

CAPITAL STRUCTURE AND PROFITABILITY IN GHANAIAN BANKS

John Gartchie Gatsi

School of Business

Department of Accounting and Finance

University of Cape Coast

Cape Coast , Ghana

nyagart@yahoo.com

MSc Finance, MSc International Accounting, MBA, B.Sc Administration, ChE , MID

and

Richard Kofi Akoto

Department of Banking and Finance

Institute of Professional Studies(IPS)

Accra, Ghana

richardakoto@yahoo.co.uk

MPhil Banking & Finance, B.Sc Administration(Banking &Finance), MID, ChE

Abstract

We studied capital structure and profitability in Ghanaian banks using panel data methodology was employed. Capital structure theories have been utilised to provide the theoretical basis for the work. The study covered 14 banks over the period 1997-2006. it was observed that 87% of the total capital of banks in Ghana is made up of debt. Of this, 65% constitute short-term debts while 22% is made up of long-term debts. This has re-emphasised the fact that banks are highly levered institutions and also highlights the importance of short-term debts over long-term debts in bank financing in Ghana. This finding agrees with previous studies such as Abor (2005) and Amidu (2007) in stressing the importance of short-term debt in firm financing in Ghana. This significant negative relationship between bank

size and profitability suggests that larger banks tend to exhibit lower margins and is consistent with models that emphasize the negative role of size from scale inefficiencies.

Keywords: Capital Structure, Panel Data , Return on Equity and Bank Size

INTRODUCTION

Capital structure is one of the most puzzling issues in corporate finance literature (Brounen and Eichholtz, 2001). The concept is generally described as the combination of debt and equity that make the total capital of firms. The proportion of debt to equity is a strategic choice of corporate managers.

Basically, banks engage in financial intermediation to ensure efficient mobilisation and disbursement of funds to the real sector of the economy. Though other financial institutions exist to engage in the intermediation process banks are considered the most important financial intermediaries.

The banking sector remains one of the most lucrative industries in Ghana despite increasing competition (Ghana Banking Survey, 2009). In the attempt to remain competitive , banks are exposed to various forms of risk including credit, market, and operational risks. In doing this, banks must find better ways of determining the amount of capital that can be set aside to absorb unexpected losses emanating from their risk exposures (Amidu, 2007). The determination of capital that can absorb risk and also make banks remain competitive has led

to the recognition of the important role capital plays in the profitability and survival of banks. Therefore, the determination of appropriate choice and mix of debt and equity that would maximise the market value of banks is crucial.

Abor and Biekpe (2005) studied the determinants of capital structure of listed firms in Ghana. Abor (2005) investigated the relationship between profitability and debt ratios of twenty-two listed Ghanaian companies for a five year period (1998-2002); and Amidu (2007) who studied the determinants of capital structure in Ghanaian banks. Important for us to note is that the studies by Abor and Biekpe (2005) and Abor (2005) have indicated that profitable firms in Ghana depend more on leverage relative to equity, whilst Amidu (2007) found an inverse relationship between profitability and leverage in his study to examine the determinants of capital structure of banks in Ghana. In the Ghanaian context therefore, these studies have ignited the debate on firms' capital structure and its associated issues.

Statement of problem

According to Buser et al. (1981), the capital structure decision of a bank is similar to that of a nonfinancial firm. Although there are considerable inter industry differences in the capital structure of firms due to the unique nature of each industry's business, the intra-firm variations are attributed to the business and financial risk of individual firms.

In the banking, the issue of capital structure has been significantly under-researched although this is not the case in other industries. The thrust of this study therefore is to *empirically examine the influence of capital structure on bank profitability in Ghana*, using a relatively more elongated data set and a robust estimation technique of panel data methodology.

Hypotheses

According to Saunders et al (2004) banking is the most highly geared and risky business in any economy. This is because banks are sources of funds to other businesses. These funds are mostly provided in the form of short to medium term loan facilities, which the businesses use in funding their operations. It is crucial for us to note that the theoretical and duration matching perspectives of banking requires banks to use a relatively long term sources of funds to enable them meet the predominantly short to medium term loan requirements of their customers if they are to remain profitable and competitive. Based on the above, the following hypotheses have been constructed:

General hypothesis

There is a positive correlation between leverage and bank profitability in Ghana.

Testable hypotheses

In this study, the following specific hypotheses were tested:

H1a: Return on equity is negatively related to short-term debt.

H1b: Net interest margin is negatively related to short-term debt.

H2a: Return on equity is positively related to long-term debt.

H2b: Net interest margin is positively related to long-term debt.

H3a: Return on equity is positively related to total debt.

H3b: Net interest margin is positively related to total debt.

H4a: Return on equity is positively related to bank size.

H4b: Net interest margin is positively related to bank size.

H5a: Return on equity is positively related to sales growth.

H5b: Net interest margin is positively related to sales growth.

Theories of capital structure

The principal theoretical models of capital structure centre on the idea that firms have information that investors do not have, and that the interests of managers, equity-holders and debt-holders may not coincide. The theories have also recognised the benefits of financial leverage in firm financing while avoiding the costs of financial distress. These recognitions have led to two dominant theoretical models within which other theories are embedded. These are the Static Trade-Off model and the Pecking Order model.

In the Static Trade-off model, capital structure moves towards an optimum leverage which is determined by balancing the corporate tax savings advantage of debt and the costs of financial distress. This idea has been developed in many papers, including DeAngelo and Masulis (1980) and Bradley et al. (1984). However, it has been questioned by many others, including Miller (1977), who argues that the Static Trade-off model implies that firms should be highly levered than they really are, as the tax savings of debt seem large while the costs of

financial distress seem minor. Other theories that are rooted in the Static Trade-off model are bankruptcy costs, agency problems, and the benefits of tax savings.

In the Pecking order model, Myers and Majluf (1984) provided a theoretical foundation for the proposition of Donaldson (1961) that there is a financing hierarchy, where firms prefer internal finance, and if external finance is required firms issue the safest security first. In the Model, raising external finance is costly because insiders have more information about the firm's prospects than outside investors, and outside investors know this and would thus demand higher returns on their investments. Basically, this is what makes external source of financing more expensive from firm perspective. Generally, firms will issue equity when they think it is overpriced but would not if it is underpriced. From the perspective of outside investors therefore, equity is riskier than debt. Thus, they will rationally demand a higher risk premium for equity than for debt. From the point of view of the insiders, debt is therefore a better source of funding than equity, and internal funding is even better. Debt financing will only be used when there is an inadequate amount of internal funding available, and equity will only be used as a last resort. As a consequence, Myers and Majluf (1984) observe that, there is no optimal leverage and that observed leverage is simply the sum of past financing events.

Firms prefer retained earnings to debt and would only issue equity as a last resort (Myers and Majluf, 1984). The implications of the pecking order theory is that companies with few investment opportunities and substantial free cash flow will have low (or even negative) debt ratios because the cash will be used to pay down the debt. It also suggests that high-growth firms with lower operating cash flows will have high debt ratios because of their reluctance to raise new equity (Barclay and Smith, 2005).

From the two broad models indicated above, numerous theories have emerged in the corporate finance literature, all in an attempt to define the theory of corporate financial policy. However, for the purpose of this study, these theories would be grouped into three broad categories and discussed in turn. More so, it is realised that these theories are not mutually exclusive but each can help us understand the various aspects of financing decisions. These categories include: taxes, contracting costs and information asymmetry costs. Specifically, taxes and contracting costs would be reviewed within the context of the “static trade-off theory”, while information asymmetry costs would be discussed within the views of the “pecking order theory”.

Capital structure and the issue of tax benefits

A tax can generally be defined as the quantum of money that firms and individuals pay to a state for doing business within the territorial boundaries of that State. Every major business decision is affected in some way or other by taxes. Basically, when making corporate business decisions, managers try to minimize taxes within the confines of the tax laws of that country. While tax evasion is a crime, tax avoidance is good management (Brownlee et al, 2001).

Normally, the basic corporate profits tax law allows companies to subtract interest payments but not dividends in their computation of taxable income. Thus introducing debt into a firm’s capital structure can lower its expected tax burden and thereby increase its after-tax cash flow (Modigliani and Miller, 1963). If there were only a corporate profits tax and no individual taxes on the returns from corporate securities, the value of a debt-financed company would equal that of an identical all-equity firm plus the present value of its interest tax shields

(Miller, 1977). The present value represents the contribution of debt financing to the market value of the firm. This could be estimated basically by multiplying the tax rate by the principal amount of outstanding debt (provided the firm expects to maintain its current debt level). The above illustration echoing the benefits of debt usage over equity can certainly not be true. This is because holders of debt and equity must pay taxes on the interest income and the dividend/capital gain that they receive respectively. However, debt-holders do know that they pay higher taxes than equity holders. Thus debt-holders being rational will therefore demand higher returns on their investments relative to equity holders to compensate. In this vein, it's the equity holders that bear all the tax costs of the firms operations, whether the company pays the taxes directly in form of corporate income tax or it pays it indirectly in the form of required returns on the debt it sells (Barclay and Smith, 2005). The tax benefit emanating from more debt usage may be eroded by a high tax on interest income.

However, it is important to note that it is the trade-off between debt and equity that determines the net effect of taxes on debt usage (Miller, 1977; Myers, 2001). Thus tax policy has a significant effect on the capital structure decisions of firms (Green et al, 2002). The implication of the tax theory on capital structure therefore suggests that, firms must use more debt to create value (Miller and Modigliani, 1963). However, this proposition must not deceive managers into introducing very high levels of debt into their operations because of the associated benefits. This is because the tax advantage has an eminent possibility of being dashed away by the higher tax that debt-holders pay on their interest income compared to what equity-holders pay on their dividends and capital gains. We must realise that investors in general, and debt-holders in particular being interested in their after tax profits would incorporate this loss value in their expected returns to pay off thus making the ultimate cost of debt higher than equity. Thus, firms that can derive maximum benefit from debt usage are

those whose managers can accurately determine the point where the advantages of interest tax shield ends and where the costs of financial distress starts.

Contracting costs

No matter the tax benefits of higher leverage, they must be set against the greater probability and higher expected costs of financial distress. Thus, another capital structure theory that can be reviewed within the context of the “trade-off theory” as promulgated by Myers and Majluf (1984) is contracting costs. Contracting costs are the costs that firms bear as a result of using high levels of debt in their operations and also the consequences that they may face due to the running of the firm by managers rather than the true owners of the firm. The two most prominent costs that can be identified under this are *bankruptcy and agency costs*

Bankruptcy cost

Basically, bankruptcy costs refer to costs that occur when a firm fails to honour its debt obligations and stand the possibility of being closed down (Titman, 1984). These costs are both direct and indirect. The direct costs are often legal and administrative expenses and are often small in relation to corporate market value. However, the indirect costs are substantial and are costs that result from unwillingness of stakeholders to do business with the firm (Warner, 1977). For example, if a firm is perceived to be near bankruptcy, customers may not be willing to do business with such firms because the possibility that they may not be able to meet their warranty obligations is high (Abor, 2008). Further, suppliers and the banks may not extend credit for such firms. Such restrictions or limitations can affect a firm’s value and its performance, as they eventually may have to forgo attractive investment opportunities leading to underinvestment (Kim et al, 2006). This could adversely affect firms’ profitability and existence.

The argument is that firms may be unable to pay their debts if they over-borrow and become financially distressed. Nonetheless, it is reasonable for firms to be highly leveraged so as to increase value because of the tax deductibility of debt (Miller and Modigliani, 1963). Warner (1977) contends that bankruptcy costs increase with increase debt use thus reducing the value of the firm. Thus the optimal capital structure is that combination in which the next cedi of debt is capable of providing an additional tax subsidy that just offsets the resulting increase in the expected costs of financial distress.

Secondly, when firms become bankrupt, managers may lose their jobs. This means that bankruptcy is costly to a firm's management and they will therefore do everything possible to prevent it. In view of this understanding, managers of financially distressed firms would advocate for less debt in their capital structure relative to their low-debt counterparts so as to safeguard against underinvestment and its associated problems. However, some academic writers are of a different view in using less debt in the operations of a firm in preserving managements' job and also to resolve the problem of underinvestment. Grossman and Hart (1982) argue that if bankruptcy is costly to managers, perhaps because they would lose benefits of control or reputation, then debt finance should rather create incentives for managers to work harder, consume fewer perquisites, make better investment decisions, etc. because this behaviour reduces the probability of bankruptcy. Thus the application of debt to mitigate bankruptcy cost and to control managerial inefficiency as espoused by Leibenstein (1966); Grossman and Hart (1982); Jensen (1986); and Champion (1999) is at variance with what some authors like Warner (1977) and Barclay and Smith (2005) have noted, as they observe that financial distress and therefore bankruptcy costs can be reduced significantly if less debt is used relative to equity in the capital structure of a firm.

Agency cost

In corporate finance literature, agency theory is formalised by Jensen and Meckling (1976) building on an earlier work by Miller and Fama (1972). Under this, agency cost is defined as the costs that arise due to variances in the interests of principal and agents of the firm, both of whom endeavour to maximize their own objectives at the expense of the other. Thus, the principal would typically impose some set of restrictions on agents' behaviour to align their actions with the principal's objectives (Kim et al, 2006).

Berle and Means (1932) contend that in the modern firm in which share ownership is widely held, managerial actions depart from those required to maximize shareholder returns. In agency theory, the owners (debtors and shareholders) are principals and the managers are agents and there is an agency loss which is the extent to which returns to the claimants, the owners, fall below what they would be if the principals, exercised direct control of the corporation (Jensen and Meckling 1976).

Jensen and Meckling identify two types of conflicts that exist between principals and agents. These are, on the one hand, conflicts between shareholders and managers, and on the other hand, conflicts between debt-holders and equity holders.

Harris and Raviv (1990) observe that the conflicts between shareholders and managers arise because managers hold less than 100% of the residual claim. Consequently they do not capture the entire gain from their profit enhancement activities, but they do bear the entire risk of these activities (especially the risk of losing their jobs). Consequently, managers would embark on projects that would preserve their interest and jobs relative to maximising the shareholders wealth. For example, Jensen (1986) argues that in large mature public

companies, “free cash flow” is available that cannot be profitably reinvested in the firm. The natural inclination of corporate managers is to use these excess cash to sustain growth at the expense of profitability, either by overinvesting in their core businesses or, perhaps worse, diversifying through acquisition into unfamiliar ones.

To curb this unwarranted behaviour on the part of managers, shareholders can demand that more debt be introduced into the firm’s operations so as to increase managerial performance (Leibenstein, 1966; Myers, 1977; Champion, 1999). The debt agreement must contractually obligate payments of interest and principal so as to perform the role of dividend payments (which are not mandatory) in squeezing out excess capital. Thus, in industries generating substantial cash but facing few growth opportunities, debt financing can add value simply by forcing managers to be more critical in evaluating capital spending plans.

The inefficiency that results due to the conflict between managers and shareholders can also be effectively resolved by making corporate managers own substantial amount of their company’s equity. This action would make managers more loyal and execute more responsible and prudent investment decisions, which are necessary for increasing shareholders wealth.

Agency costs can also arise due to conflicts between debt-holders and equity holders (Jensen and Meckling, 1976). These conflicts are deeply embedded within the concept of moral hazard and risk-taking between the parties and the associated costs they add to firm financing. The conflicts can be explained in three distinct ways and are discussed in turn.

Firstly, it is generally known that firms are not obligated to pay dividends to equity holders. Rather, they are entitled to residual claims of the firm after debt-holders have been paid. However, debt-holders receive fixed income on their investments whether the firm perform creditably or not else it is forced in bankruptcy. Consequently, debt-holders care about the level of risk that firms take which should be minimal so as to protect their investments. Nonetheless, equity holders would prefer management to take relatively excessive risk in order to maximise their value (the value of shareholders). This thinking is based on the concept of risk-return trade-off. Debt-holders being aware that shareholders through management would increase the risk of their investments would thus factor this 'risk increase' into their expected returns to compensate thus increasing the cost of debt. Thus astute managers in situations like this would resort to more equity use relative to debt in financing their operations although they would forgo the benefits of debt use.

Secondly, Myers (1977) argues that the agency costs that arise between debt-holders and shareholders can be enormous as it could create serious 'underinvestment problems'. For example, consider a high-growth company that is having problem in honouring its debt obligations. Since the value of such a firm will depend heavily on its ability to carry out its long-term investment plan, what this company needs is an introduction of more equity capital. This capital is needed to protect the firm against the costs of financial distress. However, the acquisition of this type of capital becomes rather expensive since the providers (shareholders) think it would go to better debt-holders position. Consequently, managers may rationally go without both the capital and the investment opportunity which is detrimental to the survival of the firm.

From the foregoing analysis, Myers contends that companies whose value consists primarily of intangible investment opportunities or “growth options,” as he called them should avoid debt to limit their greater potential loss in value from underinvestment. However, mature companies with few profitable investment opportunities (firms with most of their value reflecting cash flows from tangible assets) would have lower expected financial distress costs. Hence, mature firms should have significantly higher leverage ratios relative to high-growth firms. The implication of the argument from Myers (1977) therefore is that shareholders fund should be used to finance profitable investment opportunities whilst debt should be used to finance less profitable investment opportunities.

Nonetheless, what is contradictory in Myers (1977) argument to modern corporate financing is the use of rather more debt in the operations of high-growth firms. Generally, high-growth firms have relatively more profitable investment opportunities than their mature counterparts. The evidence therefore is that managers of high-growth firms believe their investment projects are so viable so much so that it can pay-off the higher debt levels and consequently enjoy the concomitant benefits of debt financing.

Last but not least, the conflicts between debt-holders and equity holders may occur because debt contracts give equity holders a motivation to invest sub-optimally (Jensen and Meckling, 1976). Basically, debt contracts provide that if an investment yields large returns, well above the face value of the debt, most of the profits should go to shareholders who are residual claimants of the firm’s cash-flows while debt-holders receive fixed agreed payments.

The bone of contention however is that debt-holders bear all the consequences if the investment fails, since shareholders are under the veil of limited liability. As debt-holders are

not unaware of this development, debt financing becomes expensive as they would factor it into their required returns to compensate.

Another flip of the coin is that the limited liability status of shareholders and the fact that they relatively enjoy most of the benefits when the firm does well give them (shareholders) an incentive to invest in very risky projects, even if they are value-decreasing. Such investments result in a decrease in the value of debt. The loss in value of equity from the poor investment (excessively risky investment to maximise value by shareholders) can more than offset the gain in equity value captured under reasonable and less risky investment practices. Thus, the cost of the incentive to invest in excessively risky and value-decreasing projects created by debt is borne by the equity holders who issue debt. This effect, generally called 'asset substitution effect', is the agency cost of debt financing.

From the above discussion, one can conclude that firms with higher agency costs due to conflict between the firm and the debt-holders should have lower levels of debt in their capital structure to maximise value.

Thus to effectively reduce agency problems, there is a need to change the capital structure of the firm. This can be done for example by sending a binding signal to debt-holders by incorporating call provisions into the debt contracts among others (Arshadi, 1989). This provision would inevitably allow debts to be withdrawn before their maturity, an act which is capable of changing the capital structure of the firm by reducing the debt levels and reducing the agency costs (Barnea et al, 1980).

Information asymmetry costs

Barclay and Smith (2005) argue that business executives often have better information about the value of their firms than outside investors. In corporate finance, information asymmetry refers to the idea that firm insiders, typically managers have superior knowledge than do other market participants on the value of their firm's assets and investment opportunities (Klein et al., 2002). This information asymmetry creates an avenue for market participants to price firms' claims incorrectly, thus providing a positive role for corporate financing decisions. According to Abor (2008), the existence of information asymmetries between the firm and likely finance providers causes the relative costs of finance to vary among the various sources of finance. The presence of this information "gap" between managers and investors has led to the formulation of two distinct but related theories of financing decisions, namely: market timing theory and signalling theory. These are reviewed within the "pecking order" model and are discussed in turn.

Market timing theory

Myers (1984) and Myers and Majluf (1984), contend that firms will always resort to the cheapest source of funding to stimulate their operations. This is based on the assumption that managers would act in the best interest of shareholders. The market timing theory is a theory that argues that managers critically observe the funds market and taking advantage of the information gap, would only issue new shares when they believe those shares are overvalued by investors and vice versa. The fact is that pertinent problems within the firm may not be known immediately to outside investors (unless there is a presence of insider-trading) and thus would not reflect in the share prices of the companies. This is true because in the real world, capital markets are not efficient.

This means that companies that have profitable uses for more capital but believe their shares are undervalued will generally choose to issue debt rather than equity to avoid diluting the

value of existing shareholders claim (Barclay and Smith, 2005). Investors are aware that managers know more than they do about the future performance of the firm, and they also understand management's motivations to issue overpriced shares and to avoid issuing undervalued ones. This well-known propensity of companies to "time" their share offerings is evident with decreases in share prices after announcement of new shares. As a result, these issues become relatively expensive and managers would reasonably avoid them and rather use internally generated funds. Thus, by choosing the timing of new shares, managers can control to some level the informational disadvantage of the market.

Further, dynamic models of asymmetric information by Lucas and McDonald (1990) and Korajczyk et al. (1992) have also suggested that firms should issue shares to invest in growth opportunities to avoid the costs of financial distress. However, the issuance of new equities become rather expensive as investors are not unaware that firms would only issue equity when it is overpriced and would thus demand higher returns to compensate. As a result, astute managers would prefer to use internally generated funds rather than issuing new shares. The same notion would also inform debt-holders to demand higher returns on their investments to pay-off. Again, internally generated funds become a cheaper source of funding compared to debt. However, it is important for us to recognise that firms may not necessarily issue new equities because they believe it is overvalued or use internal funds because their existing shares are undervalued. This explains why information asymmetry can be costly to firms as investors may misinterpret managers' behaviour and charge them unfairly.

It is therefore clear from the above that firms maximize value by steadily choosing to finance new investments with the "cheapest available" source of funds. Managers would prefer internally generated funds (retained earnings) to external funding and, if outside funds are

needed, they prefer debt to equity because of the lower information costs associated with debt issues. Generally, share prices are more sensitive than debt to any proprietary information about the firm's future performance. This is because debt-holders receive fixed payments over the firm's cash flows whilst shareholders are residual claimants, well after debt-holders are paid. Myers (1984) contends that companies will only issue equity as a last resort when their debt capacity has been exhausted.

It is therefore gleaned from the above that there is a certain hierarchy of firm preferences regarding financing of their investments. Undoubtedly, firms would prefer internal sources of funding to expensive external finance (Myers and Majluf, 1984). This "pecking order" theory would thus predict that companies with few investment opportunities and substantial free cash flow will have low (or even negative) debt ratios because the cash will be used to pay down the debt. It also suggests that high-growth firms with lower operating cash flows will have high debt ratios because of their unwillingness to raise new equity.

Signalling theory

Signalling theory is one of the most important theories in corporate finance literature that is based on the idea that managers have superior information than outside investors on the performance of the firm, and would thus communicate this potential to investors by increasing leverage. However, in contrast to market timing, where securities offerings are seen as an attempt to raise "cheap" capital, the signalling model assumes that financing decisions are designed basically to convey managers' confidence in the firm's future prospects to outside investors (Barclay and Smith, 2005). Most often, this is done to raise the value of shares when managers think they are undervalued.

Debt mandates firms to make a fixed set of cash payments to debt-holders over the term of the debt security. Firms could be forced into bankruptcy if they default in honouring their debt obligations. Also, bankruptcy is costly to managers as they could lose their jobs. Managers are not unaware of this and would therefore do everything possible to avoid it in order to maintain their positions, all things being equal.

Nonetheless, dividend payments are not obligatory and managers have more judgment over their payments and can reduce or omit them in times of financial difficulty (Barclay and Smith, 2005). For these reasons, adding more debt to the company's capital structure can serve as a credible signal of higher expected future cash flows (Ross, 1977). In this vein, increasing leverage has been suggested as one potentially effective signalling device. Different academic writers have suggested different signalling models in which they demonstrated what determines more debt use by firms. However, we must appreciate that they all reviewed the models within the framework of information asymmetry. These models are reviewed in turn.

According to Akerlof (1970), managers with informational advantage have the motivation to signal their private information through their choice of leverage levels. He argues that, firms with higher expected cash flows would have the incentive to take on higher debt levels relative to firms with lower debt levels because of the probability of bankruptcy and its associated costs.

Further, Leland and Pyle (1977), also provide another fundamental signalling model to demonstrate what motivates managers to use more debt in their operations. In their model, the authors contend that a high value firm signals their kind by retaining a high proportion of

ownership and would thus use higher levels of debt relative to their low-quality counterparts. Thus as in Ross (1977), the authors go ahead to predict a positive correlation between firm quality and financial leverage in their model.

Furthermore, Heinkel (1982) has also developed a debt signalling model in which the information asymmetry is about the mean and variance of the returns. In his model, the assumed positive correlation between the means and variance drives a signalling equilibrium in which higher-value firms signal their quality with higher debt levels. He goes on to argue that higher-value firms are relatively more risky than their low-value counterparts. This finding is in consonance with Ross (1977) that higher-value firms have a greater probability of default.

Another signalling model that is worth discussing is that of Blazenko (1987). In this model, Blazenko observes that risk-averse managers would generally pass up risky but profitable investment opportunities thus decreasing the value of the firm. Consequently, these managers may avoid debt as they believe this would increase their probability of bankruptcy. However, managers of high-value firms would show their sort by higher debt use. Nonetheless, this is not to say that managers of higher-value firms are always risk-lovers. The implication of this model just like those reviewed above suggests a positive relationship between leverage and firm quality.

To add to the above, some authors have also identified another important variable that can also effectively signal firm quality in addition to debt. According to Ravid and Sarig (1991), payment of dividends to shareholders can significantly convey firm quality to investors.

Thus, this model also suggests a positive correlation between high-value firms on one side and dividend payments on the other side.

To conclude, the lesson learnt from the signalling theory of asymmetry information is that higher-value firms would use more debt in their capital structure to signal this value relative to their low-value counterparts. This is premised on the fact that inefficient firms cannot manage debt and any attempt to use more debt would jeopardise the financial health of the firm due to bankruptcy and its associated costs.

Empirical evidences relating capital structure and firm profitability

One of the most important financial decisions facing companies is the choice between debt and equity capital (Glen and Pinto, 1994). This decision can effectively and efficiently be taken when managers are first of all aware of how capital structure influences firm profitability. This is because; this awareness would enable managers to know how profitable firms make their financing decisions in particular contexts to remain competitive. In the corporate finance literature, it is believed that; this decision differs from one economy to another depending on country level characteristics.

According to (Bos and Fetherston, 1993), capital structure affects both profitability and riskiness of firms. These believe has been held by earlier researchers such as Miller and Modigliani, (1963) and Titman and Wessels, (1988). As a result, numerous studies have been conducted by academic writers to examine the impact of capital structure on firm profitability. Most of these studies concentrated on different segments of different economies and industries but with little attention to the financial services sector. Thus, lacking

significantly in the literature are studies that are purported to investigate the association between debt policy and profitability in the banking sector.

Modigliani and Miller (1958) demonstrated that, in an idealised world without taxes, the value of a firm does not depend on the debt-equity mix. Simply put, debt policy is irrelevant to the value of the firm. Nonetheless, this conclusion is inconsistent with what one sees in the real world, where capital structure matters since banks operate in an increasingly imperfect and competitive world. As a result, Modigliani and Miller (1963) reviewed their earlier proposition to include taxes and other market imperfections and contend that capital structure matters and firms can really maximise value by using more debt in their operations so as to take advantage of the tax shield benefits of leverage.

The relationship between capital structure and company profitability is always explained in the corporate finance literature within the framework of 'Pecking Order Theory'. Within this framework, firms would always prefer internal sources of finance as opposed to external sources (Myers, 1984; Myers and Majluf, 1984). These authors argue that, internal funding which is specifically the use of retained earnings is cheaper as a source of finance relative to external funding which is exclusively the use of debt and equity. This preference is due to the cost that is associated with the information asymmetry that exist between managers and outside market participants thus making external funding expensive. Generally, investors are of the view that managers would only issue overvalued shares and the vice versa thereby raising cheap capital. Although this proposition may not always be true, investors often demand higher returns to compensate when there is a new issue thus making external funding relatively expensive (Barclay and Smith, 2005). As a result, astute managers would ignore external funding and use internal sources instead.

Empirical evidence of negative association between leverage and firm profitability

Numerous attempts to explain the influence of debt policy on firm profitability have yielded inconclusive results. However, empirical evidence from some previous studies seems to be consistent with the pecking order theory. Most studies found a negative relationship between profitability and leverage. Within this framework, Titman and Wessels (1988) contend that firms with high profit levels, all things being equal, would maintain relatively lower debt levels since they can realise such funds from internal sources. Furthermore, Cassa and Holmes (2003), and Hall et al. (2004) all found negative relationship between profitability and both long-term debt and short-term debt ratios. Furthermore, Kester (1986) finds a significantly negative relation between profitability and debt/asset ratios. Rajan and Zingales (1995) also confirm a significantly negative correlation between profitability and leverage in their work. According to Fama and French (1998), debt usage does not necessarily grant tax benefits; high leverage may rather generate agency problems among shareholders and debt-holders that predict negative relationships between leverage and profitability. Graham (2000) argued in his work that big and profitable companies present low debt levels. In the banking sector, Amidu (2007) devised a study to investigate the determinants of capital structure of banks in Ghana and found a significantly negative relation between total debt and profitability. Basically, the implication of the above empirical results is that, profitable firms use less debt in funding their operations.

Empirical evidence of positive association between leverage and firm profitability

Despite the above empirical works supporting the pecking order theory, some authors are of a different opinion. These authors observed a positive relationship between profitability and debt levels in their studies. For example, Petersen and Rajan (1994) found a significantly

positive association between profitability and debt ratios in a study designed to investigate the relationship. Furthermore, Ooi (1999) argues that profitable firms are more attractive to financial institutions as lending prospects. The reason is that, those firms are expected to have higher tax shields and low bankruptcy cost. According to Scherr et al. (1993), start-up firms with higher anticipated profitability have higher debt to equity ratios. In a study developed to investigate the relationship between profitability and firm leverage, Taub (1975) in a regression analysis of four profitability metrics against debt ratio found a significantly positive association between debt and profitability. According to Champion (1999), and Leibenstein (1966), companies can use more debt to enhance their financial performance because of debts' capability to cause managers to improve productivity to avoid bankruptcy. The point here is that, debt must be repaid while dividend payment is not obligatory and can even be postponed if the firm is financially 'hard up'. In another vein, Roden and Lewellen (1995), observed a significantly positive association between profitability and total debt in a study developed to find the percentage of total debt in leverage buyouts. In a study designed to examine the effect of capital structure on profitability of listed firms on the Ghana Stock Exchange, Abor (2005) has reported a significantly positive relationship between the ratio of short-term debt to total assets and profitability but a negative association between the ratio of long term debt to total assets and profitability. However on the average, Abor (2005) found a significantly positive relationship between total debt and profitability thus supporting the above previous works. There also exists a positive association between debt and return on equity of firms provided that, the earnings power of the firm's assets outweighs the average interest cost of the debt (Hutchinson, 1995). To add to the above, scholarly publications by some celebrated researchers have also supported the notion that there exists a significantly positive relation between profitability and firm leverage (Nerlove, 1968 and Baker, 1973).

The conclusion drawn from these empirical works suggests that ‘blue chip’ companies use more debt relative to equity in funding their operations.

From the foregoing discussions based on the available empirical literature, it is crystal clear that results from investigations into the relationship between capital structure and profitability are inconclusive, and requires more empirical work. This researcher therefore believes that, the knowledge of how capital structure affects profitability in the banking sector of Ghana would enhance strategic and prudent financing decision which would in turn make the banks competitive and buoyant.

The New Basel Capital Accord (Basel II) and the minimum capital requirement

According to Saunders et al. (2004), a minimum capital requirement effectively constrains the leverage of banking institutions and reduces the risk of failure. This is because highly leverage banks may be more susceptible to credit, interest rate and other shocks in the economy which investors must be insulated against. As a result, regulating the capital of banks for the above purpose would therefore impact the financing decision of banking firms.

The implications of the minimum capital requirement under Basel II on banks’ financing decisions

Under Basel II, it is clear that banks are mandated to maintain some levels of equity to enable them meet their capital requirements. This requirement is essential as the regulators believe that, owners of banking firms must themselves contribute some amount of capital into their businesses to ensure customer confidence prior to invitation of deposits from the public. The belief is that, this practice would tie the interest of owners to ensure the success of the firm as significant levels of their wealth is at stake and also to cover the risks that abounds in banking. The fact is that, the maintenance of the capital adequacy ratio is expected to boost

investor confidence in the banks, increase customer base and enhance financial performance, all things being equal.

In response to the above developments, the Bank of Ghana (BoG) for example, has currently pegged the initial paid-up capital at GH¢7,000,000 Million. This means that by law, no banking firm can start its operations in Ghana unless the owners have the above minimum stated capital. Furthermore, the Bank of Ghana has also increased the minimum capital adequacy ratio from 6% to 10% or more for all banks operating in Ghana (Ghana Banking Act, 2004). In addition to the above, the Bank of Ghana (BoG) has recently announced that all banks in Ghana are likely to adopt the full provisions under Basel II by 2009 so as to further strengthen the banking system (Ghana Banking Survey, 2006). These are all attempts to making sure that banks are well capitalized in Ghana so as to prevent bank failures.

The implication of the above is that the financing decision of banks is restricted or toned if they are to operate within the confines of the law which is designed to make them financially stable, remain competitive and to be considered well capitalized. If capital regulations are in nonexistence in the banking sector, one could imagine what would happen if a manager for example decides to finance his/her operations with 100% debt or equity. Unsurprisingly, such a financing decision is at variance with banking law due to the primary role banks play in the financial system coupled with the numerous risks that characterise the banking industry. Thus capital regulation is justified in the banking sector to maintain safe and sound financial system and to heighten productivity.

An overview of banking in Ghana

Banking in Ghana has undergone several developmental phases over time. This section discusses the overview of banking in Ghana,

In 1896, the British Colonial Administration established the Bank of British West Africa (BBWA) in the Gold Coast, now Ghana and started the business of banking. Initially, the bank provided basic banking services of lending and borrowing of money (Amidu, 2007). Later on the bank had a monopoly over the importation of silver coins meant to pay the salaries of employees in the Colonial Administration and furtherance secured the business of maintaining the Government Accounts.

The success story of BBWA has led another expatriate bank, the Colonial Bank to also commence operation in the Gold Coast by 1918. In 1925, the Colonial Bank merged with some other foreign banks under the name and leadership of Barclays Group which became a major competitor of BBWA, in the then Gold Coast. The late 1920s to early 1950s therefore saw exclusive activities of these two expatriate banks in the Gold Coast. In 1953, the Colonial Administration set up another bank called the Bank of the Gold Coast. This new bank was latter split into two: the Bank of Ghana, operating as a bank of issue, to be developed into a complete Central Bank; and the Ghana Commercial Bank, to be transformed into the largest Commercial Bank with a monopoly on the accounts of Public Corporations. After independence in 1957, the Bank of Ghana quickly developed into a strong competitor of the expatriate banks with branches in Ashanti and Northern Regions.

In 1957, the first political regime commenced its tenure with a large surplus on its Balance of Payment Accounts with a good infrastructure to enable it succeed. However by 1963, it was becoming increasingly clear that the country (Ghana) was experiencing serious economic

difficulties due to its socialist policies. In 1983, the Government sought the assistance of the International Monetary Fund (IMF) and the World Bank to restructure the economy. Consequently, the Economic Recovery Programme (ERP) was launched with principles embracing the idea of market economy. Under this, privatisation; liberalisation of trade and financial restrictions; and the divestiture of government interest in Public Corporations were heightened to revive the economy.

In 1988, the government introduced the Financial Sector Adjustment Programme (FINSAP) as part of the ERP. This is to restructure and revitalise the financial services sector through legislative and regulatory instruments. Specifically, FINSAP sought to remove financial restrictions and inject new capital into the financial services sector. Furthermore, it was also designed to clean up the asset portfolio of the State-owned banks through diversification.

In pursuance of the above, a new Banking Law PNDCL 225 was passed in 1989. This was meant to define capital adequacy, prudential lending, standardised reporting and accounting procedures and also to strengthen the supervisory capacity of Bank of Ghana (Amidu, 2007). The Law also sought to invite suitable locally incorporated bodies to apply for licences to operate as banking institutions in Ghana (Ghana Banking Law, 1989).

According to Amidu (2007), the banking system in Ghana has not seen much progress and development in spite of the rigorous legislative and regulatory instruments. As a result, the Bank for Housing and Construction, Ghana Co-operative Bank, and the Bank for Credit and Commerce were all liquidated in the year 2000. One conclusion that can be drawn from the

above is that, legislative and regulatory instruments in the banking sector of Ghana are needed to strengthened and safeguard the survival of the banks. Furthermore, effective risk management practises and prudent financing decision are also required for optimal financial performance of the banks, all else equal.

In response to the above, the Banking Act of 2004 was introduced in Ghana to mirror Basel II and repealed the Banking Law of 1989. Banking regulators in Ghana believed that compliance with this new legislative instrument, the Banking Act of 2004 (Act 673) together with the provisions under the Companies Code of 1963 (Act 179) would bring orderliness and strengthen the banking services industry in Ghana. Consequently, this would reduce or eradicate bank failures, increase performance and boost customer confidence in the Ghanaian banking system.

Panel data methodology

Panel data methodology is an important method of longitudinal data analysis. In this research, this methodology has been adopted because of the potential it has in effectively addressing the objectives of the study. It is therefore clear that the methodology employed in this work is quantitative and of panel data form. According to Baltagi (2005), panel data involves the pooling of observations on a cross-section of units over several time periods and provides results that are simply not detectable in pure cross-sections or pure time-series studies. He argues that panel data is more useful than either cross-section or time-series data alone due to the following reasons;

- Panel data provides more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency.
- It controls for individual heterogeneity due to hidden factors.
- Better ability to study dynamics of adjustments.
- Better ability to identify effects that are simply not detectable in pure cross-section or pure time-series data.
- Enable researchers to construct and test more complicated behavioural models than cross-section or time-series data.

Model specification

The theoretical and empirical literature in corporate finance has identified a vector of variables that influence firm profitability including debt, decomposed into short-term debt, long term debt, and total debt. The relationship between debt and bank profitability in Ghana is thus estimated in the following regression models:

$$Y_{it} = \alpha_0 + \square TD_{it} + \pi X_{it} + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \alpha_0 + \Psi STD_{it} + \pi X_{it} + \varepsilon_{it} \quad (2)$$

$$Y_{it} = \alpha_0 + \Gamma LDT + \pi X_{it} + \varepsilon_{it} \quad (3)$$

Where **Y** represents both return on equity measured as the ratio of profit before taxes to shareholders equity and net interest margin measured as net interest income to total assets. **STD** is short term debt which is measured by the ratio of short term debts to total assets (total capital), **LTD** is the long term debt measured by the ratio of long term debts to total assets (total capital), and **TD** is the ratio of total debt to total assets. The symbols **Ψ**, **Γ**, and **□** are the respective coefficients of short-term debt, long-term debt, and total debt. **X** is a vector of

control variables including size, and sales growth. ε , is a three way error structure defined below:

$$\varepsilon_{itc} = \mu_{itc} + \theta_i + \delta_t$$

θ , is bank unobserved effects; δ is time specific unobserved effect and μ is the idiosyncratic error term. Two major regressions were run: one for return on equity (ROE) as a dependent variable against the set of explanatory variables in the model and the other for net interest margin (NIM) also as a response variable against the same set of explanatory variables. However, due to the problem of multicollinearity among the independent variables, a stepwise regression of three has emanated from each of the two major regressions to resolve the problem.

Estimation method

Estimation of panel data models using pooled Ordinary Least Squares (OLS) yields inconsistent estimators and heteroskedasticity errors. Furthermore, if the parameters to be estimated differ across firms and/or over time, then a pooled regression is not appropriate because the heterogeneity in the parameter estimates is not effectively dealt with (Chang and Lee, 1977). From a theoretical perspective, Hsiao (1986, p. 5) demonstrates that “ignoring such parameter heterogeneity among cross-sectional or time-series units could lead to inconsistent or meaningless estimates of interesting parameters”. To resolve this problem, it is therefore appropriate to use panel data models. Panel estimation methods including the fixed effect and random effect methods are commonly used in estimating heteroskedastic consistent estimators. The basic difference between the above mentioned estimation techniques are based on the assumptions about the relationship between the error term and the covariates. The choice of the estimation procedures above is informed by the deficiencies

with pooled Ordinary Least Squares. Estimating models from panel data requires first the determination of whether there is a correlation between the unobservable heterogeneity η_i of each firm and the explanatory variables of the model. If there is a correlation (fixed effects), we would obtain the consistent estimation by means of the within-group estimator. Otherwise (random effects) a more efficient estimator can be achieved by estimating the equation by Generalized Least Squares (GLS). The normal strategy to determine whether the effects are fixed or random is to use the Hausman (1978) test under the null hypothesis $E(\mu_i/x_{it}) = 0$. If the null hypothesis is rejected, the effects are considered to be fixed, and the model is then estimated by OLS. If the null hypothesis is accepted, we would have random effects, and the model is then estimated by GLS. In this way we achieve a more efficient estimator of β and the estimated model can be said to be robust, all else equal.

Variables used in the study

Two variable groups have been used in the study. These are dependent and independent variables.

The dependent variables

Two dependent variables have been used to operationalise bank profitability in the study. These are, net interest margin (NIM) and return on equity (ROE). The NIM was calculated as the ratio of the difference between interests received and interest paid to total assets (*i.e.* $\frac{Int.Received - Int.Paid}{TotalAssets}$). This ratio measures the margin a bank makes on its core business and some researchers use it as a proxy for measuring efficiency in the banking sector.

The return on equity (ROE) is defined as the ratio of pre-tax profit to total equity capital (E)

i.e. $ROE = \frac{\text{Pre-tax profit}}{\text{Total equity or E}}$. This is a common and widely accepted measure of ROE in the accounting and finance literature. Furthermore, this definition of ROE has been used specifically so as to prevent the results of the estimation from being distorted by the influence of tax payments.

It must be noted that an additional tax called the ‘National Reconstruction Levy’ was introduced into the banking sector of Ghana between 2001 and 2006. This additional tax ranged between 2.5% and 5% and was slapped on the pre-tax profit of the banks and dependent on the profitability level of the individual banks. What this meant was that banks with higher profits were required to pay higher rates relative to their poor performing counter-parts. The Central Bank of Ghana therefore thought this could become a disincentive to good performing banks and thus consequently abolished it in 2006 (Ghana Banking Survey, 2007). The researcher therefore believes that using after-tax profits as a numerator in computing the ROE for banks in Ghana for the chosen period of study may therefore not reflect the true and fair profitability of the banks at least from ROE perspective.

In this study, the researcher used ROE as a profitability measure rather than ROA because ROE represents the return that goes to the owners of a business hence considered as an appropriate profit metric in this work. Another point is that ROA is thought of to be already embedded in ROE although the two measure profitability from different perspectives (Saunders et al. 2004). For example, in a typical decomposition of ROE into the various financial ratios, it is found that $ROE = ROA \times \text{Equity multiplier}$. Where ROA is a measure of profitability linked to the asset size of the bank whilst the equity multiplier which indicates

the extent to which the assets of the bank are funded with equity relative to debt is a measure of leverage (Saunders et al 2004, pp. 390-391).

Furthermore, it can be observed from the extant literature in corporate finance that return on equity (ROE) is generally preferred to NIM and ROA as a profitability measure in capital structure/profitability studies. Nonetheless, the researcher included NIM (also a profit and efficiency metric of banks) as another dependent variable in the study since it reflects the profit that emanates from the core business of banks and thus a researcher desire to see how the explanatory variables would influence it in the regression model.

The independent variables

To resolve the challenge of omitted variables, three most widely and accepted debt ratios used in the extant profitability/debt policy literature have been employed in the study as independent variables. These are the ratio of short-term debt to total capital, the ratio of long term debt to total capital, and the ratio of total debt to total capital (see Taub, 1975; Abor, 2005; and Amidu, 2007). As stated earlier, bank size and sales growth have been used as control variables to minimise specification bias and to ensure the robustness of the model. These variables are discussed in turn.

1) The ratio of short-term debt to total capital

The ratio of short-term debt to total capital is the first leverage ratio employed in the study as one of the explanatory variables. It sought to determine the extent to which banks in Ghana

use short-term debt to finance their operations and how this category of debt associates with bank profitability for the chosen period of the study. Some academic writers have established that firms use a significant amount of short-term debt to finance their activities relative to long term debt (Abor, 2005; Amidu, 2007). According to Abor (2005), there exist a significantly positive association between company profitability and short-term debt. In another vein, Amidu (2007) observed an inverse relationship between short-term debt and firm profitability. However in this study, the researcher expects a significantly negative association between short-term debt and the two profitability metrics. This relationship is expected so as to meet the dictates of theoretical and durational matching perspectives in banking.

In the study, short-term debt is defined as the component of total liabilities of the banks payable within one year and includes the summation of savings accounts, current accounts, time deposits, and foreign currency deposits. In Ghana, a critical analysis of the financial reports of banks have showed that a significant amount of deposits are expected to be paid back or withdrawn by customers within a year and thus reasonably constitute a temporal source of funding or short-term debt to the banks. However, some authors have argued that in vibrant economies like Northern America and Europe, where savings habit is deeply rooted, deposits are expected to be a source of long term funding for banks since customers could leave their monies with their banks beyond a year (Saunders et al., 2004).

2) The ratio of long-term debt to total capital

The ratio of long-term debt to total capital is another debt ratio used in the study as an explanatory variable. It purported to determine the extent to which banks in Ghana use long-term debt to finance their operations and how this category of debt associates with bank profitability for the chosen period of the study. Some academic writers have established that firms use a relatively lesser amount of long-term debt to finance their activities relative to short-term debt (Abor, 2005; Amidu, 2007). According to Abor (2005), there exist an inverse relationship between company profitability and long-term debt. In another vein, Amidu (2007) observed a positive association between long-term debt and firm profitability. In spite of the above inconclusive findings relating firm profitability and long-term debt, the researcher expects a positive association between long-term debt and the two profitability metrics in this study. This relationship is expected in order to meet the expectations of the theoretical and durational matching perspectives in banking.

In the study, long-term debt is defined as the total liabilities of the banks payable beyond one year and was computed as the sum of creditors, accruals (including deferred taxes and other liabilities payable beyond one year), and borrowings. This is because, a careful analysis of the financial reports of Ghanaian banks have revealed that a significant amount of banks' borrowings as well as accruals and what is due their creditors are often expected to be paid back by the banks beyond a year and thus reasonably constitute a permanent source of funding or long-term debt to the banks. Again, some authors have observed that in vibrant economies like Northern America, Japan and Western Europe, where capital markets are highly developed, this category of debt in addition to subordinated notes and debentures rather constitute short-term funding for banks. They explained that the various elements under this debt category are rate-sensitive and further bears relatively higher interest rates

compared to deposits and are thus withdrawn or replaced immediately as rates on competitive instruments change (Saunders et al., 2004).

3) The ratio of total debt to total capital

This ratio which can also be expressed as the ratio of total liabilities to total capital is basically an addition of both short-term debt and long term debt of the banks to their total capital. The ratio sought to explain the extent to which the operations of the banks have been funded with total debt relative to equity and also to see how leverage associates with bank profitability in Ghana. Many studies to determine the association between leverage and company profitability found positive relations (see Taub, 1975 and Abor, 2005).

In another vein, some researchers have also found an inverse relationship between total debt and profitability (see Amidu, 2007; Graham 2000). It is therefore clear from the empirical literature that earlier studies to determine the association between total debt and firm profitability are inconclusive.

In this study, we expect a positive relationship between total debt and bank profitability. A significantly positive association between profitability and leverage would imply that profitable banks in Ghana depend more on leverage to fund their operations relative to equity.

4) Bank size

Size is introduced to determine whether economies or diseconomies of scale exist in the banking sector of Ghana and further doubles as a control variable. Arkhavién et al (1997) found a significantly positive association between size and bank profitability. In addition, Short (1979) argues that size is closely related to capital adequacy of a bank since relatively

large banks tend to raise less expensive capital and hence appear more profitable. Using similar argument, Goddard et al (2004), all found a positive association between bank size and capital ratios. The implication is that as bank size increases, profitability increases as well especially in the case of small and medium-sized banks.

On the other hand, many other studies suggest that little cost saving can be achieved by increasing the size of banking firm. Berger et al (1987), opine that eventually very large banks could face scale inefficiencies.

In this study, bank size has been taken as the logarithm of the total assets of the bank. The use of logarithm enables us to get the real total assets of the banks due to its capability to standardise values thus bringing them on the same platform for a more efficient analysis to be done. From the foregoing discussion, size/profitability relationship is expected to be positive in this study. A statistically positive and significant association with the dependent variables will imply the existence of the scale efficiency hypothesis in the banking sector of Ghana.

5) Sales growth

This is the last independent variable used in the study. Its purpose is to act as a control variable. Percentage change in net interest income has been used as a proxy for sales growth. A positive relationship is expected between the dependent variables (ROE and NIM) and sales growth. This positive relationship to a large extent may imply operational efficiency in the banking sector of Ghana. A negative relationship between the dependent variables and sales however is a demonstration that Ghanaian banks do not really gain much from their core business.

The entire variables for this study are based on book values in line with the argument by Myers (1984) that book values are proxies for the value of assets in place. The summary of the variables used and the expected impact of the dependent variables on the explanatory ones are shown in table 3.1 below.

Table 3.1: Variables used in the Study and their expected associations

Category	Variables	Measurement or Ratios used	Expected association between the dependent and the independent variables
Dependent variables	<ol style="list-style-type: none"> 1. Return on equity (ROE) 2. Net interest margin (NIM) 	<p>Pre-tax profit/Total Equity.</p> <p>Net interest income/ Total assets.</p>	

Independent variables	1. Short-term debt	Short-term debt/Total capital	-
	2. Long-term debt	Long-term debt/Total capital	+
	3. Total debt	Short + Long-term debt/Total capital	+
	4. Size	Log of Total assets	+
	5. Sales growth	% change in net interest income	+

The study used secondary data for the analysis and in the estimation of the empirical model. A secondary data is a data that have been previously collected for some other project rather than the one at hand but found useful by the current researcher. The financial statement which is made up of income statements and balance sheets of the sampled banks were the main sources of data for this study. These were obtained from the data files of Bank of Ghana and the archives of some individual banks under investigation. Further, scholarly articles from academic journals, relevant textbooks on the subject and the internet search engines were also used. Specifically, the financial statements of the banks in the sample were collected for the period 1997-2006 and a balanced panel of fourteen banks emerged for the study.

The various variables as defined earlier were computed and fed into *excel programme*. This was then imported into software called *Eviews (Version 6)* for the model estimations.

Previous studies conducted to investigate the relationship between capital structure and firm profitability yielded mixed results. Most studies revealed a significant positive association

between debt and firm profitability while many also found inverse relations. This inconclusive result is prevalent because of lack of a universal theory that explains the debt-equity choice. However, one remarkable observation is that all the theories of capital structure have directly or indirectly indicated the influence of debt on firm profitability.

The present study therefore examines the association between debt policy and firm profitability with the focus on the banking sector of Ghana. In doing this, it is important to segregate banks' total debt into short-term and long term debts so as to capture the two main sources of debt financing available to banks and evaluate how each reacts with banks' profit. The findings are expected to enhance the quality of financing decision in the banking sector of Ghana, which is critical in cutting down financing cost and improving the financial health of banks, all else all.

EMPIRICAL ANALYSIS

This chapter reports the findings of the research. The findings are based on the methodology as discussed in the previous chapter. The chapter is divided into four main sections: firstly, the descriptive statistics of the variables is reported in Table 4.1. This is followed by Table 4.2 which reports the multicollinearity matrix. Table 4.3 shows the Hausman Specification Tests, and finally the results of the panel regressions are reported in Table 4.4.

Descriptive statistics

Basically, descriptive statistics utilizes numerical and or graphical methods to look for patterns in a data set. Normally, it summarizes the information in a data set by revealing the

average indicators of the variables used in a study and presents that information in a convenient way (McClave et al, 2000). As discussed in the previous chapter, 14 banks were selected for the study. The list of the banks are presented in Appendix A. Seven (7) variables were included in the study - two dependent and five explanatory variables. Table 4.1 below shows the descriptive statistics of the variables used in the study.

Table 4.1 Descriptive statistics of the variables

Variable	Mean	Std. Dev.	Min	Median	Max
Return on equity	0.470651	0.346031	-1.518000	0.448350	2.022100
Net interest margin	0.086566	0.026638	0.035700	0.081200	0.157500
Short term debt	0.652238	0.133020	0.303000	0.671000	0.965100
Long term debt	0.216228	0.119268	0.036300	0.191450	0.581800
Total debt	0.868489	0.082286	0.451600	0.884250	1.126200
Bank size	5.782616	0.638920	4.315600	5.840300	6.889900
Sales growth	34.90324	42.07435	-57.43000	24.50000	196.9400

Where:

- Return on equity = Pre-tax profit/Total equity.
- Net interest margin = Net interest income/Total Asset.
- Short-term debt = Short-term debt/Total Capital.
- Long-term debt = Long-debt/Total Capital.
- Total debt = Short-term debt + Long-term debt/Total Capital.

- Bank size = Log of Total Asset.
- Sales Growth = Percentage Change in Net Interest Income.

The descriptive statistics above show that over the period under study, the profitability ratios measured by returns on equity (ROE) and net interest margin (NIM) averaged 47% and 8.7 % respectively. The variations within and between the banks is quite moderate as can be seen from the minimum and maximum values shown above. These pictures suggest a good performance in the banking sector of Ghana during the period under investigation. The ROE measures the contribution of net income per cedi (local currency) invested by the firms' stockholders; a measure of the efficiency of the owners' invested capital.

The debt ratio variables present interesting results. During the period, the ratio of short-term debt to total capital averaged 65.2%. However, the ratio of long-term debt to total capital stood at 21.6%. Total debt averaged 86.8%. This is an indication that approximately 87% of total assets in the banking sector of Ghana are represented by debt, confirming the fact that banks are highly levered institutions. An important point that must be recognised is that, over 65% of these are short-term debts, attesting to the fact that Ghanaian banking firms largely depend on short-term debt for financing their operations relative to long-term instruments (Amidu, 2007). This trend is also eminent as a result of the under-developed nature of the Ghanaian long-term debt market, which makes it difficult for most Ghanaian banks to access long-term debt (see Abor, 2005).

The descriptive statistics above also show that sales growth in the banking sector of Ghana stood at 34.9% on the average. This value indicates that there is rapid growth in the banking

services industry in Ghana, and further revealed that the sector remains one of the most profitable industries in Ghana (see Ghana Banking Survey, 2007).

The Correlation Matrix

Generally in model specification, variables that are correlated (those with values exceeding 0.50) cannot be placed in the same model as they play basically the same role. To resolve this difficulty, it is accepted that if variables are correlated or highly correlated one of the variables be dropped in the model to avoid misspecification. However, if the researcher is reluctant in dropping one of the variables, then the multicollinearity problem can be resolved through a step-wise regression. Below is the correlation matrix reported in Table 4.2.

Table 4.2 Correlation Matrix of the Variables used in the Study

Correlation	BS	LTD	NIM	ROE	SG	STD	TD
BS	1.000000						
LTD	-0.053607	1.000000					
NIM	-0.002711	-0.156003	1.000000				
ROE	0.316866	-0.150139	0.262324	1.000000			
SG	0.058806	0.124880	0.114010	0.178945	1.000000		
STD	0.201590	-0.792645	-0.044606	0.226033	-0.061812	1.000000	
TD	0.247818	0.168302	-0.298275	0.147803	0.080934	0.467580	1.000000

Where: **BS** represents bank size, **LTD** denotes long-term debt; **NIM** represents net interest margin, **ROE** is returns on equity; **SG** is sales growth, **STD** represents short-term debt; and **TD** represents total debt. From table 4.2 above, there exist a high multicollinearity between

short-term debt (STD) and long-term debt (LDT). As a result of this, the two variables cannot be run in the same regression model. To address this challenge, a stepwise regression has been employed in this study, which led to six separate regression equation models.

The Hausman Specification Test

The Hausman specification test is a test performed on a panel data prior to running a panel data regression to determine whether the researcher should choose the fixed effects or the random effects in his/her model estimation. As a rule of thumb, if performed and the probability value is less than 0.05 (i.e. $p < 0.05$) then there is a correlation between the error terms and the explanatory variables and the fixed effects is adopted in the model estimation otherwise the random effects is a more efficient estimator of the parameters under investigation. Table 4.3 below shows the results of the Hausman specification tests.

Table 4.3 Hausman Specification Test for Return on Equity and Net Interest Margin

Variables	Chi-square statistic	Probability Values
ROE = std + bs + sg	29.724006	0.0000
ROE = ltd + bs + sg	22.298360	0.0001
ROE = td + bs + sg	18.342426	0.0004
NIM = std + bs + sg	35.598782	0.0000
NIM = ltd + bs + sg	36.999221	0.0000

NIM = td + bs + sg	22.524388	0.0001
---------------------------	-----------	--------

Where: **ROE** represents returns on equity, **NIM** denotes net interest margin, **std** represents short-term debt, **ltd** represents long-term debt, and **td** denotes total debt.

From table 4.3 above, it can be observed that all the probability values in the six models are below 0.05 (i.e. $p < 0.05$). Therefore it is prudent to use fixed effects as this approach produces a more efficient parameter estimates. The point therefore is that in the model specification in this study, the error terms and the explanatory variables are correlated.

Panel regression results

In this section, the various panel data regressions that were run are discussed. Regression analysis is used to investigate the relationship between capital structure and bank profitability in Ghana, measured by returns on equity (ROE) and net interest margin (NIM). As stated in the previous chapter, two major regressions were run in the study. However, due to the problem of multicollinearity among the explanatory variables, a stepwise regression technique has been adopted so as to achieve a more efficient parameter estimates. As a result of this, six different regression equations were generated. In light of this, each debt ratio was regressed against each dependent variable whilst maintaining the same control variables in all scenarios. The fixed effects regression results are presented in table 4.4 below and discussed thereof.

Table 4.4 Consolidated Regression Estimates of Profitability and Debt Nexus

Estimator	FIXED FFECTS ESTIMATION
------------------	--------------------------------

Dependent var.	ROE	ROE	ROE	NIM	NIM	NIM
Long-term debt		-0.093136 0.222432 (0.6762)			-0.014117 0.018410 (0.4447)	
Short-term debt	0.149456 0.211710 (0.4816)			-0.030641 0.017369 (0.0802)		
Bank size	-0.126636 0.050244 (0.0130)	-0.117151 0.047824 (0.0157)	-0.126451 0.051869 (0.0162)	-0.016651 0.004122 (0.0001)	-0.019330 0.003958 (0.0000)	-0.011470 0.003954 (0.0044)
Sales Growth	0.001685 0.000491 (0.0008)	0.001670 0.000493 (0.0010)	0.001628 0.000486 (0.0011)	0.000138 4.03E-05 (0.0008)	0.000154 4.08E-05 (0.0003)	0.000154 3.71E-05 (0.0001)
Total debt			0.206249 0.376396 (0.5847)			-0.137052 0.028695 (0.0000)
_cons	1.046648 0.277994 (0.0003)	1.109938 0.284237 (0.0002)	0.965936 0.343419 (0.0057)	0.198010 0.022807 (0.0000)	0.196032 0.023525 (0.0000)	0.266552 0.026181 (0.0000)
N	140	140	140	140	140	140
r ²	0.592024	0.590954	0.591368	0.536653	0.527190	0.599252
F-statistic	11.15550	11.10621	11.12528	8.903754	8.571676	11.49540
F-prob.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
D-W Statistic	1.805388	1.819548	1.831121	1.268502	1.128825	1.393406

Legend: b/se/p

Where: **b** represents the coefficients of the variables used, **se** denotes the standard errors of the variables used, and **p** is the probability values in bracket.

Source: *Author's Regression.*

From table 4.4 above, the Durbin-Watson Statistic (D-W Statistic) shown for the various regressions revealed that the problem of autocorrelation of the errors terms which is sometimes a challenge in panel data methodology is **not** serious in this research. These values

averaged 1.81868567 and 1.26357767 for equations that used returns on equity and net interest margins as dependent variables respectively in the study.

The R^2 measures the extent to which the explanatory variables explain the variations in the dependent variables. From table 4.4 above, the results indicate that the explanatory variables (the debt ratios in this case) partially explained 59% of the variations in return on equity (i.e. profitability) in the banking sector of Ghana within the period under study. On the other hand, 54% of the variations in net interest margin are explained by variations in short-term debts or deposits in the banking sector of Ghana for the period under study. Similarly, 53% of the variations in net interest margin are also explained by variations in long-term debts. However, on the average approximately 60% of variations in profitability measured by returns on equity (ROE) and net interest margins (NIM) in the banking sector of Ghana for the period under study is explained by variations in leverage. These figures suggest that profit determination in the banking sector of Ghana depends to a large extent on the debt-equity choice or its combination thereof for approximately 60%. Hence prudent financing decision in the banking sector of Ghana is crucial for the sectors' profitability. Nonetheless, this relatively low value of the R^2 revealed that other factors rather than debt policy influence banking profitability in Ghana. However, it is important for us to acknowledge that the focus of this study is to examine the influence of debt policy on bank profitability in Ghana, thus the researcher believes that any attempt to include other variables beyond debt ratios would render the thesis non-focus. The F -test which shows the global usefulness of the model indicates appreciable goodness of fit. In other words, the F -statistics prove the validity of the estimated models which are statistically significant at 1% as shown by the F -probabilities.

The constant term indicates the returns on equity and net interest margins levels if all the explanatory variables are put to zero. It is significant at 1%, 5% or 10% and shows that other

factors which equally impact on interest margins and returns on equity have not been captured in the model. These factors may be mostly institutional and/or legal environments in which the banks operate. Major findings of this research are discussed below beginning with the effect(s) of the explanatory variables on returns on equity in the banking sector of Ghana. Furthermore, the effect(s) of the explanatory variables on net interest margins are analysed.

From table 4.4 above, it can be observed that short-term debts, long-term debts, and total debt are not important in determining returns on equity in the banking sector of Ghana. They are all insignificant at the levels of 1%, 5%, and 10%. This means that debt-returns on equity (i.e profitability) hypotheses do not exist in the banking sector of Ghana at least for the period under study. It is crucial for us to note that whether debt would have a significant effect on returns on equity depends to a large extent on what the debt is used for. Assuming deposits are taken but are not efficiently utilized means returns on equity will be nil or little since a significant proportion of banks' capital come from debt. In Ghana, over 86% of banks' total capital comes from debt. Similarly, if deposits are taken and given out as loans but at high default rates, it is again expected that debt will have little or no effect on returns on equity. This seems to be the case in Ghana especially during the 1990s to early 2000s when doubtful debts were astronomically high on the books of most banks. This led, for example, to the failure and closure of Bank for Housing and Construction, and Cooperative Bank in the year 2000 (Ghana Banking Survey, 2006).

To add to the above, debt does not influence returns on equity significantly in the banking sector of Ghana as dividend payout ratios are small or in most cases nil in the sector. The evidence in Ghana is that, the levels of retained earnings continue to soar on the books of

most banks thus depriving shareholders of dividends at least in the short-run (Ghana Banking Survey, 2007).

Another reason for the insignificance of debt (being it short-term, long-term, and total) in influencing returns on equity is as a result of increasing costs in doing the business of banking in emerging economies including Ghana. The resultant effect of this is that it reduces profits which could have gone to shareholders, all else equal. These costs include increasing employee salaries, investments in information technology, acquisition and maintenance of chauffeured premises, and finally increasing cost of raising deposits. These costs are discussed in turn.

The cost of hiring and maintaining employees continue to increase in the banking sector of Ghana. Global sophistication of banking as a result of the advent of computer-based technology and increasing customer desire for innovative products and services has called for the engagement of very skilled personnel for effective and efficient management of all these demands in order to remain profitable and competitive (Ghana Banking Survey, 2007). To achieve this, it is crucial for us to note that heavy costs are often incurred, which significantly reduces shareholders' wealth. The worst scenario is when the benefits of these employees do not more than compensate significantly to the cost of hiring them.

Furthermore, the cost of investment in information technology has also undoubtedly increased the cost of doing business in the banking sector of Ghana. For example, the cost of installing satellites, automated teller machines (ATM's), telephone lines and other

information technology devices have all escalated costs on the books of the various banking firms in Ghana. Consequently, this would affect profits adversely and thus shareholders' wealth, all else equal. What we must appreciate at this point is that very often than not, it's the net returns on loans given out by the banks that is primarily used in offsetting the above mentioned costs among other things (Ghana Banking Survey, 2006). It is therefore intuitive that if significant portions of this income are used in compensating for costs, then banking profits which is mainly a function of net returns on loans will fall. Thus the insignificance of debt (deposits) in determining returns on equity or shareholders' wealth in the banking sector of Ghana is not surprising.

Another group of overheads, which is reducing banks' profit in Ghana and therefore shareholders' wealth thus making deposits insignificance in influencing returns on equity is acquisition and maintenance of chauffeured premises. In Ghana, most banking groups believe that one of the ways to attract clients is to operate from expensive, well decorated and furnished premises. This practice makes the banking halls attractive and comfortable to customers but would however build up costs, which if can be reduced would make banking firms more profitable and competitive in Ghana.

Last but not least is the increasing cost of raising debt. There is an increase competition in the banking sector of Ghana due to global deregulation of the financial services sector and the gains that abounds in banking in Ghana (Ghana Banking Survey, 2007). This has led to the influx of many foreign banks mostly from Nigeria onto the soils of Ghana. To remain competitive and profitable therefore, banking firms in Ghana have embarked on aggressive advertisements and other forms of campaigns to increase their customer base. In light of this,

frequent adverts and many sales personnel have been used as a tool to attract customers for the various banking firms. This also builds up cost which reduces banks' margins and therefore shareholders' wealth especially when the cost of these adverts and campaigns far outweighs the benefits they bring to the various banking groups.

From table 4.4 above, Bank size defined as logarithm of total assets has been used as a control variable and thus the quest to see how it would influence return on equity. The results revealed that bank size enters the regression equation as negative with returns on equity (ROE) and is statistically significant at 5%. This means that in the banking sector of Ghana, size is important in determining banks' profit. However, what is important for us to note is that as bank size increases bank profitability falls in Ghana and vice versa. The negative relationship between bank size and returns on equity or profitability suggests that larger banks tend to exhibit lower margins and is consistent with models that emphasize the negative role of size from scale inefficiencies. This agrees with previous empirical works such as Marsh (1982) and Titman and Wessels (1988). Therefore, there is lack of enough evidence in this study to accept the hypothesis that bank size and returns on equity are positively related in the banking sector of Ghana.

In theory, banks generally would increase their profits as the level of economic activities increase in an economy. As the level of economic activities improve the need for credit increases and this may translate into higher profitability for firms. According to this school of thought, there exist a positive relationship between growth and firm profitability. In this study, the growth variable also enters the regression equation as positive with returns on equity and is statistically significant at 1%. This means that growth is very important in

determining banks profit in Ghana. What is important for us to acknowledge is that as growth increases in the banking sector of Ghana, profitability also increases and is in line with the theoretical prediction. Some earlier studies also confirmed this stance, for example Kyereboah-Coleman (2004) and Abor (2005). Thus, it is intuitive that any attempt by policy makers to increase economic growth should be welcome by banks. Therefore, there is lack of enough evidence in this study to reject the hypothesis that sales growth and returns on equity are positively related in the banking sector of Ghana.

The nature of the relationship between debt (short-term debt, long-term debt, and total debt) and net interest margin would primarily depend on the levels of interest payments or interest received or both. It is expected that when debt is increasing, interest payments should also increase since depositors must be compensated accordingly. As this happens, it is imperative for us to note that interest received may not necessarily go up especially when the debts are not being utilised. This means that so long as there is debt, there would be an interest component especially from interest payments. This therefore establishes a relationship between debt and net interest margin. Therefore, it can be argued that net interest margin would dwindle either as a result of an increase in interest payments or a decrease in interest received. In Ghana, the fact is that the margins are falling and this can be attributed to a decrease in interest received since interest payments to depositors have rather been low among other things. The inverse relationship between debt and net interest margin or profitability in the banking sector of Ghana is therefore not unanticipated.

From table 4.4 above, there exists a negative relationship between short-term debt and net interest margin or profitability in the banking sector of Ghana. This association is significant at 10%. This means that as deposits increase in the banking sector of Ghana, profitability

measured by net interest margin falls. The following reasons account for this phenomenon: Firstly, lending rates are high in the banking sector of Ghana. This means that though deposits are received from clients and interest paid on them, the high lending rates coupled with collateral demand by the banks are deterring customers from accessing the loans thereby reducing interest received of the various banking firms. The second reason is that most customers are unable to repay their loans thus increasing doubtful debts on the books of the banking groups in Ghana. It is often argued that most business men and women do not properly utilise the loans they have acquired from the banks as many would use bank loans to purchase cars and other expensive items for which the loans have not been acquired for. This increases the moral hazard of the bankable population in Ghana which the banks are not unaware of and would therefore compensate for this through higher lending rates. The third reason for significant negative association between short-term debt and net interest margin or profitability in the banking sector of Ghana is as a result of increased competition. According to Ghana Banking Survey (2006), competition has intensified in the banking sector of Ghana as a result of the influx of foreign banks. In Ghana the fact is that only 30% of the population is bankable as unemployment rate is high and many still do not appreciate why they should deposit their monies with the banks taking into consideration the low deposit rates in the country. To become profitable and competitive, these many banks have to increase their campaigns of attracting more customers from within the small bankable population. The consequence is increased cost of raising deposits and diminishing customer base of the various banking firms, which is affecting their margins negatively. Therefore, there is lack of enough evidence in this study to accept the hypothesis that short-term debt and net interest margin are positively related in the banking sector of Ghana.

Long-term debt is negatively related to net interest margin but insignificant at 1%, 5%, and 10%. This means that creditors and accruals and both foreign and domestic borrowings do not influence net interest margin or profitability in the banking sector of Ghana. An assessment of the books of the various banking groups has shown that banks in Ghana rather use very low levels of long-term debt in their operations. This may be due to the under developed nature of our bond market which make accessibility of long-term debt impossible for Ghanaian banks. It is therefore intuitive that the insignificance of long-term debt in influencing net interest margin or profitability in the banking sector of Ghana is not unexpected. Therefore, in this study it is clear that long-term debt/net interest margin or profitability hypothesis does not exist in the banking sector of Ghana at least for the period under investigation.

Table 4.4 above revealed an inverse relationship between total debt and net interest margin, which is significant at 1%. This means that as leverage increases in the banking sector of Ghana, net interest margin or profitability falls. What this suggests basically is that all the deposits that banks mobilise in the banking sector of Ghana are not being utilised effectively and efficiently as many challenges still abound in the sector which is hampering the banking firms from achieving their full potentials. Furthermore, this significant negative association also means that profitable banks in Ghana depend less on debt as their main financing option. This result is also consistent with the finding of Titman and Wessels (1988) and also revealed that higher profits increase the level of internal financing. The fact is that profitable banks accumulate more internal reserves and this enables them to depend less on external funds. Amidu (2007) argues that, “even though profitable banks may have better access to external financing, the need for debt finance may possibly be lower, if new investments can be financed from accumulated reserves”. This finding supports the pecking order theory that

profitable firms prefer internal financing to external financing. Therefore, there is lack of enough evidence in this study to accept the hypothesis that total debt and net interest margin are positively related in the banking sector of Ghana.

From table 4.4 above, Bank size defined as logarithm of total assets has been used as one of the control variables in order to avoid specification bias and also researcher desire to see how it would influence net interest margin. The results revealed that bank size enters the regression equation as negative with net interest margin (NIM) and is statistically significant at 1%. This means that in the banking sector of Ghana, size is very important in determining banks' profit. However, what is important for us to note is that as bank size increases bank profitability falls in Ghana and vice versa. The negative relationship between bank size and net interest margin or profitability suggests that larger banks tend to exhibit lower margins and is consistent with models that emphasize the negative role of size from scale inefficiencies. This agrees with previous empirical works such as Marsh (1982) and Titman and Wessels (1988). Therefore, there is lack of enough evidence in this study to accept the hypothesis that bank size and net interest margin are positively related in the banking sector of Ghana.

Theoretically, banks generally would increase their profits as the level of economic activities increase in an economy. As the level of economic activities improve the need for credit increases and this may translate into higher profitability for firms. According to this school of thought, there exist a positive relationship between growth and firm profitability. In this study, the growth variable also enters the regression equation as positive with net interest margin and is statistically significant at 1%. This means that growth is very important in determining banks profit in Ghana. What is important for us to acknowledge is that as growth

increases in the banking sector of Ghana, profitability also increases and is in line with the theoretical prediction. Some earlier studies also established this position, for example Kyereboah-Coleman (2004) and Abor (2005). Thus, it is intuitive that any attempt by policy makers to increase economic growth should be welcome by banking firms in Ghana. Therefore, there is lack of enough evidence in this study to reject the hypothesis that sales growth and net interest margin are positively related in the banking sector of Ghana.

FINDING

Banks generally play a major role in the economic development of every country. Basically, they intermediate between the surplus and deficit units of an economy among other functions by taking funds from those who have them but do not have any immediate need for them and channel these funds to those in need of them.

One critical decision banks face is the debt-equity choice. Among others, this choice is necessary for the profit determination of firms. What this means is that banks that are able to make their financing decision prudently would have a competitive advantage in the industry and thus make superior profits, all else equal. Nonetheless, it is essential for us to recognize that this decision can only be wisely taken if and only if banks know how debt policy influences their profitability.

This study examined the relationship between capital structure and bank profitability in Ghana. The study covered 14 banks over the period 1997-2006. Panel data methodology was employed and the major findings of the study are summarized below:

Firstly, it was observed that 87% of the total capital of banks in Ghana is made up of debt. Of this, 65% constitute short-term debts while 22% is made up of long-term debts. This has re-emphasised the fact that banks are highly levered institutions and also highlights the importance of short-term debts over long-term debts in bank financing in Ghana. This finding agrees with previous studies such as Abor (2005) and Amidu (2007) in stressing the importance of short-term debt in firm financing in Ghana.

Short-term debt, long-term debt, and total debt were found to be insignificant at 1%, 5%, and 10% in determining returns on equity in the banking sector of Ghana. This means that deposits do not necessarily translate into enhancing returns on equity in the banking industry in Ghana. One reason is the increasing cost of doing the business of banking in Ghana which is consequently driving down profits in the sector. Another reason is the high lending rates in the banking sector of Ghana which is deterring many customers from using loan facilities. It is crucial for us to note that when deposits are received but banks could not significantly give them out as loans to customers, means these deposits would not in any way influence returns on equity or in the worst scenario it would rather constrain returns on equity. It is also important for us to note that collateral demands by the banks before loans are given out is one of the key issues that is impeding customers from accessing loans. When this happens deposits are underutilized thus making it insignificant in determining returns on equity. Last but not least factor that explains why debt is not important in explaining returns on equity in the banking sector of Ghana is increased competition which is lowering banks' customer base hence their margins. After the deregulation of the financial services sector in Ghana, the country has seen the influx of many banks mostly from Nigeria. This has increased competition among the banks for customers amidst the already small bankable population in Ghana.

With regards to the relationship between short-term debt and net interest margin, the regression result indicates a significantly negative association. This means that as deposits increase in the banking sector of Ghana, net interest margin or profitability falls. The main reason for this phenomenon is the reduction in interest received by the various banking firms. This can be attributed to relatively low patronage of bank loans in Ghana due to high lending rates, demand for collaterals by the banks among others.

In the study, long-term debt is negative but insignificant in determining net interest margin in the banking sector of Ghana. This is not startling since as a matter of fact banks in Ghana use very low levels of long-term debt in their operations. Another reason is that the capital market, where banks can access long-term debt is not developed in Ghana.

Total debt is significant and negatively related to net interest margin in the study. This means that as leverage increases in the banking sector of Ghana, profitability expressed as net interest margin falls. This finding suggests that profitable banks in Ghana use less debt or they depend more on internally generated funds rather than external funds as their main financing option. This result is consistent with Amidu (2007) and supports the pecking order theory of firm financing.

The results of this study has revealed that bank size which is defined as the logarithm of total assets is significant and negatively related to both returns on equity and net interest margin in the banking sector of Ghana. This means that size is very important in determining banks' profit in Ghana. However, what is important for us to note is that as bank size increases bank profitability falls in Ghana and vice versa. This significant negative relationship between

bank size and profitability suggests that larger banks tend to exhibit lower margins and is consistent with models that emphasize the negative role of size from scale inefficiencies. This finding agrees with some previous empirical works such as Marsh (1982) and Titman and Wessels (1988).

Finally in the study, there exists a positive and statistically significant relationship between sales growth and both returns on equity and net interest margin in the banking sector of Ghana. Theoretically, banks increase their profits as the level of economic activities increase in an economy. The finding suggests that growth is very important in determining banks profit in Ghana. What is important for us to acknowledge is that as growth increases in the banking sector of Ghana, profitability also increases and is in line with the theoretical prediction. Some earlier studies also established this position, for example Kyereboah-Coleman (2004) and Abor (2005).

Conclusions

The study investigated the relationship between capital structure and bank profitability in Ghana over the period 1997-2006. Using panel data methodology, it was discovered that short-term debts, long term debts, and total debt are insignificant in determining returns on equity (ROE) in the banking sector of Ghana. This has been attributed to increased cost of doing the business of banking in Ghana coupled with underutilization of deposits due to high lending rates.

Furthermore, bank size influences profitability measured as returns on equity and net interest margin (NIM) negatively. This significant negative relationship between bank size and profitability suggests that larger banks tend to exhibit lower margins and is consistent with models that emphasize the negative role of size from scale inefficiencies.

Sales growth affects profitability positively in the banking sector of Ghana. Theoretically, banks increase their profits as the level of economic activities increase in an economy. The finding suggests that growth is crucial in determining banks profit in Ghana and when it increases, profits also increase. This result is in line with the theoretical prediction.

The study also found that profitable banks in Ghana use less debt and depend more on internal sources of financing thus supporting the pecking order theory. In addition to the above, the study has also shown that long-term debt is not important in explaining profitability measured as net interest margin in the banking sector of Ghana. This is probably due to the absence of a well developed bonds market in Ghana, where banks can raise enough long-term debt.

Recommendations

Policy makers have an interest in promoting the banking sector by making it stable and efficient in order to boost customer confidence and also because of the intermediation role of banks. Stability clearly requires sufficient banking profitability, while economic efficiency requires banking spreads that are not too large. A prerequisite to formulating effective banking policies to some extent depends on the understanding of how capital structure influences the profitability of banks. To add to the above, it is often the desire of top management of every banking firm to make prudent financing decision in order to remain

profitable and competitive. A prerequisite to achieve this also to some extent, needs a sound knowledge of how capital structure influences profitability of banks.

Recommendations for policy makers

Based on the findings of the study, the following is recommended for policy makers and the management of banking institutions in Ghana.

- 1) Banks in Ghana must not be only interested in mobilising deposits but must also be concerned with utilising these deposits effectively and efficiently. To achieve this, the banks must set competitive lending rates that would not deter customers from accessing loans. Further, banks' policy that aims at always demanding collaterals from customers before loans are granted must be reviewed to rope in more customers. This is not to say that the credit worthiness of loan seekers must not be effectively appraised.
- 2) Efforts must also be geared towards prudent cutting down of costs in the banking sector of Ghana. Costs on employee salaries and remunerations, banking premises and the like can be negotiated wisely so as to cut some cost. Many still believe that banks in Ghana make a lot of money to just pay their employees 'good' at the expense of the shareholders.
- 3) The government, through Bank of Ghana (BoG), must develop our bond market so that banking firms can raise a lot of long-term debt which they need to meet their short to medium term loan obligations.

REFERENCES

- Abor, J. (2005), “The Effect of Capital Structure on Profitability: An Empirical Analysis of Listed Firms in Ghana”, *The Journal of Risk Finance*, Vol. 6 No. 5.
- Abor, J. and Biekpe, N. (2005), “What Determines the Capital Structure of Listed Firms in Ghana?” *African Finance Journal*, Vol. 7 No. 1, pp. 37-48.
- Abor, J. (2008). *Determinants of the Capital Structure of Ghanaian Firms*. Research Paper No. 176. African Economic Research Consortium, Nairobi.
- Akerlof, G. (1970) “The Market for Lemons: Qualitative Uncertainty and the Market Mechanism”, *Quarterly Journal of Economics*, Vol. 84, pp. 288–300.
- Amidu, M. (2007), “Determinants of Capital Structure of Banks in Ghana: An Empirical Approach”, *Baltic Journal of Management* Vol. 2 No. 1, pp. 67-79.
- Arkhavein, J.D., Berger, A. N., Humphrey, D. B. (1997), The Effect of Mega Mergers on Efficiency and Prices: Evidence from a Bank Profit Function, *Finance and Economic Discussion Series 9, Board of Governors of Federal Reserve System*.
- Bank of Ghana: *Ghana Banking Act*, Act 2004.
- Barclay, M. and Smith, C. (2005), “The Capital Structure Puzzle: The Evidence Revisited”, *Journal of Applied Corporate Finance*” Vol. 17 No. 1.
- Barnea, A., Haugen, R.A. and Senbet, L.W. (1980), “A Rationale for Debt Maturity and Call Provision in the Agency Theoretic Framework”. *The Journal of Finance*, Vol.35 No.5, pp.1223–34.
- Basel Committee on Banking Supervision (1988). *The Capital Accord*. Bank for International Settlements, Basel, Switzerland.
- Basel Committee on Banking Supervision (2004). *The New Basel Capital Accord*. Bank for International Settlements, Basel, Switzerland.
- Basel Committee on Banking Supervision (2006). *International Convergence of Capital Measurement and Capital Standards: A Review Framework, Comprehensive Version*. Bank for International Settlements, Basel, Switzerland.

- Berger, A. N., Hanweck, G. A. and Humphrey, D. B. (1987), “Competitive Viability in Banking: Scale, Scope and Product Mix Economics”, *Journal of Monetary Economics*, Vol.20, pp. 501-520.
- Berle, A. S. Jr. and Means G. C. (1932), *The Modern Corporation and Private Property*, MacMillan, New York.
- Blazenko, G.W. (1987), “Managerial Preference, Asymmetric Information, and Financial Structure”, *Journal of Finance*, Vol.42, pp. 839-862.
- Bos, T. and Fetherston, T.A. (1993), “Capital Structure Practices on the Pacific rim”, *Research in International Business and Finance*, Vol. 10, pp. 53-66.
- Bradley, M., Jarrel, G.A and Han Kim, E. 1984. “On the Existence of an Optimal Capital Structure: Theory and Evidence”. *The Journal of Finance*, Vol. 39, pp. 857–80.
- Brealey, R.A. and Myers, S.C. (2000), *Principles of Corporate Finance*, 6th ed., McGraw-Hill, Boston, MA.
- Brealey, R.A. and Myers, S.C. (2003), *Principles of Corporate Finance*, international ed., McGraw-Hill, Boston, MA.
- Brounen, D. And Eichholtz, M.A. (2001), “Capital Structure Theory: Evidence from European Property Companies’ Capital Offerings” *Real Estate Economics*, Vol.29 No.4, pp. 615-632.
- Brownlee, E.R., Ferris, K.R. and Haskins, M.E. (2001), *Corporate Financial Reporting*, 4th ed., McGraw-Hill, Boston.
- Champion, D. (1999), “Finance: The Joy of Leverage”, *Harvard Business Review*, Vol. 77 No. 4, pp. 19-22.
- De Angelo, H. and Masulis, R.W. (1980), “Optimal Capital Structure under Corporate and Personal Taxes”, *Journal of Financial Economics*, Vol. 8, pp. 3-29.
- De Jong, A., R. Kabir and T.T. Nguyen (2006), “Capital Structure around the World: The Roles of Firm- and Country-Specific Determinants”, Working Paper, (available at <http://ssrn.com/abstract=890525>).

- Donaldson, G. (1961), *Corporate Debt Capacity*, Harvard University Press, Boston.
- Fama, E. And Miller, M. (1972), *The Theory of Finance*, Holt, Rinehart, and Winston, New York.
- Fama, E.F. and French, K.R. (1998), “Taxes, Financing Decisions, and Firm Value”, *Journal of Finance*, Vol. 53, pp. 819-43.
- Fan, J.P.H., S. Titman and G. Twite (2006), “An International Comparison of Capital Structure and Debt Maturity Choices”, Working Paper, (Hong Kong University of Science and Technology).
- French, K.R. and Fama, E.F. (2002) “Testing Trade-Off and Pecking Order Predictions about Dividends and Debt”, *Review of Financial Studies*, Vol. 15, pp 1-33.
- Ghana Banking Survey, *PricewaterhouseCoopers*, 2005, Accra, Ghana.
- Ghana Banking Survey. , *PricewaterhouseCoopers*, 2006, Accra, Ghana.
- Ghana Banking Survey. , *PricewaterhouseCoopers*, 2007, Accra, Ghana.
- Glen, J. and Pinto, B. (1994), “Debt or Equity? How Firms in Developing Countries Choose”, IFC Discussion paper No. 22, pp. 1-16.
- Goddard, J., et al (2004), “The Profitability of European Banks: A Cross-Sectional and Dynamic Panel Analysis”, *Manchester School*, Vol. 72 No.3, pp. 363-381.
- Graham, J.R. (2000), “How Big are the Tax Benefits of Debt?”, *Journal of Finance*, Vol. 55, pp. 1901-41.
- Grossman, S. J. and Hart, O. (1982), “Corporate Financial Structure and Management Incentives”, In: *The Economics of Information and Uncertainty* (ed. McCall, J. J.), pp. 107–140. University of Chicago Press, Chicago.
- Harris, M. and Raviv, A. (1990), “Capital Structure and the Informational Role of Debt”, *Journal of Finance*, Vol. 45 No. 2, pp. 321–49.
- Hausman, J.A. (1978), “Specification Tests in Econometrics”, *Econometrica*, Vol. 46, pp. 1251-1271.

- Heinkel, R. (1982), "A Theory of Capital Structure Relevance under Imperfect Information", *Journal of Finance*, Vol. 37, pp. 1141-1150.
- Hutchinson, R.W. (1995), "The Capital Structure and Investment Decisions of the Small Owner-managed Firm: Some Explanatory Issues", *Small Business Economics*, Vol. 7, pp. 231.
- Jensen, M. (1986), "Agency Cost of Free Cash-Flow, Corporate Finance and Takeovers", *American Economic Review*, Vol. 76, pp. 323-9.
- Jensen, M. and Meckling, W. (1976), "Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure", *Journal of Financial Economics*, Vol. 3, pp. 305-60.
- Kester, W.C. (1986), "Capital and Ownership Structure: A Comparison of United States and Japanese Manufacturing Corporations", *Financial Management*, Vol. 15, pp. 5-16.
- Kim, H., Heshmati, A. and Aoun, D. (2006), "Dynamics of Capital Structure: The Case of Korean Listed Manufacturing Companies", *Asian Economic Journal*, Vol. 20 No. 3, pp. 275-302.
- Klein, L.S., O'Brien, T.J. and Peters, S.R. (2002), "Debt vs. Equity and Asymmetric Information: A Review", *The Financial Review*, Vol. 37, pp. 317-350.
- Korajczyk, R.A., Lucas, D.J. and McDonald, R.L. (1992), "Equity Issues with Time Varying Asymmetric Information", *Journal of Financial and Quantitative Analysis*, Vol. 27, pp. 397-417.
- Kyereboah-Coleman, A. (2004), "An Investigation into the Determinants of Bank Profitability and Interest margins: The case of Ghana", *First African Finance Conference*, ACIA. July 14-15, 2005.
- Leland, H.E. and Pyle, D.H. (1977), "Information Asymmetries, Financial Structure, and Financial Intermediation", *Journal of Finance*, Vol. 32, pp. 371-378.
- Lucas, D.J. and McDonald, R.L. (1990), "Equity Issues and Stock Price Dynamics", *Journal of Finance*, Vol. 45, pp. 1019-1043.

- Leibenstein, H. (1966), "Allocative Efficiency vs. 'X-Efficiency'", *American Economic Review*, Vol. 56, pp. 392–415.
- McClave, J.T., and Sincich, T. (2000), *Statistics*, 8th ed., Prentice Hall, Upper Saddle River, New Jersey.
- Miller, M.H. (1977), "Debt and Taxes", *Journal of Finance*, Vol. 32, pp. 261–76.
- Modigliani, F. and Miller, M. (1958), "The Cost of Capital, Corporate Finance and the Theory of Investment", *American Economic Review*, Vol. 48, pp. 261-97.
- Modigliani, F. and M. Miller. (1963), "Corporate income taxes and the cost of capital: A correction". *American Economic Review*, Vol.53, pp. 443–53.
- Myers, S.C. (1984), "The Capital Structure Puzzle", *Journal of Finance*, Vol. 39, pp. 575-92.
- Myers, S.C. and Majluf, N.S. (1984), "Corporate Financing and Investment Decisions when Firms Have Information that Investors Do Not Have", *Journal of Financial Economics*, Vol. 12, pp. 187-221.
- Myers, S.C. (2001), "Capital Structure", *Journal of Economic Perspectives*, Vol.15 No.2, pp. 81–102.
- Nerlove, M. (1968), "Factors Affecting Differences Among Rates of Return on Investments In Individual Common Stocks", *Review of Economics and Statistics*, Vol. 50, pp. 312-31.
- Ooi, J. (1999), "The Determinants of Capital Structure: Evidence on UK Property Companies", *Journal of Property Investment & Finance*, Vol. 17 No. 5, pp. 464-80.
- Petersen, M. and Rajan, R. (1994a), "The Benefits of Lending Relationships: Evidence from Small Business Data", *Journal of Finance* Vol. 47, pp. 3–37.
- Rajan, R.G. and Zingales, L. (1995), "What Do We Know About Capital Structure? Some Evidence from International Data", *Journal of Finance*, Vol. 50, pp. 1421-60.
- Rajan, R.G. and Zingales, L. (2003), "The Great Reversals: The Politics of Financial Development in the 20th Century", *Journal of Financial Economics*, Vol. 69 No. 1, pp. 5–50.

- Ravid, A.S. and Sarig, O.H. (1991), “Financial Signalling by Committing to Cash Outflows”, *Journal of Financial and Quantitative Analysis*, Vol. 26, pp. 165-180.
- Ross, S. (1977), “The Determination of Financial Structure: The Incentive Signalling Approach”, *Bell Journal of Economics* Vol. 8, pp. 23–40.
- Saunders, A. and Cornett, M.M. (2004), *Financial Markets and Institutions: A Modern Perspective*, 2nd ed., McGraw-Hill, Boston.
- Short, S. (1979), “The Relation between Commercial Bank Profit Rates and Banking Concentration in Canada, Western Europe and Japan”, *Journal of Banking and Finance*, Vol. 3, pp. 209-219.
- Taub, A.J. (1975), “Determinants of the Firm’s Capital Structure”, *Review of Economics and Statistics*, Vol. 57, pp. 410-16.
- Titman, S. (1984), “The Effect of Capital Structure on a Firm’s Liquidation Decisions”, *Journal of Financial Economics*, Vol. 13, pp. 137–51.
- Titman, S. and Wessels, R. (1988), “The Determinants of Capital Structure Choice”, *Journal of Finance*, Vol. 43 No. 1, pp. 1-19.
- Warner, J.B. (1977), “Bankruptcy Costs: Some Evidence”, *The Journal of Finance*, Vol. 32 No. 2, pp. 337-47.
- Weston, J.F. and Brigham, E.F. (1992), *Essentials of Managerial Finance*, The Dryden Press, Hinsdale, IL.

APPENDIX

Banks covered in the study

Banks	<i>Number of Years Financial Data is obtained</i>
Standard Chartered Bank	10 years- (1997-2006)
Barclays Bank of Ghana Limited	10years- (1997-2006)

Ghana Commercial Bank	10 years- (1997-2006)
SG-SSB Bank Limited	10 years- (1997-2006)
Agriculture and Development Bank	10 years- (1997-2006)
Ecobank Ghana Limited	10 years- (1997-2006)
Merchant Bank (Gh) Ltd	10 years- (1997-2006)
National Investment Bank	10 years- (1997-2006)
Cal Bank Limited	10 years- (1997-2006)
The Trust Bank	10 years (1997-2006)
Metropolitan and Allied Bank	10 years- (1997-2006)
International Commercial Bank	10 years- (1997-2006)
First Atlantic Merchant Bank	10 years -(1997-2006)
Prudential Bank	10 years- (1997-2006)