# Determinants of capital structure of banks in Ghana: an empirical approach

Mohammed Amidu

*Department of Accounting, University of Ghana Business School,
Legon, Accra, Ghana*

## Abstract

**Purpose** – The purpose of this paper is to investigate the dynamics involved in the determination of capital structure of banks in Ghana.

**Design/methodology/approach** – The study employs panel regression model in examining the capital structure of banks in Ghana.

**Findings** – The results of this study show that profitability, corporate tax, growth, asset structure and bank size influence banks' financing or capital structure decision. The significant finding of this study is that, more than 87 per cent of the banks' assets are financed by debts and out of this, short-term debts appear to constitute more than three quarters of the capital of the banks. This highlights the importance of short-term debts over long-term debts in Ghanaian banks' financing.

**Originality/value** – The main value of this paper is identification of factors that determine capital structure of banks in Ghana.

**Keywords** Capital structure, Determinants, Banks, Ghana

**Paper type** Case study

## 1. Introduction

Capital composition matters to most firms in free markets, but there are differences. Companies in non-financial industries need capital mainly to support funding such as to buy property and to build or acquire production facilities and equipment to pursue new areas of business. While this is also true for banks, their main focus is somewhat different. By its very nature, banking is an attempt to manage multiple and seemingly opposing needs. Banks provide liquidity on demand to depositors through the current account and extend credit as well as liquidity to their borrowers through lines of credit (Kashyap *et al.*, 1999). Owing to these fundamental roles, banks have always been concerned with both solvency and liquidity. Given the central role of market and credit risk in their core business, the success of banks depend on their ability to identify, assess, monitor and manage these risks in a sound and sophisticated way. Llewellyn (1992) confirmed that competitive and regulatory pressures are likely to reinforce the central strategic issue of capital and profitability and cost of equity capital in shaping banking strategy.

In order to assess and manage risks, banks must have effective ways of determining the appropriate amount of capital that is necessary to absorb unexpected losses arising from their market, credit and operational risk exposures. In addition to this, profits that arise from various business activities of the banks need to be evaluated relative to the capital necessary to cover the associated risks. These two major links to capital – risk as a basis to determine capital and the measurement of profitability against risk-based

capital allocations – explain the critical role of capital as a key component in the management of bank portfolios.

There has been a great deal of research in the area of international accounting and finance (Remmers *et al.*, 1974; Rajam and Zingales, 1995; Prasad *et al.*, 1996) on the international differences in capital norms (Aggarwal, 1981), the impact of national culture on the capital of firms (Park, 1998) and the relationship between capital and ownership structure (Kester, 1986; Thompson and Wright, 1995). Numerous studies have investigated the capital structure of firms in various sectors of the economy; such as manufacturing firms (Long and Matlitz, 1985; Titman and Wessels, 1988), electric-utility companies (Miller and Modigliani, 1966), non-profit hospitals (Wedig *et al.*, 1988) and agricultural firms (Jensen and Langemeier, 1996). One of the main conclusions of empirical studies is that industrial classification is an important determinant of capital structure.

The capital structure of banks is, however, still a relatively under-explored area in the banking literature. Currently, there is no clear understanding on how banks choose their capital structure and what factors influence their corporate financing behaviour. Houston *et al.* (1997) found that lending at large banks is less subject to changes in cash flow and capital. Jayaratne and Morgan (1999) found that shifts in deposit supply affect lending at small banks that do not have access to the large internal capital market. Akhavein *et al.* (1997) also pointed to the fact that large banks tend to decrease their capital and increase their lending after mergers. Bank size seems to allow banks to operate with less capital and, at the same time, engage in more lending. Abor and Biekpe (2005) pointed out that, more than 50 per cent of the assets of listed firms in Ghana are financed by debt and that there is a correlation between debt ratio and firm size, growth, asset tangibility, risk, and corporate tax. Given the unique financial features of banks and the environment in which they operate, there are strong grounds for a separate study on capital structure determinants of banks.

The purpose of this paper is to present empirical evidence on the determinants of capital structure of bank from the context of a developing country by including more firm variables apart from the size effects. The next sub-section looks at banking in Ghana. Section three reviews the extant literature on the subject. Section four presents the research methodology. Discussion of the results is included in section five. Finally, section six gives the conclusions.

## 2. Overview of banking in Ghana

Banking activities started in Ghana in 1896 when the British Bank of West Africa, now Standard Chartered Bank (Ghana) Limited, opened an office in Accra and delivered primary banking services of lending and borrowing of money. During the early years of Ghana's independence, the government intervened extensively in the financial markets in Ghana in an attempt to control the cost and direction of finance. Public sector banks were set up and administrative controls were imposed on interest rates and sectoral allocation of bank credits. Less attention was accorded to prudential banking. Since, the late 1980s, financial sector reforms have been implemented and significant progress has been made. The public sector banks have adopted effective credit policies. They have strengthened their credit procedures and internal controls and reduced staffing levels. A new banking law PNDCL 225 was enacted to define capital adequacy, minimum capital requirement, prudential lending, standardised

reporting and accounting procedures and strengthening of the supervisory capacity of the Bank of Ghana.

Despite the improvements in the institutional structures of the banking system brought about by the reforms, the system has not achieved much developmental and progress. The liquidation of Bank for Housing and Construction and Ghana Co-operative Bank in January 2000 and the collapse of Bank for Credit and Commerce in June 2000 called for pragmatic approaches in capital adequacy, including holding a capital buffer of sufficient size, enough liquid assets, and engaging in efficient risk management. Froot *et al.* (1993) and Froot and Stein (1998) present theoretical analyses of how these factors (capital size, enough liquid assets, and risk management) affect banks' financing and lending decisions. They noted that active risk management allows banks to hold less and to invest more aggressively in risk and illiquid loans.

## 3. Literature review
This section provides a review of the theoretical literature on capital structure. We begin with the theoretical principles underlying capital structure and then discuss the empirical literature on firm level variables that affect the capital structure of firms.

### 3.1 Theories on capital structure
The theoretical principles underlying the capital structure, financing and lending choices of firms can be described either in terms of a static trade-off choice or pecking order framework. The static trade-off choice encompasses several aspects, including the exposure of the firm to bankruptcy and agency cost against tax benefits associated with debt use.

Bankruptcy cost is a cost directly incurred when the perceived probability that the firm will default on financing is greater than zero. One of the bankruptcy costs is liquidation costs, which represents the loss of value as a result of liquidating the net assets of the firm. This liquidation cost reduces the proceeds to the lender, should the firm default on finance payments and become insolvent. Given the reduced proceeds, financiers will adjust their cost of finance to firms in order to incorporate this potential loss of value. Firms will, therefore, incur higher finance costs due to the potential liquidation costs (Cassar and Holmes, 2003).

Another cost that is associated with the bankruptcy cost is distress cost. This is the cost a firm incurs if non-lending stakeholders believe that the firm will discontinue. If a business is perceived to be close to bankruptcy, customers may be less willing to buy goods and services due to the risk of a firm not being able to meet its warranty obligations. In addition, employees might be less inclined to work for the business and suppliers less likely to extend trade credit. These stakeholders' behaviour effectively reduces the value of the firm. Therefore, firms which have high distress cost would have incentives to decrease debt financing so as to lower these costs. Given these bankruptcy costs, the operating risk of the firm would also influence the capital structure choice of the firm because firms which have higher operating risk would be exposed to higher bankruptcy costs, making cost of debt financing greater for higher risk firms. Research has found that high growth firms often display similar financial and operating profiles (Hutchinson and Mengersen, 1989).

Debt financing may also lead to agency costs. Agency costs are the costs that arise as a result of a principal-stakeholder relationship, such as the relationship between

equity-holders or managers of the firm and debt holders. Myers and Majluf (1984) showed that, given the incentive for the firm to benefit equity-holders at the expense of debt holders, debt-holders need to restrict and monitor the firm's behaviour. These contracting behaviours increase the cost of capital offered to the firm. Thus, firms with relatively higher agency costs due to the inherent conflict between the firm and the debt-holders should have lower levels of outside debt financing and leverage.

Firms also consider within the static trade-off framework, the tax benefits associated with the use of debt. This benefit is created as the interest payments associated with debt are tax deductible while payments associated with equity such as dividends are appropriated from profit. This tax effect encourages the use of debt by firms as more debt increases the after-tax proceeds to the owner. The theory among other things predicts a positive relationship between tax and leverage.

The pecking order theory suggests that firms have a particular preference order for capital used to finance their businesses (Myers, 1984). Owing to the presence of information asymmetries between the firm and potential financiers, the relative costs of finance vary between the financing choices. Where the funds provider is the firm's retained earnings, meaning more information than new equity holders, the new equity holders will expect a higher rate of return on capital invested resulting in the new equity finance being more costly to the firm than using existing internal funds. A similar argument can be provided between the retained earning and new debt-holders. In addition, the greater the exposure to the risk associated with the information asymmetries for the various financing choices besides retained earnings, the higher the return of capital demanded by each source. Thus, the firm will prefer retained earnings financing to debt, short-term debt over long-term debt and debt over equity.

### 3.2 Firm level characteristics

Theoretical constructs of any empirical research are proxied indirectly through the use of firm characteristics. Thus, the hypotheses and results are interpreted on the basis that several theoretical effects are represented by each variable. The firm variables discussed are profitability, growth, tax, asset structure, risk and size.

*3.2.1 Profitability.* Corporate performance has been identified as a potential determinant of capital structure. The tax trade-off models show that profitable firms will employ more debt since they are more likely to have a high tax burden and low bankruptcy risk (Ooi, 1999). However, Myers (1984) prescribes a negative relationship between debt and profitability on the basis that successful companies do not need to depend so much on external funding. They, instead, rely on their internal reserves accumulated from past profits. Titman and Wessels (1988) and Barton *et al.* (1989), agree that firms with high profit rates, all things being equal, would maintain relatively lower debt ratio since they are able to generate such funds from internal sources. Empirical evidence from previous studies (Chittenden *et al.*, 1996; Coleman and Cole, 1999; Al-Sakran, 2001) appears to be consistent with the pecking order theory. Most studies found a negative relationship between profitability and debt financing.

*3.2.2 Growth.* Applying pecking order arguments, growing firms place a greater demand on their internally generated funds. Consequentially, firms with high growth will tend to look to external funds to finance the growth. Firms would, therefore, look to

short-term, less secured debt then to longer-term more secured debt for their financing needs. Myers (1977) confirms this and concludes that firms with a higher proportion of their market value accounted for by growth opportunity will have debt capacity. Auerbach (1985) also argues that leverage is inversely related to growth rate because the tax deductibility of interest payments is less valuable to fast growing firms since they usually have non-debt tax shields. Michaelas *et al.* (1999) found future growth positively related to leverage and long-term debt, while Chittenden *et al.* (1996) and Jordan *et al.* (1998) found mixed evidence.

*3.2.3 Tax*. Different authors on capital structure have given different interpretations of the impact of taxation on corporate financing decisions in the major industrial countries. Some are concerned directly with tax policy. For instance Auerbach (1985), MacKie-Mason (1990), etc. studied the tax impact on corporate financing decisions. The studies provided evidence of substantial tax effect on the choice between debt and equity. They concluded that changes in the marginal tax rate for any firm should affect financing decisions. A firm with a high tax shield is less likely to finance with debt. The reason is that tax shields lower the effective marginal tax rate on interest deduction. Graham (1996) on his part concluded that, in general, taxes do affect corporate financial decisions, but the extent of the effect is mostly not significant. Ashton (1991) confirms that any tax advantage to debt is likely to be small and thus have a weak relationship between debt usage and tax burden of firms. De Angelo and Masulis (1980) on the other hand, show that depreciation, research and development expenses, investment deductions, etc. could be substitutes for the fiscal role of debt. Titman and Wessels (1988) provided that, empirically, the substitution effect has been difficult to measure as finding an accurate proxy for tax reduction that excludes the effect of economic depreciation and expenses is tedious.

*3.2.4 Assets structure*. Asset structure is an important determinant of the capital structure of a new firm. The extent to which the firm's assets are tangible and generic would result in the firm having a greater liquidation value (Harris and Raviv, 1991; Titman and Wessels, 1988). Studies have also revealed that leverage is positively associated with the firm's assets. This is consistent with Myers (1977) argument that tangible assets, such as fixed assets, can support a higher debt level as compared to intangible assets, such as growth opportunities. Assets can be redeployed at close to their intrinsic values because they are less specific (Williamson, 1988; Harris, 1994). Thus, assets can be used to pledge as collateral to reduce the potential agency cost associated with debt usage (Smith and Warner, 1979; Stulz and Johnson, 1985). Feri and Jones (1979), Marsh (1982), Long and Matlitz (1985) and Allen (1995) provide empirical evidence of a positive relationship between debt and fixed assets. The empirical evidence suggests a positive relation consistent with the theoretical arguments between asset structure and leverage for large firms (Van der Wijst and Thurik, 1993; Chittenden *et al.*, 1996; Michaelas *et al.*, 1999).

*3.2.5 Risk*. Given agency and bankruptcy costs, there are incentives for the firm not to utilise the tax benefit of debt within the static framework model. As a firm is exposed to such costs, the greater its incentive to reduce its level of debt within its capital structure. One firm variable which impacts upon this exposure is firm operating risk, in that the more volatile a firm's earnings streams, the greater the chance of the firm defaulting and being exposed to such costs. Firms with relatively higher operating risk will have incentives to have lower leverage than more stable earnings firms.

Empirical evidence suggests that there is a negative relationship between risk and leverage of small firms (Ooi, 1999; Titman and Wessels, 1988).

*3.2.6 Size*. Size plays an important role in determining the capital structure of a firm. Researchers have taken the view that large firms are less susceptible to bankruptcy because they tend to be more diversified than smaller companies (Smith and Warner, 1979; Ang and McConnel, 1982). Following the trade-off models of capital structure, large firms should accordingly employ more debt than smaller firms. According to Berryman (1982), lending to small businesses is riskier because of the strong negative correlation between the firm size and the probability of insolvency. Hall (1995) added that, this could partly be due to the limited portfolio management skills and partly due to the attitude of lenders. Marsh (1982) and Titman and Wessels (1988) report a contrary negative relationship between debt ratios and firm size. Marsh (1982) argues that small companies, due to their limited access to equity capital market tend to rely heavily on loans for their funding requirements. Titman and Wessels (1988) further posit that small firms rely less on equity issue because they face a higher per unit issue cost. The relationship between firm size and debt ratio is, therefore, a matter for empirical investigation.

## 4. Research methods
The study examines the determinants of capital structure of banks in Ghana. The sample selected includes all banks supervised by the country's Central Bank (Bank of Ghana). In all, 19 banks qualified for this study. The data was collected from Bank of Ghana. The proposed period was from 1998 to 2003. Following (Remmers *et al.*, 1974; Cassar and Holmes, 2003) the three dependent variables are leverage; short-term leverage and long-term leverage. Short-term debt is defined as the portion of the banks total debt repayable within one year. This includes deposits and current accounts, payable within one year. Long-term debt is the bank's total debt repayable beyond one year.

The leverage (LEV) is total debts divided by total capital. The short-term debt ratio (SHORT) is total short-term debt to total capital while the long-term debt ratio (LONG) is the total long-term debt divided by total capital. The explanatory variables include profitability (PRE), risk (RSK), asset structure (AST), tax (TAX), size (SZE) and sales growth (GROW).The entire variable for this study is based on book value in line with the argument by Myers (1984) that book values are proxies for the value of assets in place.

Panel data involves the pooling of observations on a cross-section of units over several time periods and facilitates identification of effects that are simply not detectable in pure cross-sections or pure time-series studies. The panel regression equation differs from a regular time-series or cross section regression by the double subscript attached to each variable. The general form of the panel data model can be specified more compactly as:

$$Y_{it} = \alpha + \beta X_{it} + \ddot{e}_{it} \tag{1}$$

the subscript $i$ representing the cross-sectional dimension and $t$ denoting the time-series dimension. The left-hand variable $Y_{it}$, represents the dependent variable in the model, which is the firm's debt ratios. $X_{it}$ contains the set of independent variables in the estimation model, is taken to be constant overtime $t$ and specific to the individual

cross-sectional unit $i$. If $\alpha$ is taken to be the same across units, ordinary least squares (OLS) provides a consistent and efficient estimate of $\alpha$ and $\beta$.

The model for this study follows the one used by Ooi (1999) to explain the relationships between capital structure and the determinants. This takes the following form:

$$LEV_{i,t} = \beta_0 + \beta_1 PRE_{i,t} + \beta_2 GRW_{i,t} + \beta_3 TAX_{i,t} + \beta_4 AST_{i,t} + \beta_5 RSK_{i,t} + \beta_6 SZE_{i,t} + \ddot{e}$$

$$LONG_{i,t} = \beta_0 + \beta_1 PRE_{i,t} + \beta_2 GRW_{i,t} + \beta_3 TAX_{i,t} + \beta_4 AST_{i,t} + \beta_5 RSK_{i,t} + \beta_6 SZE_{i,t} + \ddot{e}$$

$$SHORT_{i,t} = \beta_0 + \beta_1 PRE_{i,t} + \beta_2 GRW_{i,t} + \beta_3 TAX_{i,t} + \beta_4 AST_{i,t} + \beta_5 RSK_{i,t} + \beta_6 SZE_{i,t} + \ddot{e}$$

Where: $LEV_{it}$, ratio of total debt to total capital for firm $i$ in period $t$; $LONG_{it}$, ratio of long-term debt to total capital for firm $i$ in period $t$; $SHORT_{it}$, ratio of short-term debt to total capital for firm $i$ in period $t$; $PRE_{it}$, ratio of pre-tax profits to total assets for firm $i$ in period $t$; $GRW_{it}$, percentage change in turnover for firm $i$ in period $t$; $TAX_{it}$, ratio of pre-tax profits for firm $i$ in period $t$; $AST_{it}$, ratio of fixed assets to total assets for firm $i$ in period $t$; $RSK_{it}$, variability in profit for firm $i$ in period $t$; $SZE_{it}$, log of total assets for firm $i$ in period $t$; and $\ddot{e}$ the error term.

## 5. Empirical results
### 5.1 Descriptive statistics
Table I provides a summary of the descriptive statistics of the dependent and explanatory variables. This shows the average indicators of variables computed from the financial statements. The mean (median) leverage of banks was 0.8703 (0.8775). This means that more than 87 per cent of the banks in Ghana are financed by debts. The average of long-term leverage suggests that it represents around 8.2 per cent of the capital of the bank while the mean (median) short-term ratio (measured by total short-term debts/total capital) of the banks was 0.7752 (0.8473). Total short-term debts appear to constitute more than three quarters of the capital of the banks. This highlights the importance of short-term debts over the long-term debts in Ghanaian banks' financing. This seems to be consistent with standard practice as banks working capital is largely on the customers' deposit. Profitability, given as the ratio of pre-tax profits to total assets, registered a mean value of 0.0538 indicating a return on assets of 5.38 per cent. Risk is measured as the variability of profit and this shows

| | Mean | SD | Minimum | Median | Maximum |
|---|---|---|---|---|---|
| LEV | 0.8703 | 0.0851 | 0.5254 | 0.8775 | 1.1491 |
| SHORT | 0.7752 | 0.2117 | 0.0934 | 0.8473 | 1.1491 |
| LONG | 0.0822 | 0.1564 | 0.0000 | 0.0252 | 0.7818 |
| PRE | 0.0538 | 0.0384 | − 0.1470 | 0.0538 | 0.1276 |
| RSK | 0.8209 | 3.1089 | − 15.7600 | 0.5530 | 16.2200 |
| TAX | 0.2561 | 0.1477 | − 0.0000 | 0.3233 | 0.5656 |
| GROW | 0.6488 | 1.7795 | − 0.7500 | 0.3914 | 16.1923 |
| AST | 0.0367 | 0.0201 | 0.0078 | 0.0324 | 0.0959 |
| SZE | 26.7152 | 1.3368 | 24.0717 | 26.7478 | 29.2592 |

Table I.
Descriptive statistics of
dependent and
explanatory variables

a mean (median) of 0.8209 (0.5530). Corporate tax rate on average was 26.61 per cent. The mean (median) growth (measured as growth in sales) was 0.6488 (0.3914). This indicates that, on average, growth rate in sales was 64.88 per cent during the six-year period. Operating assets (fixed assets) had a mean (median) of 0.0367 (0.0324). This indicates that, on average, fixed assets accounted for 3.67 per cent of total assets of the banks sampled. Size, determined as the natural logarithm of total assets had a mean (median) of 26.7152 (26.7478).

## 5.2 Regression analysis
The results of the OLS regression between leverage (dependent variables) and the six explanatory variables are reported in Table II. The results indicate a negative relationship between profitability and leverage. The results, which are also consistent with previous studies (Titman and Wessels, 1988; Barton *et al.*, 1989) show that, higher profits increase the level of internal financing. Profitable banks accumulate internals reserves and this enables them to depend less on external funds. 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 is consistent with the pecking order theory that suggests that profitable firms prefer internal financing to external financing. There is no support of risk influencing the level of leverage of banks in Ghana. The coefficient for risk on leverage is positive and statistically insignificant. This finding raises a question as whether risk is important in the capital structure of banks in Ghana.

The results indicate a positive and statistically significant relationship between tax and leverage. The positive coefficient could be attributable to the additional tax levied on banks. In Ghana, banks are taxed a special tax (National Reconstruction levy since 2001) in addition to the corporate tax. Banks, therefore, have an incentive to employ more debt capital given that interest charges are tax deductible. Thus, successive tax increase would be associated with increasing debt capital. This finding appears to be consistent with the traditional capital structure theory on tax shield. The results show a positive relationship between growth on the one hand and leverage on the other hand. Growing firms place a greater demand on the internally generated funds of the firm. Consequently, banks with a relatively high growth rate will tend to look at short-term less secured debt first then to longer-term more secured debt to finance their growth.

Surprisingly, the results on Table II below show a negative correlation between operating assets and leverage. The results also indicate a statistically significant positive relationship between size and leverage. The results suggest that the bigger the

| Explanatory variables | Coefficient | t-Statistic | Prob. |
|---|---|---|---|
| PRE | −1.1509 | −7.0230 | 0.0000 |
| RSK | 1.1800 | 0.0019 | 0.9985 |
| TAX | 0.1556 | 4.0095 | 0.0001 |
| GROW | 0.0022 | 0.6025 | 0.5486 |
| AST | −1.0642 | −10.5953 | 0.0000 |
| SZE | 0.0103 | 2.9541 | 0.0041 |

**Table II.**
Regression model results (dependent variable: leverage)

**Notes:** $R^2 = 0.994008$; S.E. of regression $= 0.059308$; $F$-statistic $= 2184.201$; and Prob($F$-statistics) $= 0.000000$

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bank, the more external funds it will use. One reason is that, larger banks are more diversified and hence have lower variance of earnings, enable them to manage high debt ratios. The providers of the debt capital are more willing to lend to larger banks as they are perceived to have lower risk levels. Other the hand, smaller banks may find it relatively more costly to resolve issues of information asymmetries with the providers of capital debt, thus, may present lower debt ratios. This result supports financial theory and is consistent with the empirical evidence.

Table III is the regression results of the relationship between short-term debt and banks level characteristics. The results show a negative relationship between the banks' profit, risk and asset tangibility and short-term debt. The correlation between profitability and short-term debt shows that profitable banks make use less short-term debt. The negative coefficient and statistically insignificant of risk (defined as variability of pre-tax profit) clearly shows that risk has no influence on banks structure. Contrary to the empirical evidence, the negative relationship between assets tangibility and short-term debts indicate less short-term debt in banks operating assets financing. Again the results in Table III below show a positive and statistically significant between taxation, growth and size on one hand and short-term debt on the other hand. The results show that, in all the variables (apart from risk), short-term debt and leverage appear to be moving in the same direction. It could be due to the fact that short-term debt constitutes a significant portion of banks capital.

Table IV below shows the results of relationship between long-term debt and banks' profit, risk, corporate tax, growth and asset structure. The results reveal a statistically significant and positive relationship between profitability and long-term debts of banks. The finding seems to contrast with empirical evidence that profitable firms use less debt

| Explanatory variables | Coefficient | $t$-Statistic | Prob. |
|---|---|---|---|
| PRE | $-1.8704$ | $-8.9660$ | 0.0000 |
| RSK | $-0.0011$ | $-0.9967$ | 0.3219 |
| TAX | 0.5884 | 11.5692 | 0.0000 |
| GROW | 0.0169 | 2.9067 | 0.0047 |
| AST | $-1.3465$ | $-3.6016$ | 0.0006 |
| SZE | 0.0337 | 7.4053 | 0.0000 |

**Notes:** $R^2 = 0.967048$; S.E. of regression $= 0.156558$; $F$-statistic $= 386.4032$; and Prob($F$-statistics) $= 0.000000$

**Table III.**
Regression model results
(dependent variable:
short-term debt)

| Explanatory variables | Coefficient | $t$-Statistic | Prob. |
|---|---|---|---|
| PRE | 0.4540 | 5.4811 | 0.0000 |
| RSK | $-0.0008$ | $-0.7896$ | 0.4321 |
| TAX | $-0.2970$ | $-8.3540$ | 0.0000 |
| GROW | $-0.0044$ | $-2.6596$ | 0.0095 |
| AST | 0.4662 | 3.5606 | 0.0006 |
| SZE | $-0.0060$ | $-2.9012$ | 0.0048 |

**Notes:** $R^2 = 0.148080$; S.E. of regression $= 0.130133$; $F$-statistic $= 2.288624$; and Prob($F$-statistics) $= 0.043444$

**Table IV.**
Regression model results
(dependent variable:
long-term debt)

capital. The results also show a negative relationship between risk and long-term debt. Although this result shows a statistically insignificant, it is consistent with the arguments that high risk firms normally use less debt. Contrary to the trade-off model, the regression results show a negative relationship between corporate tax and long-term leverage. The results also show a negative and statistically significant between long-term debt and banks' growth. Growing firms place a greater demand on the internally generated funds. Thus, banks with a relatively high growth rate will tend to look at their accumulated reserves then short-term debt before long-term debt to finance their growth. This finding supports the pecking order theory that suggest that firms have a preference order for capital used to finance their investments.

The results also show a positive relationship between operating assets (fixed assets) and long-term debt. The results suggest that Ghanaian banks with a higher proportion of operating assets are financed by long-term debt capital. The reason could be that higher proportions of banks' operating assets denote less operating risks, therefore, the banks may not be exposed to more risk from the use of more long-term debt capital. The result shows a negative relationship between size and long-term debt. This means that smaller banks, due to their limited access to equity capital market tend to rely on long-term debt for their financing requirements. The finding is consistent with the empirical evidence that smaller firms use more debt capital.

## 6. Conclusion
This study builds on Abor (2004) and Abor and Biekpe (2005) in developing a framework for analysing financing and capital structure decisions facing Ghanaian firms. This study examines the determinants of capital structure of Ghanaian banks. Generally, the variables examined were consistent with the static trade-off and pecking order arguments, with the only exception being risk. However, the inferences associated with this variable were significantly affected by the choice of proxy employed to represent risk.

The study has also highlighted the importance of distinguishing between long and short forms of debt when inferences about capital structure. Given the relatively high proportion of short-term debt financing of banks in Ghana, and banks being a source of capital to other firms, overall leverage of banks is negatively related to operating assets. However, splitting the duration of debt into long and short components, it is found that long-term debt structure is positively and statistically related to operating assets. This is intuitive both from theoretical and duration matching perspectives. The result also shows that short-term debt of banks is negatively related to banks' profitability, risk and asset structure and positively related to bank size, growth and corporate tax. On the other hand, the long-term debt of the banks is positively related to banks' asset structure and profitability and inversely related to bank risk, growth, size and corporate tax.

Apart from risk, the results show that, in all the variables, short-term debt and leverage appear to be moving in the same direction. It could be due to the fact that short-term debt constitutes a significant portion of banks capital.

The study reveals that more than 87 per cent of the Ghanaian banks' assets are financed by debts, of this, short-term debts appear to constitute more than three quarters of the capital of the banks. This highlights the importance of short-term debt over the long-term debt in Ghanaian banks' financing.

In conclusion, the empirical evidence from this study suggests that profitability, corporate tax, growth, asset structure and bank size are important variables that influence banks' capital structure. These results are consistent with the theories developed in finance to explain capital structure within the firm, including static trade-off arguments utilising bankruptcy, agency and tax costs and pecking order arguments. However, there is no support of banks' risk influencing the level of leverage of banks in Ghana. This finding is contra to earlier studies.

Following from these findings, it would be useful to also consider the following directions for future research:

- how does risk influences capital structure of banks using value of risk concept; and

- the relationship between capital structure and the bank credit.

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**Further reading**

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