structures, Myers (1984) states that profitable firms will have a lower debt ratio compared to unprofitable firms with higher debt ratios. This suggests that profitability and leverage are negatively correlated because successful firms depend on internal reserves from past profits. Therefore, successful firms do not depend on external funding.

Titman & Wessels (1988) studied determinants of capital structure choice using the LISREL system and agree that highly profitable firms have lower debt ratios. Since lower debt ratio firms are profitable, they highlight that the previous profits of a firm, and hence the amount of earnings, should be a current important capital structure determinant. Chittenden, Hall & Hutchinson (1996), examined the financial structure of small firms, the firms' growth and access to capital markets by analysing 172 listed firms and 3308 unlisted firms in United Kingdom. Using ordinary least squares regression, their findings document evidence of a negative association between profitability and leverage

hence corroborating the notion that profitable firms fund projects using retained earnings.

Jong et al. (2008) studied firms from 42 countries around the world to assess how firm-specific and country-specific factors affect capital structure decision. The results show that firms use retained earnings to fund new investments before moving to debt and equity, thus suggesting a negative relationship between debt and profitability. In a more recent study of what are the reliable determinants of capital structure in China; Chang, Chen & Liao (2014) reveal the relationship between profits and leverage is negative. Further in support of the pecking order theory is Vavatu (2015) who finds a negative relationship between profitability and debt.

Contrary to the pecking order, the trade-off theory suggests a positive relationship between profits and leverage since profitable firms borrow more to get tax benefits hence shielding their income from tax. In accord with the trade-off theory, Ooi (1999) in his study of determinants of capital structure for UK property companies, states that profitable firms will use more debt because they have a low tax burden and a low bankruptcy risk. Thus, suggesting that profitability and leverage are positively correlated.

The above evidence indicated how capital structure affects profitability of firms. Focusing on how profitability affects capital structure of banks, Amidu (2007) employs panel regressions method on 19 banks for the period 1998 to 2003 to find the determinants of capital structure choice of banks in Ghana. The author categorised the leverage into short-term, long-term and total leverage before investigating the relationship with profitability and other determinants. The author finds that banks' profits have a negative relationship with total leverage and short-term debt, which means profitable banks use less leverage and short-term debt. Amidu (2007) further shows that there is a positive relationship between profitability and long-term debt of banks. This is in accordance with the trade-off theory suggesting that banks use long-term debt to shield their incomes from tax.

4.1.2 Tax

The static trade-off theory emphasizes that firms with high corporate taxes have more debt because interest on debt is an allowable deduction for tax purposes. There is conflicting evidence on how tax and leverage are correlated. Graham (1996) studied whether high tax rate firms issue more debt than low tax rate firms by considering 10000 firms for the period 1980-1992.He concludes that the decision to issue debt is not affected by taxes. MacKie-Mason (1990) investigated how tax effects affect the choice of financing between debt and equity and reports that firms with high tax shields rarely use debt to fund projects.

Concerning banks, Amidu (2007) concludes in support of the trade-off theory, that there is a positive relationship between tax and leverage. Amidu (2007) attributed the relationship to the special tax (National reconstruction levy) which the banks pay in addition to corporate tax. The high taxes provide an incentive for banks to use more debt given that interest charges are tax deductible (Amidu, 2007). Therefore, an increase in tax is linked to the increase in debt capital.

4.1.3 Growth

Growth as a capital structure determinant, received considerable attention in the literature. The pecking order theory proposes a positive association between growth and leverage. Firms are reluctant to issue equity hence use more debt to finance growth. According to the theory, firms will issue the safest security first. Therefore, firms with high growth opportunities requiring external debt will exhaust safer debt first before moving to riskier debt (Myers, 2001). Consequently, for financing needs firms would use short-term debt first since it is less secured then longer-term secured debt. In support of the theory, Chang et al. (2014) finds a positive relationship between growing China firms and leverage, indicating that growing firms use more debt. When conducting a comparative study of the trade-off and pecking order theory, Guner (2015) also finds a positive relationship between growth and leverage.

Vo (2017) is also one of the researchers who reports a positive affiliation between growth and leverage.

Smith & Watts (1992) and Rajan & Zingales (1995) suggest precisely the opposite. Firms expecting high future growth use a greater amount of equity finance, hence use less debt. To emphasize Jong et al. (2008) states that to lessen agency conflicts between stockholders and bondholders, firms with growing opportunities finance new projects with equity instead of debt. This evidence suggests an inverse affiliation between growth opportunities and leverage.

When investigating what determines capital structure for manufacturing firms in Pakistan, Sheikh & Wang (2011) found an insignificant connection between growth opportunities and leverage.

For banks, Amidu (2007) concludes that there is a positive association between bank growth and total leverage. The results are the same for short-term debt and growth. Concerning long-term debt, Amidu (2007) found a negative relationship with leverage. The evidence supports the pecking order theory that securities with lower information costs should be issued before securities with higher information costs. As a result, because short-term debt is less secured than long-term debt, growing banks use short-term debt first before moving to long-term debt to finance growth.

4.1.4 Asset structure

"Asset structure is the proportions of several types of asset held by a firm as shown in the balance sheet. A firm's asset structure helps to determine the way in which finance is raised, the balance of long term loans and short-term debt" (Pass, Lowes, Pendleton, Chadwick, O`Reilly & Afferson, 2005:30).

The trade-off theory states that companies with tangible assets and stable cash flows tend to borrow more than companies with growth opportunities, more current assets and that are least profitable. This is because tangible assets can be collateralized and are less likely to lose value in financial distress. Most empirical evidence reveal that fixed assets and leverage are positively related. Myers (1977) assesses determinants of corporate borrowing and concludes that

leverage is positively related with a firm's assets and that tangible assets should be financed by more debt than growth opportunities. Moreover, Marsh (1982) focused on how UK companies select between financing instruments at a given point in time for the period 1959 and 1974. Using a descriptive model of the choice between equity and long-term debt, the authors find that companies with high proportions of fixed assets lean towards using more long-term debt. In the study of the determinants of capital structure for Chinese listed companies, Chen (2004) used fixed effects model and the results show positive affiliation between asset structure and leverage indicating that fixed assets are used as security for debt. Other researchers who found a positive affiliation between fixed assets and leverage include Kayo & Kimura (2011) and Vo (2017).

Contary to the above evidence is Serghiescu & Vaidean (2014) who found that in Romania a negative correlation exists between asset structure and leverage because a higher level of fixed assets does not guarantee creditors payment in case of default.

Amidu (2007), shows a positive affiliation between fixed assets and banks long-term debt suggesting that creditors consider having a larger proportion of fixed tangible assets as guarantee that they will recover their funds in case of default. Amidu (2007), also reports a negative association between fixed assets and leverage and short-term debt.

4.1.5 Size

Size is one of the variables that has been studied in determinants of capital structure of a firm. The pecking order suggests that the relationship between size and leverage is negative because firms deplete short-term debt before long-term debt. Marsh (1982), argues that because small companies face flotation costs and problems of access to capital markets they tend to rely more on bank loans. In addition, Titman & Wessels (1988) state that the cost of issuing debt and equity securities depends on firm size. Unlike large firms, small firms pay more to issue new equity and even much more to issue long-term debt. This evidence suggests that compared to large firms, small firms have more debt hence negative connection between debt and firm size. More

recently, Chen (2004) found a negative association between long-term debt and size and concluded that larger firms have better access to capital markets. Likewise, when studying determinants of capital structure for Turkey, Guner (2015) finds that size and leverage are negatively related.

Contrary to the above findings, the trade-off theory suggests that larger firms are highly levered than smaller firms because larger firms do not have the information asymmetry problem and have less risk of insolvency. Consistent with the trade-off theory, Smith & Warner (1979) and Ang & McConnel (1982) also report that large firms use more debt than small firms because they are less prone to bankruptcy. In addition, when investigating the capital structure of G7 countries, Rajan & Zingales (1995) show that larger firms should borrow more because they tend to be more diversified and have a lower probability of default. Lending to small firms is riskier because of probability of insolvency. Furthermore, Sheikh & Wang (2011) report that the cost of debt is lower for large firms because larger firms have lower monitoring costs and it is easier for them to access capital markets. The arguments suggest a positive affiliation between size and leverage. Kayo & Kimura (2011), Serghiescu & Vaidean (2014), and Vo (2017) are among the researchers who find positive correlation between size and leverage.

When studying the relationship between bank size and leverage Amidu (2007), finds a positive relationship between leverage and size, meaning the larger the bank the more debt it will use. This evidence supports the trade-off theory. Furthermore, Amidu (2007) observes a negative connection between bank size and long-term debt, concluding that smaller banks depend on long term debt when funding projects.

Based on the review of the determinants of the capital structure, this study hypothesizes that;

H1: Profitability has a negative effect on leverage.

H2: Tax has a positive effect on leverage.

H3: Growth and total leverage are positively related.

H4: Asset structure has a positive effect on leverage.

H5: Bank size has a negative effect on leverage.

The next part of the literature review will review internal factors that influence the performance of banks.

4.2 Factors that influence bank performance

Determinants of banks performance can be divided in two key groups; internal determinants and the external determinants. The internal determinants of banks performance are based on the efficiency, the balanced portfolio and the risk-return trade off theories while the external determinants are based on the market power theory. Kosmidou (2008:5), states that "the internal determinants are those factors that are influenced by the bank's management decisions and policy objectives". For example, liquidity, loans and investments in securities, while external determinants are those factors that are influenced by the economic and industry conditions for example interest rates, inflation rate, market growth and market share. Contrary to the studies of Molyneux & Thornton (1992), Athanasoglou, Brissimis & Delis (2008) and Dietrich & Wanzenried (2011) which examined internal and external determinants of commercial banks' profitability, this study identifies the internal determinants of banks performance only.

The internal determinants considered for this study are cost to income ratio, equity to total assets, bank loans to customer, loan loss reserves to gross income and bank total assets.

4.2.1 Cost to income ratio

The costs of running a bank (staff costs, administration costs and property costs) as a percentage of income are used to measure the cost to income ratio (Curak, Poposki & Pepur, 2012). The ratio gives a view of how efficiently the bank is being run, given that improved management of expenses leads to improved efficiency and eventually higher profits. Consequently, there is

an inverse relationship between cost to income ratio and profitability of a bank. Even though the connection between costs and profits suggest that lower costs results in higher profits and the opposite, this may not always be true. “The reason is that higher costs may be associated with higher volumes of banking activities and therefore higher revenues” (Kosmidou, 2008:5).

Kosmidou (2008) investigated the determinants of banks’ profits in Greece during the period of EU integration (1990-2002) using unbalanced pooled time series dataset of 23 banks. The study show that poor expenses management is one of the main contributors to poor profitability of banks. Therefore, the finding is consistent with literature that higher costs result in lower profits and that efficiency affects profitability. Athanasoglou et al. (2008) applied the generalized methods of moments (GMM) technique to a panel of Greek banks for the period 1985 to 2001.The author’s show operating expenses to be a crucial factor that influences profit. Moreover, Curak et al. (2012) studied 16 banks in Macedonia for the period 2005 to 2010 using the GMM panel estimator. The results show a negative association between operating expenses and profitability. Furthermore, consistent with the literature is the finding of Dietrich & Wanzenried (2014). They investigated the determinants of commercial banking profits in low, middle and high-income countries and revealed that in all these countries cost to income ratio is negatively associated to profitability. In addition, Petria, Capraru & Ihnatov (2015) examined determinants of banking profitability from EU 27 banking systems and reveal negative correlation between cost to income and return on assets. Garcia & Guerreiro (2016) also show that cost to income ratio has a negative affiliation with profitability, concluding that cost management is the way to improve banks’ profits around the world. All the literature reviewed indicated a negative relationship between cost to income ratio and profitability.

4.2.2 Equity to total assets

Ratio of equity to total assets is calculated by dividing total equity by total assets of the bank. For banks, the ratio will be used as a measure of capital adequacy. Capital adequacy refers to whether there is adequate equity to cushion the bank from shocks such as insolvency. A high equity to total assets ratio means that the firm is mostly owned by its shareholders while a low ratio means the firm is burdened with high debts. In addition, a high equity to total assets ratio indicates lower insolvency risk, increasing a bank's creditworthiness thus reducing costs of funding. This ratio is of concern to investors. It is anticipated that banks with high capital adequacy have less need for external funding which makes them more profitability than banks with less capital adequacy (Kosmidou, 2008).

Empirical evidence on ratio for equity to total assets points to a positive relationship between the ratio and profitability. Berger (1995), used 30 cross-sections of data to test the Market-Power and Efficient-Structure hypotheses in banking. The results show that the relationship between capital adequacy and earnings is positive. In addition, Kosmidou (2008) finds that the relationship between equity to assets ratio and the bank's performance is positive, implying that well capitalised banks face a lower risk of going bankrupt which reduces their cost of funding. Athanasoglou et al. (2008) and Garcia-Herrero, Gavila & Santabarbara (2009) also show that with a sound capital adequacy ratio, banks can pursue business opportunities thus improving their profits and at the same time having the means and flexibility to deal with unexpected losses. Furthermore, Dietrich & Wanzenried (2014) reveal a positive affiliation in high-income countries and no evidence for middle and low-income countries. Capraru & Ihnatov (2014), Albulescu (2015) and Petria et al. (2015) are among researchers who report a positive connection between equity to total assets and profitability. In the case of Portugal banks, Garcia & Guerreiro (2016), report that the relationship between ratio of equity to total assets and profitability is positive. The result confirm that the more capitalised banks are, the profitable they become.

4.2.3 Bank loans to customer deposits

Bank loans to customer ratio is used to assess the bank's liquidity. It is the ratio of total bank loans divided by customer's deposits plus any short-term funding (Kosmidou, 2008). The higher the ratio the lower the liquidity, the higher the profitability and vice versa. If the ratio decreases then banks are granting more loans without increasing deposits or they use less deposits to grant loans, decreasing performance. Lower liquidity will result in a bank not being able to meet unforeseen fund requirements. To prevent this, banks often hold liquid assets which can be easily converted into cash. However, holding liquid assets results in the limited investment opportunities. Therefore, high liquidity is associated with lower profitability.

Kosmidou (2008) finds that the relationship between liquidity and profitability is negative. Other researchers who report a negative association between liquidity and profitability include Curak et al. (2012) and Petria et al. (2015).

On the contrary, Bourke (1989) analysed concentration and other determinants of bank profitability in Europe, North America and Australia for the period 1972 to 1981. The results show that the relationship between liquidity and bank profitability is positive. The results were less expected as conventional wisdom is that liquidity holdings result in lower profitability. Further, Albulescu (2015) used fixed effects approach to study banks profitability indicators and finds positive affiliation between liquidity and profitability. Capraru & Ihnatov (2014) are the only researchers who did not find evidence of any connection between liquidity and profitability.

4.2.4 Loan loss reserves to gross loans

Loan loss reserves is the money kept in a separate account to cover possible losses when borrowers are unable to pay back their loans. The loan loss reserve account does not count as revenue, and, thus, does not contribute to profits. "Loan loss reserves to gross loans is the ratio of loan loss reserves to gross loans. It indicates how much of the total portfolio has been provided for but not charged off and is used as a measure of bank's asset quality and risk" (Kosmidou, 2008:8). If the loan loss reserves to gross loans ratio is high it means the loan portfolio is risky and of poor quality (Kosmidou, 2008).

Empirical evidence on loan loss reserves to gross loans revealed a negative connection between loan loss reserves to gross loans and profitability. Kosmidou (2008) found a negative connection between loan loss reserves to loans on performance. In their analysis of determinants of bank profitability, Menicucci & Paolucci (2016) analysed ratio of loan loss provisions to total loans to measure the effect of a bank's asset quality on profitability and as an indicator of credit risk. The authors report that loan loss provisions have a significant negative impact on banks' profitability. Furthermore, in the study of internal and external determinants of banks' profitability for Portugal Garcia & Guerreiro (2016), find that the ratio of loan loss provisions over total loans which is a measure of credit quality of banks is negatively related to profitability.

4.2.5 Bank size

Bank size is measured by the bank's total assets. Bank size is regarded a crucial factor of profitability because of economies of scale. Increasing bank size can increase profitability by allowing banks to realise economies of scale, for example a bank can spread fixed costs over a greater asset base. Larger banks have market power through their strong brands and have diversified products and loans. However, large banks may also experience bureaucracy and rigidities which may lower performance.

The association between bank size and profitability has been examined extensively in prior studies and evidence in these studies show mixed results. Some studies that found a positive relationship between size and profitability argued that the positive relationship could be attributed to the fact that large banks are profitable, have economies of scale and are more efficient than small banks (Berger & Humphrey, 1997, Altunbas, Gardener, Molyneux & Moore, 2001) while others attributed that relationship to larger banks' ability to generate higher returns on assets and equity than small banks (Petria et al. 2015, Menicucci & Paolucci 2016).

Contrary to the above findings, other studies found a negative relationship between bank size and profitability (Spathis et al, 2002, Pasiouras & Kosmidou

2007, Kosmidou, 2008 Capraru & Inhatov, 2014,), hence leading some authors to argue that small banks have economies of scale while large banks have diseconomies of scale (see for example, Athanaslogue et al, 2008, Curak et al, 2012, Dietrich & Wanzenreid, 2014).

Following the above review of the internal determinants of banks' profitability, this study hypothesizes that;

H6: The relationship between cost to income and profitability is negative.

H7: Ratio equity to assets has positive relationship with profitability.

H8: There is an inverse relationship between liquidity and profitability.

H9: There is an inverse relationship between loan loss reserves to gross loans and profitability.

H10: There is a positive relationship between size and bank profitability.

Research Rationale

The decision of how a bank will be financed i.e. combination of debt and equity is a major decision. If financing is done by employing the wrong combination between debt and equity the bank's performance may be negatively affected. Thus, to maximise the bank's value, managers need to carefully consider capital structure decisions (Siddik et al., 2017). Sometimes, banks increase profits by using too much leverage, which helped precipitate the credit crisis that occurred in 2007 to 2009.Therefore, it is crucial that banks employ the right leverage.

A lot of literature focuses on determinants of firm's capital structure, however there is limited literature on determinants of capital structure for commercial banks. Realising the importance of capital structure of banks, the study aims to add onto existing literature on banks' capital structures. Further, studies have been done in Europe on determinants of banks' profits, but there is dearth in literature on determinants of banks' profits for developing countries. This study

extends the literature by investigating internal factors that influence performance of commercial banks for a developing country i.e. Botswana.

Finale Chapter Remarks

The purpose of the review was to study determinants of capital structure based on theories of capital structure. Determinants of capital structure explored by the study are profitability, tax, growth, asset structure and size. The research also investigates cost to income ratio, equity to total assets, bank loans to customer, loan loss reserves to gross loans and bank size as the factors that influence profitability. It is clear from the literature reviewed that profitable firms have lower leverage since they use retained earnings to fund projects. Furthermore, the literature revealed that tax increases with leverage to shield income from taxes. Concerning growth, growing firms use more debt because of the reluctance to issue equity. In addition, studies showed that fixed assets are used as security for debt and that larger firms have more debt compared to smaller firms due to that larger firms are less risky hence less likely to go bankrupt. Moreover, it is evident from the literature that management of expenses leads to better profits and that well capitalised banks have means to pursue other businesses. Even though holding liquid assets results in firms being able to meet unforeseen circumstances, it has the opportunity cost of limited investment return. Conclusions on whether there are economies of scale for larger firms differ.

CHAPTER 5:

Research Methodology

This chapter discusses the data and the research methodology used to investigate the determinants of capital structure and internal factors that influence performance. Section 3.1 of the chapter details the data and the data sources used in the study, research methodology is discussed in Section 3.2.

5.1 Sample selection and data sources

This study uses secondary data sourced from the Bank of Botswana. It uses monthly data for all licensed commercial banks in Botswana for the period 2012 to 2016. The main sources of data are the Botswana Financial Statistics reports which are published by the Bank of Botswana .However, this study considers the number of reports published in each year, while also paying attention to the fact that the total number of reports for each year considered will differ depending on whether new commercial banks were licensed in each of the subsequent years under consideration. This means the number of reports considered is not the same for all the years, but that it will be different depending on whether there were new banks licensed in each of the subsequent years considered for this study (refer to figure A1 in the appendix).

The data was collected and sorted into time series dataset. “Time series data is a collection of observations of well-defined data items obtained through repeated measurements over time” (Baltagi, 2005:50). For example, in this research the variables data are obtained monthly for the period 2012 to 2016.

5.2 Research models and measurement of variables

This study is divided into two main parts. Part one examines the determinants of capital structure whereas part two examines the impact of internal factors on bank profitability. Part one is sub divided into three sections and each section examines the relationship between a dependant variable that represents capital structure and a selected list of independent variables. In

total there are three models that are examined for part one. This is explained in greater detail under section 5.2.1.Part two examines the impact of a selected list of internal factors on bank profitability. This analysis is done at one level, thus there is only one model considered for part two. More detail about this is provided under section 5.3.

To begin the next sub section presents the models to be used to explain the determinants of capital structure.

5.3 Determinants of capital structure

This is consistent with the argument by Myers (1984) that all variables are measured using book values instead of market values, since book values reflect assets in place.

5.3.1 Dependent variables

Following Amidu (2007) the dependant variables are short-term leverage, long-term leverage and total leverage.

Short term debt is debt (deposits and current accounts) that must be repaid within 12 months.

Long term debt is the bank's total debt payable for a period exceeding 12 months.

The dependent variables are calculated as follows:

Short term debt ratio **(STD) -** total short-term debt divided by total capital.

Long term debt ratio **(LTD)** - total long-term debt divided by total capital.

Total leverage **(LEV)-**Total debt divided by total Capital.

5.3.2 Independent variables

Consistent with prior students, the independent variables considered for this section are profitability, tax, growth, asset structure and size of the bank. These variables are measured as follows:

Profitability **(PRE)-**pre-tax profits divided by total Assets.

Tax **(TAX) –**total tax divided by profit after taxation.

Growth (**GRW**)-percentage change in total assets.

Asset Structure **(AST)-** fixed assets divided by total assets.

Size **(SZE)-**log of bank total assets.

Therefore, the three models for this part are presented below:

$$LEV = \beta_o + \beta_1 PRE + \beta_2 TAX_i + \beta_3 GRW + \beta_4 AST + \beta_5 SZE + \hat{e} \quad (1)$$

$$STD = \beta_o + \beta_1 PRE + \beta_2 TAX + \beta_3 GRW + \beta_4 AST + \beta_5 SZE + \hat{e} \quad (2)$$

$$LTD = \beta_o + \beta_1 PRE + \beta_2 TAX + \beta_3 GRW + \beta_4 AST + \beta_5 SZE_i + \hat{e} \quad (3)$$

In addition to the above models, the next sub section presents the models considered for part two of this study, that is, models relating to an examination of the effect of internal factors on bank profitability.

5.4 Internal Factors that influence the performance of commercial banks

The model for this part of the analysis has one dependent variable, which is profitability which is presented by return on Assets (ROA) and a selected list of independent variables. Each of the variables considered is explained in detail in the ensuing sub sections.

5.4.1 Dependant variable

The measure of banks' performance (dependent variable) used to test the relationship between banks performance and internal factors is Return on total assets of the banks (ROA). ROA measures how efficiently management converts investment to profits, it is expressed as a percentage.

ROA-net profit after tax divided by total assets.

5.4.2 Independent variables

In testing the relationship between banks performance and internal factors, this study includes four independent variables that account for Bank characteristics. The variables are explained below:

CST-Cost to Income ratio.

EQAS-ratio of equity to total assets.

LODEP-total banks loans to customers' deposits.

SIZE-Log of banks total assets.

Therefore, the model for this part is presented as below:

$$ROA = \beta_o + \beta_1 CST + \beta_2 EQAS + \beta_3 LODEP + \beta_4 SZE + \hat{e} \quad (4)$$

5.5 Methodology

The three research methods possible are qualitative, mixed and quantitative research methods. Qualitative method uses non-numeric data. The data has not been quantified and examples include questionnaires, interviews, observations and focus groups (Saunders, Lewis & Thornhill, 2009). The advantages of qualitative approach include, the collection of data can be real time e.g. interviews and observations. Further, questions are not limited, and it is flexible. On the other hand, qualitative data is easily influenced by the researcher`s personal bias (Saunders et al., 2009). Further, data analysis and interpretation are time consuming and difficult to present in visuals like graphs. Moreover, qualitative methodology might not generalize, and it is difficult to test hypotheses and theories generated.

Mixed research methods combine collection and analysis of qualitative and quantitative data. Mixed method provides more useful information since the shortcomings in one method can be met by the other method. However, mixing methods can be time consuming and expensive.

Quantitative research uses numeric data that is analysed through numeric comparisons and statistical inferences. Further, quantitative approach examines connection among variables, with the quantitative approach the researcher begins with a hypothesis or theory and performs tests to affirm or

reject the hypothesis (Benz & Newman, 1998). The advantages of quantitative approach include data collection is fast and data can be analysed quickly. Further with quantitative approach one can generalize the findings (Saunders et al., 2009).

The study adopts quantitative research method because the researcher seeks to confirm hypotheses and is seeking relationships among variables. Analysis of data uses descriptive statistics and regression models to find the association between leverage and bank characteristics that are potential determinants of capital structure and the relationship between internal factors and the performance of banks. Descriptive statistics are statistics that will quantitatively summarise features of the data.

The model for the study employs multiple regressions method. With multiple regressions the relationship between more than one independent variables and the dependant variable are analysed.

Multiple regression general equation is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_{2+\ldots.} B_n X_{n+} u, \quad (5)$$

where:

Y dependent variable

β_i the constant or intercept term

X_i *set* of independent variables

u the error or disturbance term.

Summary

The study uses quantitative and descriptive statistics to answer the research questions. Time series data obtained for the period 2012 to 2016 is regressed using multiple linear regression and statistical software package Statistical Package for Social Sciences (SPSS) is used to tabulate, analyse and interpret the data. Chapter 4 follows with preliminary analysis of data and results of the model.

CHAPTER 6:

Data Analysis and research results

6.1 Descriptive statistics and tests for multicollinearity, independence of observations and normality

The study uses multiple regression analysis models to examine the determinants of capital structure and the impact of the internal bank factors on profitability. Therefore, before running the various regressions, various tests were conducted. First, the descriptive statistics for the determinants of capital structure and internal factors are presented as Panel A and Panel B, with Panel A representing the descriptive statistics of the determinants of capital structure while Panel B represents the descriptive statistics of internal factors that affect bank profitability.

6.2 Descriptive statistics

Table 6.2.1: Descriptive statistics for dependent and independent variables

Panel A: ***Determinants of capital structure***

Variable	Mean	Median	Minimum	Maximum	Standard Deviation
STD	0.8149	0.8161	0.7871	0.8434	0.0152
LTD	0.0766	0.0738	0.0549	0.1006	0.0131
LEV	0.8915	0.8909	0.8828	0.9035	0.0047
PRE	0.0250	0.0250	-0.0789	0.0988	0.0192
TAX	0.3092	0.2892	0.3527	0.7980	0.1042
GRW	0.7740	0.8342	-6.3613	11.8338	2.5781
AST	0.0121	0.0122	0.0092	0.01448	0.0015
SZE	4.8228	4.8213	4.7182	4.9083	0.0599

Panel B: ***Internal factors that affect bank profitability***

Variable	Mean	Median	Minimum	Maximum	Standard Deviation
ROA	0.1913	0.1896	0.0610	0.3565	0.0710
CST	0.6489	0.6407	0.5507	0.7958	0.0620
EQAS	0.1085	0.1091	0.0965	0.1172	0.0046
LODEP	0.7767	0.7956	0.6329	0.8762	0.0583
SZE	4.8228	4.8213	4.7182	4.9083	0.0600

Panel A above shows that bulk of debt is short term loans. This shows that commercial banks in Botswana, on average finance their operations with short term debt. The short-term leverage which was represented by the ratio short-term debt to total capital shows a mean of 0.8149.The mean reveals that 81.5% of capital was short-term debt for commercial banks in Botswana. The maximum short-term debt ratio was 78.7% and the minimum 84.3%. The standard deviation shows that the short-term ratio can deviate from the mean by 1.52%.

The long-term debt measured by long-term debt to capital represents 7.7% of the capital, with the highest long-term ratio at 10.1% and a low of 5.5 %.The value of the long-term debt can deviate from the mean on both sides by 1.31%.Similarly the leverage (total debt to total capital) has a mean of 89.2%, indicating that 89.2 % of banks in Botswana are financed by debt. The maximum and minimum values of the leverage are 90.4% and 88.3% respectively. Leverage can deviate from the mean by 0.47%.

Furthermore, descriptive statistics show that the mean value of profitability (measured by pre-tax profits to total assets) for the period understudy was 2.5%. The maximum value for profitability for the study period was 9.88% and

the minimum of -7.89%. Tax on average was 30.9%. The highest tax was 79.8% and the minimum of 35.3%. The mean growth (measured by percentage change in total assets) for the period was 77.4 %. This indicates that growth in total assets during the 5-year period was 77.4%. The maximum for growth was 11.8 % with a minimum of -6.4%. The standard deviation for the growth variable for the period was 2.57%.

Asset structure (fixed assets to total assets) had a mean of 1.2%. This shows that fixed assets constitute 1.2% of total assets of banks for the period under investigation. The maximum value for asset structure is 1.4% and the minimum is 0.92%. Asset structure can deviate by 0.15%. Finally, the size (measured as log of total assets) had a mean value of 4.8, the minimum and maximum values of 4.718 and 4.908 respectively and a standard deviation of 5.99%.

Panel B above, the mean ROA (measured by net profit after tax to total assets) is 19.1%. This means that for the period under study commercial banks of Botswana earned on average a return on assets of 19.1% with highest value of 35.7% and lowest value of 6.1% and standard deviation at 7.1%. The findings indicate the average of cost to income ratio as 64.9% with maximum and minimum values of 79.6% and 55.1% respectively. EQAS (measured as the ratio of equity to total assets) had a mean of 10.8% a minimum of 9.65%and maximum of 11.7%.

The ratio of bank loans to customer deposits (LODEP) which represents liquidity had a mean of 77.67%. The result show that on average loans represents 77.67% of commercial banks' bank deposits in Botswana. The minimum and maximum values for LODEP for the period were 63.29% and 87.62% respectively while the standard deviation was 6%. Size as the natural logarithm of assets average is 4.8, and the maximum is 4.9 with 4.7 minimum.

6.3 Tests for multicollinearity, independence of observations and normality

To ensure that the results of the analysis are valid and reliable, the study tests assumptions of multiple regression before running the regression. These

assumptions include multicollinearity, independence of observations, normality and linearity.

6.3.1 Test for Multicollinearity

Multicollinearity refers to whether independent variables are highly correlated with each other resulting in a high standard error of the coefficients that is the independent variables are not just correlated to the dependent variable but each other (Blalock, 1963). The intercorrelations between independent variables makes it difficult to distinguish what each independent variable contributed independently on the dependent variable. To test for multicollinearity the Tolerance and the Variance Inflation Factor (VIF) can be used. The tolerance measures the strength of the linear relationships among the independent variables. "A small tolerance value indicates that the dependent variable is a linear combination of the independent variables in the equation" (Chan, 2004:5). The Variance Inflation Factor (VIF) which is a reciprocal of tolerance measures the impact of collinearity among the variables in a regression model. According to Chan (2004), when the VIF value exceed 5 it is regarded as indicating multicollinearity.

The independent variables are tested for multicollinearity and if there is a high correlation among the variables i.e. VIF of more than 5, then the independent variable with the highest VIF is removed from the regression and the test for multicollinearity is repeated. The process will be repeated until all the VIF's are 5 or less.

The regressions for testing multicollinearity are as follows:

Determinants of capital structure

$$PRE = \beta_o + \beta_1 TAX + \beta_2 GRW + \beta_3 AST + \beta_4 SZE + u \quad (6)$$

$$TAX = \beta_o + \beta_1 PRE + \beta_2 GRW + \beta_3 AST + \beta_4 SZE + u \quad (7)$$

$$GRW = \beta_o + \beta_1 PRE + \beta_2 TAX + \beta_3 AST + \beta_4 SZE + u \quad (8)$$

$$AST = \beta_o + \beta_1 PRE + \beta_2 TAX + \beta_3 GRW + \beta_4 SZE + u \quad (9)$$

$$SZE = \beta_o + \beta_1 PRE + \beta_2 TAX + \beta_3 GRW + \beta_4 AST + u \quad (10)$$

Internal determinants of bank performance

$$EQAS = \beta_o + \beta_1 CST + \beta_2 LODEP + \beta_3 LORES + \beta_4 SZE + u \quad (12)$$

$$LODEP = \beta_o + \beta_1 CST + \beta_2 EQAS + \beta_3 LORES + \beta_4 SZE + u \quad (13)$$

$$LORES = \beta_o + \beta_1 CST + \beta_2 EQAS + \beta_3 LODEP + \beta_4 SZE + u \quad (14)$$

$$SZE = \beta_o + \beta_1 CST + \beta_2 EQAS + \beta_3 LODEP + \beta_4 LORES + u \quad (15)$$

Table 6.3.1: Tolerance and VIF values for multicollinearity

Variable	**Tolerance**	**VIF**
Tax	0.903	1.107
GRW	0.978	1.022
AST	0.905	1.105
SZE	0.342	2.926
PRE	0.307	3.259
CST	0.503	1.990
EQAS	0.313	3.196
LODEP	0.193	5.192
SZE	0.147	5.255
LORES	0.190	6.819

To test whether multicollinearity exists the Variance Inflation Factors (VIF) in Table 6.3.1 are calculated. Three variables LODEP, SZE and LORES have VIF values that are more than 5. As a result, LORES being the variable with the highest VIF value of 6.819 is removed from the regression and the test for multicollinearity is repeated. A more statistically stable Table 6.3.2 is obtained.

Table 6.3.2: More statistically stable Tolerance and VIF values for multicollinearity

Variable	Tolerance	VIF
Tax	0.903	1.107
GRW	0.978	1.022
AST	0.905	1.105
SZE	0.342	2.926
PRE	0.307	3.259
CST	0.540	1.852
EQAS	0.349	2.865
LODEP	0.210	4.767
SZE	0.383	2.611

Table 6.3.2 indicates that there is correlation among the variables. The VIF values are all under 5 hence not large enough to skew the regression results.

6.3.2 Test for independence of observations

Independence of observations means that there are no underlying relationships among the residuals (error terms), that is the occurrence of one event does not affect the occurrence of the other. The independence assumption can be tested using the Durbin-Watson test. The test is especially relevant in time series data since the data is sequenced by time. The Durbin-Watson statistic ranges in value from 0 to 4. When autocorrelation does not exist, the value is close to 2 while a value toward 0 indicates positive autocorrelation and a value toward 4 indicates negative autocorrelation (Durbin & Watson, 1951).

Independence of observations

Table 6.3.3: Durbin-Watson test for independence of observations

Model	R	R Square	Adjusted R square	Std. Error of the Estimate	Durbin-Watson
1	0.596	0.355	0.295	0.0039	0.880
2	0.883	0.780	0.760	0.0346	1.875

From Table 6.3.3 model 1 is the determinants of capital structure with predictors being GRW, TAX, AST, SZE, PRE and the dependent variable being the LEV. The Durbin-Watson is 0.880 thus it is inconclusive.

Model 2 is the internal factors that influence performance with the following independent variables, SZE, EQAS, CST, LODEP and the dependent variable being the ROA. Auto-correlation among the residuals does not exist as the Durbin-Watson value is 1.875 which is close to 2. Consequently, the independence among residuals have been proved.

6.3.3 Test for normality

Normality refers to whether the residuals of the distribution follow a normal distribution. The assumption is tested by visual and statistical methods. With the visual method the normal Probability-Probability (PP) plots and the normal Quantile-Quantile (Q-Q) plots can be visually checked for normal distribution. Statistical tests include Shapiro Wilk test which is better suited for small sample sizes. The null hypothesis for the Shapiro Wilk test is that the data are normally distributed. If the p-value is less than 0.05, then the null hypothesis is rejected. If the p-value is greater than 0.05, then the null hypothesis is not rejected (Ghasemi & Zahediasl, 2012).

Linearity means that the independent variables in the regression have a straight-line relationship with the dependant variable (Darlington, 1968). Linearity can be checked graphically with scatterplots.

Normality

Table 6.3.4: Shapiro-Wilk test for normality

Variable	**Shapiro-Wilk statistic**	**Degrees of freedom**	**p-value**
Residuals (Model 1)	0.988	60	0.811
Residuals (Model 2)	0.964	60	0.077

From Table 6.3.4 the first p-value of 0.811 is greater than p>0.05. The null hypothesis (data are normally distributed) is not rejected, the data is normally distributed for model 1 (determinants of capital structure).

For model 2 (internal determinants of banks performance) the p-value is 0.077 which is also greater than 0.05 so the data is normally distributed. Further visual inspection of the normal P-P plots (figures A2 & A3 in the appendix) also revealed that the data is normally distributed. Therefore, assumption of normality has been evidenced.

Linearity

Visual inspection of the scatterplots revealed a straight-line relationship between the leverage and the independent variables. The scatterplot also revealed a straight-line relationship between return on assets and the

independent variables. The linearity assumption has been verified. The scatter plots for determinants of capital and factors that influence performance are shown in Figures A4 and A5 in the Appendix.

6.4 Regression results

Regression results are divided into main parts. Part 6.4.1 discusses the results on the determinants of capital structure whereas part 6.4.2 discusses results based on internal factors of bank profitability.

6.4.1 Results on the determinants of capital structure.

There are three models and the results for each model will be discussed separately below.

6.4.1.1 Results based on Model 1

Table 6.4.1: Multiple regression results measured by LEV

$LEV = \beta_o + \beta_1 PRE + \beta_2 TAX_i + \beta_3 GRW + \beta_4 AST + \beta_5 SZE + \hat{e}$

Explanatory variables:	**Coefficient**	**t-statistic***	**p-value**
PRE	-0.681	-2.177	0.032
TAX	-0.011	-0.097	0.923
GRW	0.221	1.997	0.051
AST	-0.466	-4.057	0.000
SIZE	-0.445	-2.382	0.021
R^2	0.455		
Adjusted R^2	0.434		
F-statistic	5.943		
p-value(F-statistic)	0.000		

Table 6.4.1 independent variables explain 43.4% of the change in the dependent variable (leverage).

The results of the regression between the dependent variable (leverage) and the five independent variables are reported in Table 6.4.1 The results show a negative and statistically-significant relationship between leverage and profitability with coefficient value of (-0.681), t statistic of (-2.177) and p-value of (0.032). Thus, Botswana banks use less debt as profits increase. The results support hypothesis that profitability has a negative effect on leverage. The finding is consistent with the pecking order theory which states that profitable firms prefer to finance their investments with internal sources (retained earnings) and do not need to rely on debt. The results are also consistent with previous studies of Chittenden et al. (1996), Titman & Wessels (1998), Jong et al. (2008), Sakim & Yadav (2012), Chang et al. (2014) and Vavatu (2015) who empirically proved that higher profits increase financing from internal sources. Amidu (2007), also found a negative connection between banks profitability and leverage.

For tax, the coefficient value is (-0.011), t-statistic value of (-0.097) and p-value of (0.923). There is no evidence of tax influencing leverage as the relationship is not statistically significant. Furthermore, the finding is also contrary to the static trade-off theory which states that there are tax benefits of debt. The results of the study are consistent with the results is Titman &Wessels (1988) who found no support of an effect on debt ratios arising from tax. However, they are contrary to those of Amidu (2007) who found a positive association between tax and leverage. Amidu (2007) attributed the positive relationship to the extra tax on top of corporate taxes that is levied to banks in Ghana. Botswana banks do not pay extra taxes, and as such, do not have any incentive to use more debt capital. Based on the traditional capital structure theory on tax shield, the tax shield provided by the tax deductibility of interest would have lowered the cost of debt for the banks thus providing an incentive to use more debt capital.

The results show that there is a positive relationship between leverage and growth at 10% significance level. Therefore, based on this finding it could be concluded that commercial banks in Botswana use debt as growth opportunities become available. This finding is consistent with Chang et al. (2014), Guner (2015) and Vo (2017), who empirically proved a positive relation between growth opportunities and leverage respectively.

The table shows a negative and statistically-significant relationship between asset structure and leverage, with coefficient (-0.466), t-statistic (-4.057) and p-value (0.000). The finding of a positive relationship between asset structure and leverage is contrary to the trade-off theory which suggests that firms with more fixed assets can borrow against those assets. The results indicate that for Botswana banks, higher level of fixed assets does not guarantee creditors their payment in case of default. This is consistent with Serghiescu & Vaidean (2014) who documented same results. The result is also consistent with Amidu (2007) who found a negative relationship between operating assets and leverage.

The regression analysis displays a statistically significant and negative association between size and leverage with coefficient value of (-0.445), t-statistic of (-2.382) and p-value of (0.021). This accepts hypothesis 5 of which there is a negative relationship between size and leverage. The results indicate that large banks do not rely on debt. This in line with the pecking order theory which implies an inverse relation between size of a firm and leverage. However, the trade-off theory which suggest larger firms are highly levered is contradicted. The finding of this study is consistent with Marsh (1982), Titman & Wessels (1988) and Guner (2015), who found that small firms pay much more than large firms to issue long-term debt thus small firms may be more leveraged than large firms, hence negative affiliation between debt and firm size.

6.4.1.2 Results based on Model 2

Table 6.4.2: Multiple regression results measured by STD

$STD = \beta_o + \beta_1 PRE + \beta_2 TAX + \beta_3 GRW + \beta_4 AST + \beta_5 SZE + \hat{e}$

Explanatory variables:	**Coefficient**	**t-statistic***	**p-value**
PRE	-0.681	-2.177	0.032
TAX	0.040	0.554	0.582
GRW	0.211	3.049	0.004
AST	-0.072	-1.003	0.320
SIZE	-0.963	-8.240	0.000
R^2	0.748		
Adjusted R^2	0.725		
F-statistic	32.071		
p-value (F-statistic)	0.000		

The above table indicate an adjusted R-squared of 72.5%, indicating that independent variables explain 72.5% of the change in the short-term debt as the dependant variable. Table 6.4.2 above shows the results of the regression between short-term debt and profitability, tax, growth, asset structure and size. The table shows statistically insignificant relationship between tax, asset structure and short-term debt. Profitability and size have a negative and statistically-significant relationship with short term debt. Profitability has coefficient value (-0.681), t-statistic (-2.177) and p-value (0.032) and size has coefficient (-0.963), t-statistic (-8.240) and p-value (0.000).Finally, growth has a positive relationship with short-term debt which is statistically significant with coefficient value (0.211), t-statistic (3.049) and p-value

(0.004).Corroborating Amidu (2007) who also observed a positive relation between growth and short term debt, it shows that growing banks tend to rely more on short-term debt. Generally, all the variables except for tax move in the same direction as they did in their relationship with leverage.

6.4.1.3 Results based on Model 3

Table 6.4.3: Multiple regression results measured by LTD

$LTD = \beta_o + \beta_1 PRE + \beta_2 TAX + \beta_3 GRW + \beta_4 AST + \beta_5 SZE_i + ê$

Explanatory variables:	**Coefficient**	**t-statistic***	**p-value**
PRE	0.081	0.692	0.492
TAX	-0.050	-0.732	0.468
GRW	-0.165	-2.514	0.015
AST	-0.082	-1.204	0.234
SIZE	0.954	8.595	0.000
R^2	0.773		
Adjusted R^2	0.752		
F-statistic	36.693		
p-value (F-statistic)	0.000		

From Table 6.4.3, 75.2% of the variation in the dependent variable is explained by the independent variables. The table above shows the results of the relationship between the independent variables and the long-term debt. From the table profitability has a positive relationship with long-term debt which is not statistically significant. The coefficient is (0.081) t-statistic of (0.692) and p-value (0.492). The finding contradicts empirical evidence that there is a

negative connection between profitability and debt as profitable firms use less debt. The results also show a negative association between tax and long-term debt which is not statistically significant.

Growth has a negative relationship (coefficient -0.165 and t-statistic -2.514) with long-term debt which is also statistically significant with a p-value (0.015). The finding is in line with the pecking order theory which suggest that firms have a preferred hierarchy for the financing decisions. When banks are faced with a financing decision, banks will use short-term debt which is less secure before long-term debt. The findings obtained are consistent with Jong et. al (2008) and Amidu (2007) who proved a negative relationship between growth and long-term debt.

Asset structure has negative relationship with long-term debt which is not statistically significant. Finally, size has a positive relationship with long-term debt which is statistically significant with a p-value of (0.000). This means that larger banks have more long-term debt which is contrary to financial theory and Amidu (2007) who found a negative relation between size and long-term debt.

6.4.2 Results based on the internal factors of bank profitability.

6.4.2.1 Results based on Model 4

Table 6.4.4 Multiple regression results measured by ROA

$ROA = \beta_o + \beta_1 CST + \beta_2 EQAS + \beta_3 LODEP + \beta_4 SZE + \hat{e}$

Explanatory variables:	**Coefficient**	**t-statistic***	**p-value**
CST	-0.485	-5.629	0.000
EQAS	0.137	1.280	0.206
LODEP	-0.187	-1.355	0.181
SIZE	-0.385	-3.766	0.000
R^2	0.780		
Adjusted R^2	0.764		
F-statistic	48.657		
p-value (F-statistic)	0.000		

Table 6.4.4 shows R-squared and adjusted R-squared of 78% and 76.4% respectively. The result indicates that independent variables explain 76.4% of the changes in the dependent variable.

Table 6.4.4 above shows statistically significant and negative relationship between cost and return on assets. The coefficient value is (-0.485), t-statistic is (-5.629) and a p-value of (0.000). This implies that the lower the costs the more profitable the bank. The finding is in accordance with the balanced portfolio theory and efficiency theory particularly the x-efficiency theory which states that efficient firms are more profitable because of their lower costs. The result

is consistent with the findings of Athanasoglou et al. (2008), Kosmidou (2008), Curak et al. (2012), Dietrich & Wanzenried (2014), Petria et al. (2015), and Garcia & Guerreiro (2016) whose studies empirically proved a negative relationship between cost and profitability.

The results show that there is a positive but insignificant relationship between equity to total assets ratio and profitability. Thus, this finding suggests that the equity to total assets ratio does not impact profitability. Even though the obtained result support the hypothesis of a positive relationship between equity to total assets and profitability, we reject the hypothesis because of lack of statistical significance.

In addition to the above, this study found a negative but insignificant relationship between liquidity and profitability (with p value of 0.181). This finding corroborates the findings of Capraru & Ihnatov (2014) who did not find evidence of the relation between bank loans to customer deposits and profitability.

The results of the regression show that size has a negative relationship with profitability. The relationship is statistically significant with a coefficient value of (-0.385), t-statistic (-3.766) and p-value of (0.000). The finding of an inverse relationship between size and profitability contradicts the scale efficiency theory which suggests a positive relationship between size and profitability because through economies of scale larger firms can gain larger profits through lower costs. However, these results are consistent with the findings of Pallage (1991), Vennet (1998) and Kosmidou (2008) who found that diseconomies of large banks experience diseconomies of scale.

6.5 Limitations of the study

Even though the results of the study are supportive in deciding levels of debt and improving profitability for banks, some variables under investigation were not statistically significant hence making it difficult to draw conclusions on the relationships observed.

Further limitation of the study include access to information. Initially, the objective was for the study to cover the period 1998 to 2016, but this was not possible due to the missing information for some variables for the period prior to 2011.However, the effect of this was that it drastically shortened the period over which the study could be covered. Therefore, with more data, possibly the results could be different.

6.6 Recommendations for further studies

Future studies could increase the number of years under investigation to get statistically-significant results.

The study only focused on commercial banks, other studies for Botswana could include statutory banks as well. In addition, further research could add more variables to the study aside from the ones considered. For example, this study used ROA as a measure profitability, although other measures such as the Net Interest Margin and the Return on Equity could be used as well. Moreover, future research can investigate external factors that influence profitability of banks in Botswana. It could be valuable to know what factors outside banks management control affect profits.

Furthermore, instead of focusing on country characteristics, future research could focus on bank characteristics and this will mean collecting data for each bank individually instead of all the banks summarised data.

6.7 Conclusion

The previous studies that investigated determinants of capital structure focused on non-financial firms, and those that investigated what factors influence banks profitability focused on developed countries. This study contributes to the

literature by focusing on banks and on Botswana which is a developing country. The purpose of the study was to explore what factors determine capital structure and internal factors that influence profitability within banks. Internal factors refer to those factors which are within management control and could be bank specific.

The results based on the determinants of capital structure show that the pecking order theory is upheld as the relationship between leverage with profitability and size is negative. The result suggests that banks preferred hierarchy for financing as internal sources of financing and short-term debt are preferred first to other forms of financing. Furthermore, the finding of a negative relationship between tax and leverage contradicts the hypothesised view of static trade off theory. Moreover, the findings of the study reveal cost to income ratio as a crucial factor of profitability. Cost to income ratio decreases when profitability increases indicating that Botswana banks are cost efficient. Economies of scale and scope were not justified for Botswana.

In examining the internal factors that affect profitability, this current study found that cost to income and size are crucial internal factors that impact profitability. Both factors were found to be negatively associated with profitability. This suggest that, first, profitability increases as cost to income decreases and vice versa. Second, the results show that profitability increases as the size of a bank decreases and vice versa. Thus, owing to this finding, the argument that large firms are more profitable because they have large economies of scale is refuted in this study. This finding is also consistent with the findings in some of the prior studies.

However, the findings of this study should be interpreted with caution as the period examined is too short and because other factors such as factors outside the bank's operations could have been considered as well. Despite the limitations alluded to above, this study provides some insights into the determinants of capital structure and internal factors that impact profitability of an important sector in an economy using developing country as a location of study.

Results provide insights for understanding Botswana features in the research topic under investigation. Results are also relevant since they confirm some previous studies and some financial theories. The results can be used by financial managers to finance projects that will potentially increase the value of their banks. In addition, cost efficiency leads to higher profits; therefore, managers can improve cost efficiency to increase further the profits. Moreover, investors can use the results to assist in deciding whether to invest in the banking sector.

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APPENDIX

Figure A 1: List of banks included in data

Bank	2012	2013	2014	2015	2016
1. First National Bank	√	√	√	√	√
2. Standard Chartered	√	√	√	√	√
3. Barclays	√	√	√	√	√
4. Stanbic	√	√	√	√	√
5. Bank of Baroda	√	√	√	√	√
6. Bank Gaborone	√	√	√	√	√
7. Capital Bank	√	√	√	√	√
8. Bank ABC	√	√	√	√	√
9. Bank SBI		√	√	√	√
10. Bank of India		√	√	√	√

Figure A 2: Normal P-P plot for determinants of capital structure

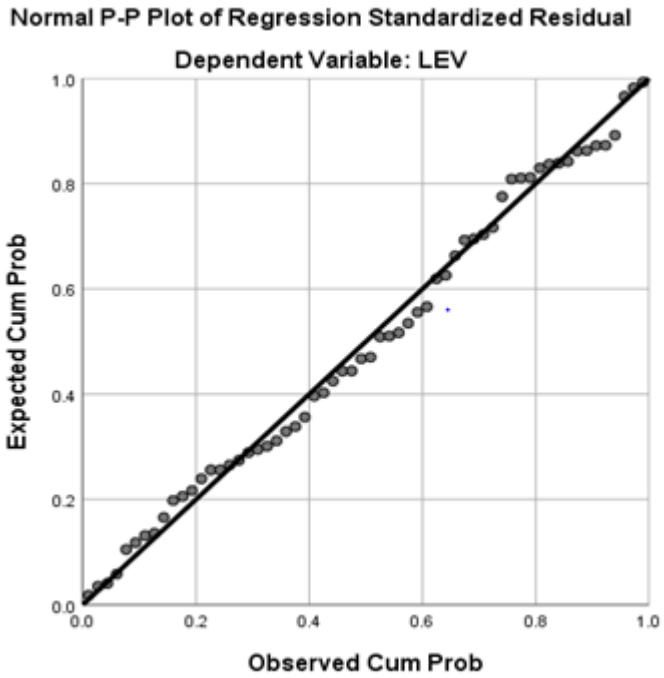

Figure A 3: Normal P-P plot for internal factors that influence performance

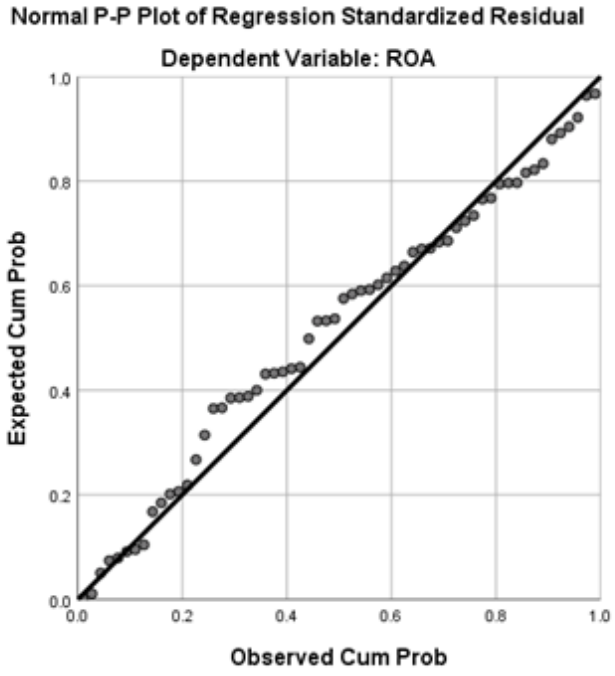

Figure A 4: Scatterplot matrix for capital structure determinants, 2012 to 2016

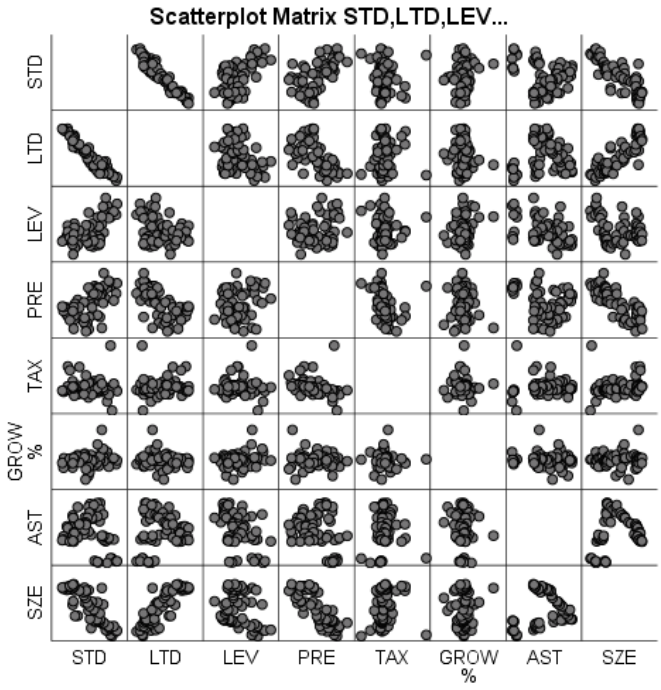

Figure A 5: Scatterplot matrix for determinants of banks performance, 2012 to 2016