ACADEMIC INVESTIGATIONS & CONCEPTS

SECTION 1

CAPITAL STRUCTURE AND PROFITABILITY: AN EMPIRICAL STUDY OF SOUTH AFRICAN BANKS

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Abstract

The bank capital structure debacle in the aftermath of the 2007-2009 financial crises continues to preoccupy the minds of regulators and scholars alike. In this paper we investigate the relationship between capital structure and profitability within the context of an emerging market of South Africa. We conduct multiple linear regressions on time series data of big South African banks for the period 2002 to 2013. We establish a strong relationship between the ROA (profitability measure) and the bank specific determinants of capital structure, namely capital adequacy, size, deposits and credit risk. The relationship exhibits sensitivity to macro-economic shocks (such as recessions), in the case of credit risk and capital but is persistent for the other determinants of capital structure.

Keywords: Capital structure, Profitability, Business Cycles, Banks, South Africa

1. INTRODUCTION

In the aftermath of the 2007-2009 financial crises banks were hard hit by the recession world over but others survived. The South African banking sector was not spared either. The 2007-2009 financial crises were characterised by increasing risk, interest rate cuts and tightening of regulations all of which have a theoretical bearing on factors affecting capital structure and the optimal mix of debt and equity. Investors were moving out of equities and seeking safety in gold, debt became more expensive due to high risk environment. This study assesses the nexus between capital structure and profitability within the banking sector in South Africa. This research effort seeks to establish how these spikes affected profitability from a practical perspective by analysing bank data before, during and post the recession.

The imperatives that we consider in this article are bank profitability and capital structure. According to Chen *et al* (2010:232), profitability serves as one of the determinants of both capital structure and stock returns. This paper looks at bank specific profitability. Demirguc-Kunt and Huizinga (1999:3) consider two measures of bank performance: bank profitability (measured as profits divided by assets), and bank interest margins (measured as net interest income divided by assets). It is trite to highlight that in order for a firm to have the necessary resources in terms of assets, they need to raise the capital. This can be achieved by equity and or debt. This capital comes at a cost in dividends and interest respectively. The aim of the finance manager is to raise the capital at the lowest cost possible and to seek optimality. Capital structure refers to the combination of debt and equity of a company which shows the behaviour of the company in financing its overall operations and growth and is considered one of the important decisions in financial management. The primary objective of the company is to maximise the shareholders wealth by making an appropriate mix of the main sources of finance.

The relationship between capital structure and profitability is vital and cannot be over emphasized because profitability is necessary in order for the firm to survive (Shubita and Alsawalhah, 2012:105).The goal of the firm is to maximize shareholder value, profit contributes by providing the basis for calculation of EPS (earnings per share), declaration of dividend and subsequently retained earnings . Relating to commercial bank interest margins and profitability for banks from four different EU countries for the period of 1986 -1999, Abreu and Mendes (2001) investigated the influences of bank-specific variables along with other variables on profitability of banks. They find that well-capitalized banks have low bankruptcy costs and higher interest margins on assets.

The relationship between capital structure and profitability is very important as this affects the value

of the firm. The mix of debt and equity has an impact on the share price. To this end there is a need to investigate the impact of business cycles on this relationship between capital structure and profitability, more so in the aftermath of the global recession that the world is yet to fully recover from. The SA banking sector managed to survive the worst. As such, the impetus of this study is to establish the relationship between capital structure and profitability of the banks in South Africa. Thus the primary objective of this study is to determine the relationship between capital structure and its effect on profitability of South African banks listed on the Johannesburg Stock Exchange (JSE).

The rest of the paper is arranged as follows: Section 2 reviews the related literature. Section 3 outlines the research methodology. Section 4 presents the research findings. Section 5 concludes the paper.

2. REVIEW OF RELATED LITERATURE

Since Modigliani and Millers (1958) seminal paper, the choice between debt and equity has been extensively investigated in finance literature. Weston and Brigham (1981) contend that there is a wide disagreement over what determines the choice of capital structure and how the choice affects performance. Capital structure decisions of firms of today have important implications for value of the firm or its cost of capital. Nevertheless a firm can choose the capital structure it wants, because the important elements that influence such a decision are easily identifiable. However the precise elements are not easily obtainable (Ross *et al*, 2001: 439). The complexity with this relationship is that it is not static and it is evolving. That decision becomes even more difficult, in times when the economic environment in which the company operates presents a high degree of instability. Therefore, the choice among the ideal proportion of debt and equity can affect the value of the company, as much as the return rates (Ferrati *et al*, 2012: 1).

2.1. Capital Structure Theories

The choice between debt and equity has been a crucial subject in finance since Modigliani and Miller (1958) seminal paper argued that capital structure is not related to firm value. However Modigliani and Miller (1963) alluded to that corporate value is maximised when it is entirely financed with debt, this created a benefit for debt in that interest rate acted as a shield from taxes. To help unravel relationship between capital structure and firm value, this study will rely on the following theories: trade off theory, pecking order theory and the agency theory.

2.1.1. Trade-off Theory

The trade-off theory posits that firms trade-off the benefits of debt financing against higher interest rates and bankruptcy costs (Brigham *et al*, 1998). Additionally Brigham *et al* (1998) assert that bankruptcy problems are most likely to arise when a firm has a lot of debt in its capital structure. Compared with equity, debt is cheaper because of the tax shield. However, should a firm be highly leveraged, the benefits that arise from the tax shield may be cancelled by the costs associated with bankruptcy. As a result the trade-off theory argues that firms set an optimal target ratio determined by the trade-off between the benefits and cost of debt (Park and Jang, 2013).

As a consequence, financing with debt instead of equity increases the total after-tax return to investors and therefore increases corporate value, implying that companies should maximise debt financing over equity. However, too much debt raises the probability of financial distress. The trade-off theory stipulates that firms will borrow to the point that the marginal value of the tax shield equals the expected marginal cost of financial distress, implying moderate debt ratios for nonfinancial businesses (Kwan, 2009). During the recession, the issue of spikes in interest rates was prominent due to high risk perception—there were shifts in the global perception of risk especially the risk of the finance sector.

2.1.2. Pecking order

The pecking order theory postulates that businesses prefer internal capital to external financing. It thus establishes a financial hierarchy that firms will follow in financing their operations. Kwan (2009) contends that pecking order theory emphasizes the information asymmetry between managers and outside investors. A company that issues equity may signal that it has positive net-present-value projects, meaning that capital raised by issuing stock can be invested in projects that exceed the company's hurdle rate of return. But the market may read stock issuance as a signal that the company is overvalued and its share price too high.

Capital structure theories can help explain the choices banks made on raising capital during the financial crisis. Under the pecking order theory, when banks have private information about their assets, they would choose to issue debt before equity to minimize the undervaluation problem. But, during the financial crisis, banks needed to raise equity to replenish depleted capital (Kwan, 2009). The present study explores the capital structures of the South African banks with view to establishing if there were shifts in composition of debt and equity and whether the pecking order theory could help explain these shifts. With rising interest rates it meant that borrowing became more expensive and with high risk perception investors moved out of equity triggering falling demand for shares and depleting the sources of financing. The study investigates the effects of the pecking order.

2.1.3. Agency Theory

The agency problem arises as a result of conflict of interest of the managers with those of owners. In essence this problem is inherent in a principal-principle relationship. The availability of free cash flow can cause managers to over-invest in sub-optimal projects which will erode firm value. According to Park and Jang (2013), to mitigate over-investment, managers' ability to promote their interests is constrained by the availability of free cash flows. This constraint can be tightened even further though debt financing which is a capital structure decision. Richardson (2006) defined free cash flow as cash flow beyond what is necessary to maintain

assets and finance expected new investments. Kwan (2009) stresses that, while a high debt ratio can raise the possibility of financial distress, it can also add value by inhibiting managers from making unprofitable investments. The study looks at the agency theory with a view to establish whether it has a role to play in the choice of capital structure. The question of whether banks had excess cash flow will be investigated as this has a direct influence on the choice of capital structure.

2.2. Bank-Specific Determinants

Many empirical researchers have explored the determinants of capital structure choice from different point of views and in different environments related to developed and developing economies. The following will be reviewed as determinants of capital structure and their effect on profitability: size, credit risk, growth rate, tax and interest rates within the banking sector.

The bank efficiency theory will help to understand if bank specific variables have a relationship with profitability within the banking sector of South Africa JSE listed banks. In this context, each bank -specific variable influences in the negative or positive way. The study looks at the ability of banks to use their resources efficiently both in producing banking products and services and in generating income from these goods and services. At the same time, the nature of this relationship can significantly affect the bank profitability. This means that if the association between each bank-specific variable is positive, the profitability is high; if it is negative, the profitability is low making the cycle is asymmetric. Farlex (2015) affirms that bank efficiency ratio is the ratio of expenses to revenue. Banks desire a lower efficiency ratio because this means that the bank is making considerably more than it is spending and is therefore on sound financial footing. Considering the cost aspect of acquiring capital and the return aspect of assessing revenue and profitability, bank efficiency becomes relatable in this regard. Athanasoglou *et al.* (2005:06) submitted that all bank-specific determinants, excluding size, significantly affect bank profitability in line with prior expectations. Additionally, they also indicate that profitability is pro-cyclical, and the effect of the business cycle is asymmetric.

2.2.1. Capital Adequacy

Capital is the source of funding for assets within a firm. It consists of equity and liabilities. Bank specific equity and capital will be a focal point. Capital adequacy is one of the determinants of bank profitability as indicated by different academics. Kosmidou *et al.* (2005:02) investigated the impact of bank-specific characteristics, macro-economic conditions and financial market structure on UK-owned commercial banks' profits, during the period 1995-2002. It is found that capital strength, represented by the equity to assets ratio, is the main contributing factor of UK banks' profits giving impetus to the case that well capitalised banks face lower costs of external financing, which reduce their costs and enhance profits. In terms of liability, Mendes and Abreu (2001:15) state that less leveraged banks have higher margins, and this is consistent with theories stressing that better capitalised banks can charge more for loans and pay less on deposits in so far as they face lower bankruptcy risks.

Dietrich and Wanzenried (2009:34) analysed the profitability of commercial banks in Switzerland during the 1999 to 2006 period. It was found that better capitalised banks seemed to be more profitable. This positive impact on bank profitability can be due to the fact that capital refers to the volume of amount of own funds available to sustain a banks activity and, therefore, bank capital acts as a safety net in the case of adversative developments. Javaid *et al.* (2001:69) analysed the determinants of bank profitability in Pakistan during the 2004-2008 period. They observed that banks with more equity capital, total assets, loans and deposits were perceived to have more security, and such an advantage could be translated into higher profitability.

2.2.2. Size

Theoretically, the relationship between size and leverage is unclear. According to the trade-off model, large firms are expected to have a higher debt capacity and are able to be more highly geared. Large firms are more diversified, thus, less exposed to the risk of bankruptcy. They may also be able to reduce transaction costs associated with long-term debt issuance. As stated by Chen (2004), the firm's size has been the critical point of capital structure decision. According to Muradoglu and Sivaprasad (2009) small firms have restricted access to the funding that is why they face higher interest rate as compared to larger firms and their growth is ultimately influenced.

The relationship between the bank-size and profitability can be measured by economies of scale. Sufian and Chong (2008:94) examined factors that influence the profitability of financial institutions in a developing economy. They found that bank size is generally used to capture potential economies or diseconomies of scale in the banking sector.

Miller and Noulas (1997) examined large commercial banks to determine what factors affected bank profitability. They found that large banks experienced poor performance because of the declining quality of the loan portfolio. However, real estate loans generally had a negative effect on large banks profitability, although not at high levels of significance. In contrast, contraction and land development loans had a strong positive effect on these banks profitability. Hassan and AL-Tamimi (2008:46) examined the determinants of the UEA commercial banks performance. They found that for the most significant determinants of the national banks performance were banks size and banks portfolio composition.

2.2.3. Business Risk

According to Brigham *et al* (1998) the firm has a certain amount of risk inherent in its operations and this is business risk, if it uses debt, then in effect, it partitions the investors into two groups and concentrates most of its business risk on the ordinary shareholders, the ordinary shareholders then demand higher compensation for assuming this risk. The tussle between creditors and shareholders is of interest to this study as they both share the profit. The proportions will highly depend on the capital

structure. A highly leveraged firm might pay more in interest to creditors than the ordinary shareholders. According to Brigham and Davies (2013:34) no investment should be undertaken unless the expected rate of return is high enough to compensate for the perceived risk.

Kjellman and Hansen (1995) state that observed that some firms employ more debts in their financing structure, other firms prefer equity financing, whereas many other firms have set target debt-equity ratio. It all depends on the nature of the business. Therefore, the company should consider its financial flexibility and its tax position. Operating conditions along with these factors may cause deviation in actual capital structure from the targeted capital structure. Hence, the optimal capital structure must be used as the definitive capital structure that decreases the Weighted Average Cost of Capital (WACC) with an increase in shareholders' value (Javaria *et al*, 2013).The study investigates the proportion of debt to equity in the capital structure, whether there is a trend or pattern that differentiates the banks in question and if it is a distinctive contributor to profitability.

The banking sector is highly regulated, especially after the challenges that arose because of the recession. Bank regulators directly affect capital structure by setting minimums for equity capital reserve ratios. Also, regulators conduct examinations and take other actions to keep the expected costs of financial distress, bankruptcy, or liquidation relatively low which may reduce agency costs outside of debt (Berger and Bonaccorsi di Patti, 2006).This study explores the effects of regulation on South African banks during the recession. Naturally a high risk environment would trigger tightening of regulations. Focus on the changes in REPO rate by the South African Reserve Bank will be emphasised. These changes have a direct effect on the cost of debt to the South African banking sector.

According to Al-Jafari and Alchami (2014:28) credit risk is measured as loan loss provisions divided by total loans. Several studies confirm credit risk to have a relationship with profitability in the banking industry. The link between credit risk and business risk is relevant to this study. The common underlying factor between credit risk and business risk is operational efficiency. Credit risk management plays an important role in terms of efficient banking. Manoj (2010:18) identified the determinants of profitability and operational efficiency of Kerela State old private sector banks in India, using an econometric methodology. He found that the old private sector banks in general and Kerala state (KOPBs) in particular, enhanced operational efficiency and risk management capability, particularly credit risk management. When a debtor defaults on approved terms of payments, this may result in crystallisation of credit risk to the bank.

Naceur and Omran (2011) examined the influence of bank regulation, concentration and financial and institutional development on commercial bank margins and profitability across a broad selection of Middle East and North Africa (MENA) countries. They found that banks specialising in particular credit risk management have a positive impact on banks net interest and profitability.

Flaminin *et al.* (2009:01) examined a sample of 389 banks in 41 sub-Saharan African countries to study the determinants of bank profitability. They found that apart from credit risk, higher returns on assets are associated with larger bank size, activity diversification and private ownership. Bank returns are affected by macro-economic variables, suggesting that macro-economic policies that promote low inflation and stable output growth do boost credit expansion. In South Africa the reserve bank has a policy of inflation targeting and REPO rate is adjusted in line with inflation. The study will consider the effect of this macroeconomic variable on the SA banks listed on JSE.

Ali *et al*, (2011:235) studied Islamic banks profitability in Pakistan by taking into consideration bank-specific and macro-economic factors. They observed that the high credit risk and capitalisation lead to lower profitability measured by return on asset (ROA). Additionally, the operating efficiency tends to exhibit the higher profitability level as measured by return on equity (ROE). The underlying difference between ROA and ROE is the financial leverage multiplier, optimal usage of debt reflects operational efficiency, and a higher ROA does not necessarily mean a higher ROE as well. This study investigates the underlying reasons for such inconsistency within the SA banks listed on the JSE.

2.2.4. Growth rate

According to the trade-off theory, firms holding future growth opportunities, which are a form of intangible assets, tend to borrow less than firms holding more tangible assets because growth opportunities cannot be collateralised (Chen, 2004). The effect of the growth rates of the South African banks listed on the JSE is of particular interest to the researchers. The growth rate might signify the need for more capital and will therefore have an effect on the capital structure of the firm. Deposit is a core of the bank, the higher the levels of deposit, the more effect on bank profitability. Deposits are the main source of banks funding and are the lowest cost of funds. Alper and Anbar (2011: 144) examined the determinants of bank profitability in Turkey. They found that the more deposits are transformed into loans, the higher the interest margin and profit. Therefore, deposits have positive impact on profitability of the banks. In contrary, when there is higher cost of funding, it negatively affects bank profitability.

Haron (2004:18) examined the effects of the factors that contribute towards the profitability of Islamic banks. He found that the more deposits placed by depositors with the bank, the more income is received by the bank influencing the profitability.

2.2.5. Tax on Banks

Some researchers believe that tax provision influences debt equity ratio. Higher rate of tax encourages profitable companies to choose for high debt equity ratio to obtain tax shield. There are theoretical and empirical arguments that the tax shield of debt financing induces the companies to get more debt to maximize the value of the company (Maleki *et al*, 2013:6). However, Miller (1977) and Fama and French (1988) found no evidence in supporting tax benefits of debt financing. Barclay and Smith (1995) and Graham (2000) found mixed results

for tax shield of debts. Taxation has been a point of contention since Miller and Modigliani (1958) seminal paper. Taxation acts differ across the globe and the effects will differ accordingly. This study will observe the influence of tax laws on the South African banking sector, particularly focusing on those listed on the JSE. Although fiscal issues are likely to exert a significant influence on banks behaviour, the taxation of the financial sector has received little attention (Caminal, 2003). The tax deductibility of interest payments shields the pre-tax income of the firm and this ultimately lowers the weighted average cost of capital (WACC). In addition, the presence of taxes causes the cost of equity to rise less rapidly with debt than would be the case in the absence of taxes (Brigham and Ehrhardt, 2008: 613).

According to Albertazzi and Gambacorta (2010), the main channel through which the corporate income tax may exert an impact on bank activity is related to the fact this form of taxation bears upon bank equity holders and therefore interacts with prudential capital requirements. In their study of how bank profitability is affected by corporate income tax, both from a theoretical and an empirical perspective. They conclude that the theoretical model highlights two main mechanisms. Firstly, corporate income taxation in the banking sector changes the costs of bank equity and therefore makes capital requirements more or less tight (so-called cost of equity effect). Secondly, a higher corporate income tax rate brings a reduction of investments from the corporate sector and a downward shift of the demand for bank loans and other bank services (so-called market effect). Empirical evidence shows an increase in the corporate income tax rate has a positive impact on the interest rate demanded on loans and a negative one on the lending volume, while leaving unaffected the deposit market.

Rasiah (2010:77) one of the major expense incurred in generating revenue include interest paid out to depositors which is termed as interest expenses. Other expenses are non-interest expenses such as overhead expenses, operating expenses, salaries and wages paid to employees and miscellaneous expenses, the more expenses incurred by the bank, the less profit the bank will make.

2.3. Bank Profitability

There are internal and external factors that determine bank profitability across many countries. Most of the studies consider internal factors as bank specific and external factors as industry specific and macroeconomic environment. External determinants are variables that are not allied to bank management but reveal the economic and legal environment that affect the operation and performance of financial institutions (Athanasoglou *et al*, 2008:122). On the other hand, the external determinants, both industry and macroeconomic related, are variables that reflect the economic and legal environments (Sufian and Habibullah, 2009:210).The investigation focuses on the economic environment considering the environment prior, during and after the recession for South African banks listed on the JSE. According to Athanasoglou *et al* (2005:06), the external determinants are variables that are not related to bank management but reflect the operation and performance of financial institutions.

According to South African Reserve Bank (2011) the banking sector remained adequately capitalised with total banking-sector equity increasing by 12,1 per cent during 2011. Total capital adequacy improved from 14, 9 % at the end of December 2010 to 15.1% at the end of December 2011. The Tier 1 capital-adequacy ratio (CAR) of the banking sector increased from 11. 8% to 12.2 % during the same period. The report is suggestive of the fact that the banking sector managed to shrug off recessionary pressures. The study investigates the possible reasons for this rise in capital adequacy.

Internal and external environment are interlinked. Internal determinants are factors that are mainly influenced by a bank's management decisions and policy objectives. Such profitability determinants are the level of liquidity, capital adequacy, and expenses of management, provisioning policy and bank size. According to Guru *et al.* (2002:3), the determinants of bank profitability can be divided into two main categories, namely, those that are management controlled and those that are beyond the control of management. The factors which are management controllable are classified as internal determinants and those beyond the control of management are referred to as external determinants. Rasiah (2010: 750) states that the internal factors which tend to have a direct impact on bank revenue and costs are bank assets, liability portfolio management and overhead expenses. Bank performance is measured by return on average assets (ROAA), return on average equity (ROAE), and/or net interest margins (NIM) and is usually expressed as a function of internal and external determinants. In the same view, Dietrich and Wanzenried (2009:04) point out that bank profitability is usually measured by return on average assets and is expressed as a function of internal and external determinants. However, external variables include bank-specific variables that are also expected to affect the profitability of financial institutions.

Capital structure theories can help explain the choices banks made on raising capital during the financial crisis. Under the pecking order theory, when banks have private information about their assets, they would choose to issue debt before equity to minimize the undervaluation problem. However, during the financial crisis, banks needed to raise equity to replenish depleted capital. In that environment, issuing preferred stock may have been a reasonable strategy because it avoided diluting ordinary equity while restoring the balance of equity and debt financing and meeting regulatory capital requirements. According to Damodaran (2009) issuing new ordinary equity at a discount would have transferred wealth from existing shareholders to new shareholders. In addition, Damodaran (2009) elaborates that issuing new debt would have increased the probability of default, with the associated risk of losing control rights. Unlike debt service payments, preferred stock dividends can be suspended without triggering bankruptcy (Damodaran, 2009).

3. METHODOLOGY

This study provides an in depth analysis on the effect of the relationship between capital structure and profitability of South African banks listed on the JSE prior, during and post the recession period. The study

consists of 28 banks in the South African banking industry as the population. The JSE will be used as the sample from the population of banks in South Africa. JSE listed banks sell shares directly to the market, these shares constitute equity in the capital structure. The sample of banks on JSE will allow for determination of macro-economic effects of the independent variables on the debt to equity ratio.

The banks sampled in this research are 6 South African banks selected from a population of 28 banks as cited above. The study considered data for the period of 12 years from 2002-2013 for the following sample of banks listed on the JSE: ABSA Bank, Nedbank, FNB, Standard Bank Capitec Bank and African Bank. The study employs the following secondary information sources: Tax data sourced from the South African Revenue Service (SARS), McGregor BFA, South African Reserve bank annual Supervision reports and Bank Scope. The data is collected from the balance sheets, comprehensive income statements and statements of changes in equity of JSE listed banks from 2006-2013. The data is categorised according to the secondary variables and each measured against the performance of the banks over a period of 12 years. A time series analysis is conducted on a year on year basis.

3.1. Data and Variables

The study uses a multiple regression technique to test the relationship between bank specific, industry specific and macroeconomic determinants with regards to bank profitability. Multiple regression techniques are used in this study to analyse the internal determinants and external determinants. First, it has the advantage of giving more informative data as it consists of both the cross-sectional information, which captures individual variability, and the time series information, which captures dynamic adjustment. Second, this technique allows for the study of the impact of macroeconomic developments on profitability after controlling for bank-specific characteristics, with less collinearity among variables, more degrees of freedom and greater efficiency (Vong and Chan 2008:104). Extant literature on bank profitability confers that the appropriate functional form of analysis is the linear one (See for instance, Vong and Chan 2008:105 and Bourke 1989:73). As such, to examine the determinants of bank profitability in South Africa, this study employed a linear regression model.

The relationship between debt and profitability is thus estimated in the linear regression models. Regression analysis is used to investigate the relationship between capital structure and profitability measured by ROA and ROE. The study utilised the SAS software to do the analysis.

3.2. Variables Definition and Measurements

Variables include profitability ratios and leverage ratios. Profitability is operationalised using the ratio of EBIT to equity. Leverage ratios include long term debt to total capital, short term debt to total capital, and total debt to total capital for each of the banks selected in sample. Firm size, taxation and growth will be included as independent variables. This study utilise the Return on Assets (ROA) as the primary measure of profitability and the Return on Equity (ROE) as the alternative measures of bank profitability. The model is specified as follows:

$$ROA = \alpha + \beta_1 CAP + \beta_2 Size + \beta_3 DEPOSIT\ FIXED + \beta_4 DEPOSIT\ SAVED + \beta_5 CreditRisk + \beta_6 Interest\ Rate \quad (1)$$

Robustness checks are conducted with an alternative definition of the profitability measure as specified by the model below:

The alternative model is specified as follows:

$$ROE = \alpha + \beta_1 CAP + \beta_2 Size + \beta_3 DEPOSIT\ FIXED + \beta_4 DEPOSIT\ SAVED + \beta_5 CreditRisk + \beta_6 Interest\ Rate \quad (2)$$

Where, ROE =return on equity
ROA = return on assets
Size = size variable
Deposit Fixed and Deposit Saved = deposits variable
Credit Risk = credit risk variable
Interest Rate = Interest rate variable

3.2.1.Dependant Variables

(i) Return on Asset (ROA)
Vong and Chan (2008:101) argue that the performance of a bank is measured by its return on assets (ROA). The ROA, defined as net income divided by total assets, reflects how well a bank's management is in using the banks investment resources to generate profits. A number of authors have used ROA as a measure of bank profitability (Kosmidou 2007:05; Javaid *et al.*, 2011:66; Athanasoglou *et al.*, 2006:21 and Flamini *et al*, 2009). Banks with lower leverage (higher equity) will generally report higher ROA, but lower ROE. This study uses the ROA as the primary dependent variable. In the calculation of ROA the Financial Leverage Multiplier is excluded and the study shows the effect of this difference on profitability.

(ii) Return on Equity (ROE)
Return on Equity (ROE) indicates the return to shareholders on their equity and equals net profits after tax divided by total equity. It combines profitability, asset efficiency and debt optimisation and the relationship is multiplicative. ROE was used as dependent variable by some of these authors such as Albertazzi and Gambacorta (2009:11); Athanasoglou *et al*, (2008:125) and Hassan and Bashir (2003:11) amongst others.

3.2.2. Independent Variables

The study employs the following bank specific determinants as the independent variables: firm size, credit risk, growth rate, company tax, and interest rates.

(i) Firm Size
One of the most important questions regarding bank profitability is whether or not bank size optimises profitability. Generally, the effect of size on profitability is expected to be positive to a certain extent. However, for banks that become extremely large, the effect of size could be negative due to bureaucracy and other reasons. Hence, the size-profitability relationship may be expected to be non-linear and the study also used the banks logarithm of total assets and their square in order to capture the possible non-linear relationship and to remove the scale effect (Dietrich and Wanzenried, 2009:12).

(ii) Credit Risk
The study utilises the loan-loss provisions to total loans ratio. In view of the fact that increased exposure to credit risk is normally associated with decreased firm profitability and, hence, it is expected to have a negative relationship with banks profitability.

(iii) Capital Adequacy
Capital is the source of funding for assets within a firm. It consists of equity and liabilities. Bank specific equity and capital will be a focal point. Kosmidou *et al.* (2005:02) investigated the impact of bank-specific characteristics, macro-economic conditions and financial market structure on UK-owned commercial banks' profits, during the period 1995-2002. It is found that capital strength, represented by the equity to assets ratio, is the main contributing factor of UK banks' profits giving impetus to the case that well capitalised banks face lower costs of external financing, which reduce their costs and enhance profits. Dietrich and Wanzenried (2009:34) analysed the profitability of commercial banks in Switzerland during the 1999 to 2006 period. It was found that better capitalised banks seemed to be more profitable. This positive impact on bank profitability can be due to the fact that capital refers to the volume of amount of own funds available to sustain a banks activity and, therefore, bank capital acts as a safety net in the case of adversative developments

(iv) Deposit saved and deposit fixed
According to the trade-off theory, firms holding future growth opportunities, which are a form of intangible assets, tend to borrow less than firms holding more tangible assets because growth opportunities cannot be collateralised (Chen, 2004). The growth rate might signify the need for more capital and will therefore have an effect on the capital structure of the firm. Deposit is a core of the bank, the more level of deposit is high, the more effect on bank profitability. Deposits are the main source of banks funding and are the lowest cost of funds. Alper and Anbar (2011: 144) examined the determinants of bank profitability in Turkey. They found that the more deposits are transformed into loans, the higher the interest margin and profit. Therefore, deposits have positive impact on profitability of the banks. In contrary, when there is higher cost of funding, it negatively affects bank profitability.

(v) Tax on Banks
Some researchers believe that tax provision influences debt equity ratio. Higher rate of tax encourages profitable companies to choose for high debt equity ratio to obtain tax shield. There are theoretical and empirical arguments that the tax shield of debt financing induces the companies to get more debt to maximize the value of the company, Maleki *et al* (2013:6).

4. RESEARCH FINDINGS

In this section we present the empirical findings of the study. We start of by presenting the summary statistics and then proceed to present the regression results.

4.1. Summary Statistics

The summary statistics give us a quick simple description of data and the study considers the following; the mean, standard deviation, variance, minimum and maximum. The summary statistics are presented in Table 1. The study's focal point is the dependent variables of ROAE an ROAA and the independent variables of capital, deposits, credit risk and interest rates. For the sample of banks analysed the mean for ROAE is 18.47 and higher than the ROAA mean of 2.9. The mean for the capital is 15.4. The standard deviation ROAE is 10.59, compared to ROAA of 3.19 shows the spread is larger for ROAE. Capital standard deviation is the highest at 16.7.The variance ROAE is 112.17, ROAA is lower at 10.16 and capital of 280.1.Capital has the highest spread of numbers.

Table 1. Summary Statistics

Results
The MEANS Procedure

Variable	Mean	Std Dev	Variance	Minimum	Maximum	N	Coeff of Variation
ROAE	18.4736620	10.5914482	112.1787753	-48.3100000	38.8900000	71	57.3326947
ROAA	2.8509859	3.1880172	10.1634540	-7.4500000	11.2100000	71	111.8215712
SIZE	23.9532857	18.9794651	360.2200963	10.1000000	98.0000000	70	79.2353306
CAP	15.4407042	16.7362309	280.1014234	4.8400000	88.8400000	71	108.3903339
DEPOSIT FIXED	11.0220000	13.5621401	183.9316446	0.3100000	50.1800000	70	123.0460907
DEPOSIT SAVED	52.3336207	34.6563805	1201.06	0	93.3900000	58	66.2220195
CREDIT RISK	6.7167606	7.3617169	54.1948754	1.1000000	30.0400000	71	109.6021931
INTEREST RATE	5.5416667	2.2709977	5.1574306	2.8000000	11.1000000	72	40.9804096

4.2. Regression Analysis

In this study we carried out regression tests for the period prior to recession, during recession and after the recession period. We also performed robustness checks by using an alternative measure of profitability that is; we also employed the return on equity measure instead of the return on assets. We first employed the ROA measure as the dependent variable. The motivation lies in that Vong and Chan

(2008:101) argue that the performance of a bank is best measured by its return on assets (ROA). The ROA, defined as net income divided by total assets, reflects how well a bank's management is in using the banks investment resources to generate profits. A number of authors have used ROA as a measure of bank profitability (See for instance Kosmidou 2007:05; Javaid *et al.*, 2011:66; Athanasoglou *et al.*, 2006:21 and Flamini *et al*, 2009).

Table 2 and Table 3 document the results of the bivariate regression analysis where ROA is employed as the dependent variable. The coefficient of determination shows a strong relationship between capital and ROA at 0.5936. The probability shows that it is highly significant with a p-value of less than 0.01.The parameter estimate shows a positive relationship between capital and profitability as the F-value is high, the relationship between capital and ROA is moderately significant. Thus it would seem that as the banks acquire more capital their ROA also increases in tandem. The residuals plot in Table 3 also depicts a fairly strong association between ROA and the capital variable.

However the results are not robust when we employ the alternative definition of profitability. Thus the bivariate relationship between return on equity and capital is highly insignificant. The results are outlined in Table 3 and Figure 2. The motivation in using the ROE measure lies in that Return on Equity (ROE) indicates the return to shareholders on their equity and equals net profits after tax divided by total equity. It combines profitability, asset efficiency and debt optimisation and the relationship is multiplicative. ROE was used as dependent variable by some of these authors such as Albertazzi and Gambacorta (2009:11); Athanasoglou et al, (2008:125); Hassan and Bashir (2003:11).

Our results show a very weak relationship between ROE and Capital as the F value is very low at 0.05, the level of significance is very low (Table 3). The results also depict a very weak association between capital and ROE in the banking sector. The residuals plot shows almost a flat line indicating that a change in the Capital does not influence the ROE (Refer to Figure 2).

Table 2. Bivariate regression of Return on Assets against Capital

Linear regression – Cap/ROA

Linear Regression Results
The REG Procedure
Model: Linear_Regression_Model
Dependent Variable:ROAA

Number of Observations Read	72
Number of Observations Used	71
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	428.36947	428.36947	100.80	<.0001
Error	69	293.23576	4.24979		
Corrected Total	70	721.60523			

Root MSE	2.06150	R-Square	0.5936
Dependent Mean	2.85099	Adj R-Sq	0.5877
Coeff Var	72.30842		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	1	0.58483	0.33287	1.76	0.0834	-0.07923	1.24889
CAP	1	0.14676	0.01462	10.04	<.0001	0.11760	0.17593

Figure 1. Plot of Residuals of Return on Assets against Capital

Linear regression-Cap/ROA

Linear Regression Results
The REG Procedure
Model: Linear_Regression_Model
Dependent variable:ROAA

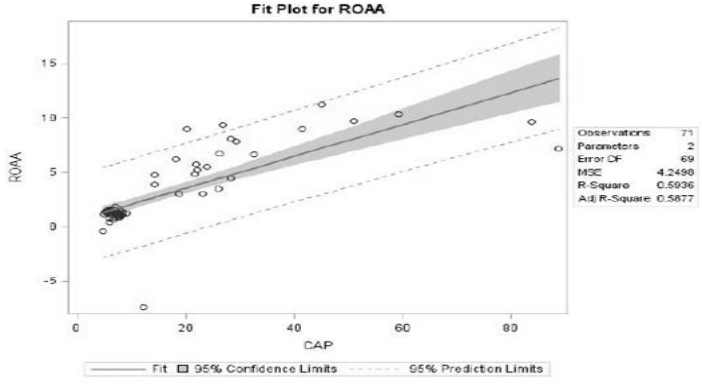


Table 3. Bivariate regression of Return on Equity against Capital

Linear Regression Results
The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: ROAE

Number of Observations Read	72
Number of Observations Used	71
Number of Observations with Missing Values	1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	5.65183	5.65183	0.05	0.8255
Error	69	7959.04122	115.34842		
Corrected Total	70	7964.69305			

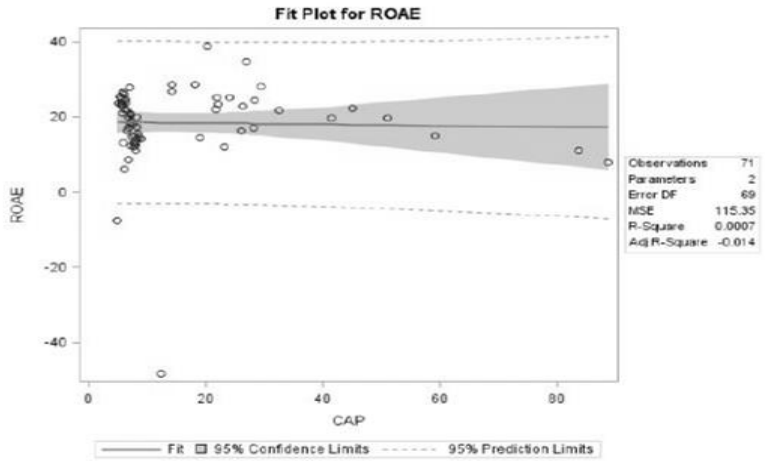
Root MSE	10.74004	R-Square	0.0007
Dependent Mean	18.47366	Adj R-Sq	-0.0138
Coeff Var	58.13703		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	1	18.73396	1.73420	10.80	<.0001	15.27432	22.19361
CAP	1	-0.01686	0.07616	-0.22	0.8255	-0.16879	0.13507

Figure 2. Plot of Residuals of Return on Equity against Capital

Linear Regression Results
The REG Procedure
Model: Linear_Refression_Model
Dependent Variable:ROAE



Having established that the relationship between capital and profitability was not robust to the alternative measure of profitability—ROE we thus proceeded to utilise ROA as the only measure of profitability. We then test the relationship between ROA (the profitability measure) and the determinants of capital structure for the period before recession, during the recession and after the recession. For the period prior to recession, the results show a strong relationship between ROA and the independent variables. The coefficient of determination is 0.97 implying it is a very strong association (Refer to Table 4). Further the regression results show that ROA is explained by all the dependent variables as their coefficients are statistically significant at the 5 percent level of significance.

Our results show an even explanatory relationship between ROA and the independent variables for the period during the recession since the coefficient of determination is 0.99 (See Table 5). However the coefficient for credit risk is now positive, this means that as the credit risk went up, ROA also went up.

Table 4. Regression of ROA against the Determinants of Capital Structure for the period before the recession.

Linear Regression Results
The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: ROAA

Number of Observations Read	32
Number of Observations Used	20
Number of Observations with Missing Values	12

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	96.06670	24.01668	132.78	<.0001
Error	15	2.71308	0.18087		
Corrected Total	19	98.77978			

Root MSE	0.42529	R-Square	0.9725
Dependent Mean	2.20900	Adj R-Sq	0.9652
Coeff Var	19.25261		

Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-1.25245	0.47014	-2.66	0.0177
CREDIT RISK	1	-0.16577	0.03290	-5.04	0.0001
DEPOSIT SAVED	1	-0.00953	0.00321	-2.96	0.0097
SIZE	1	0.18788	0.06323	2.97	0.0095
CAP	1	0.16806	0.07330	2.29	0.0367

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Table 5. Regression of ROA against the Determinants of Capital Structure for the period during the recession.

OVERALL REPORT – DURING RECESSION ROA
Linear Regression Results
The REG Procedure
Model:Linear_regression_Model
Dependent Variable:ROAA

Number of Observations Read	24
Number of Observations Used	12
Number of Observations with Missing Values	12

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	89.49583	22.37396	426.69	<.0001
Error	7	0.36706	0.05244		
Corrected Total	11	89.86289			

Root MSE	0.22899	R-Square	0.9959
Dependent Mean	2.62083	Adj R-Sq	0.9936
Coeff Var	8.73732		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	1	-0.61514	0.28527	-2.16	0.0680	-1.28969	0.05941
CAP	1	0.13108	0.07805	1.68	0.1370	-0.05348	0.31563
DEPOSIT SAVED	1	-0.00233	0.00219	-1.07	0.3222	-0.00752	0.00285
SIZE	1	0.07865	0.04801	1.64	0.1454	-0.03488	0.19218
CREDIT RISK	1	0.20814	0.04855	4.29	0.0036	0.09335	0.32294

The period after the recession shows an even slightly stronger relationship between the independent variables and ROA (Refer to Table 6). The coefficient of determination is 0.968. However some of the variables such as deposit saved and capital become insignificant. The coefficient for credit risk is now negative, this means that as the credit risk variable went up, and the return on assets went down. It would seem that the period prior and after recession shows a negative relationship between ROA and credit risk. However the relationship turns positive during the recession.

Table 6. Regression of ROA against the Determinants of Capital Structure for the period after the recession

POST RECESSION PERIOD (2009-2013)
Linear Regression Results
The REG Procedure
Model:Linear_regression_Model
Dependent Variable:ROAA

Number of Observations Read	34
Number of Observations Used	24
Number of Observations with Missing Values	10

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	76.85679	19.21420	144.58	<.0001
Error	19	2.52500	0.13289		
Corrected Total	23	79.38180			

Root MSE	0.36455	R-Square	0.9682
Dependent Mean	1.98208	Adj R-Sq	0.9615
Coeff Var	18.39214		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	1	-2.34204	0.38360	-6.11	<.0001	-3.14492	-1.53917
CREDIT RISK	1	-0.31561	0.12869	-2.45	0.0240	-0.58496	-0.04626
DEPOSIT SAVED	1	0.00289	0.00278	1.04	0.3114	-0.00293	0.00872
SIZE	1	0.23139	0.05105	4.53	0.0002	0.12454	0.33823
CAP	1	0.06615	0.07437	0.89	0.3848	-0.08950	0.22181

5. CONCLUSION

In this research effort we have demonstrated that there is a significant relationship between profitability and the determinants of capital. On one hand we found empirical evidence in support of a positive association between ROA (the profitability measure) and capital as well as the size variables. On the other hand the relationship between ROA and the deposits saved as well as credit risk variables seem to be sensitive to the business cycles. It starts of negative during the period before the recession. The negative relationship subsists between ROA and deposit saved during the recession. However it turns to an insignificant one ex-post the financial crises. However with credit risk the relationship changes from a negative one (ex-ante the financial crisis) to a positive one (during the financial crisis) and then rivets to a negative association (ex-post the financial crisis). The study also establishes a strong positive relationship between capital structure and ROA, however it unravels that there is no relationship between capital structure and ROE. Arguably, as this study utilises the ROA as the primary dependent variable it could the financial leverage multiplier (FLM) shores up and accounts for the non-robustness when the ROE measure is employed as the profitability variable. Based on the findings we conclude that there is a relationship between ROA and capital structure. The study found that the composition of debt to equity in South African banks is higher equity and lower leverage. Banks with lower leverage (higher equity) will generally report higher ROA, but lower ROE. Our results also show no change in the relationship between Capital and ROA of JSE listed banks prior, during and after the recession. Notable is the change in credit risk from a negative relationship prior and post-recession, but a negative relationship during the recession. However on the main, there is no change on the trend in relationship between capital and ROA.

What is noteworthy is that our results corroborate the findings of the IMF. According to the SARB (2010) the IMF stated that the banking sector had remained essentially sound, although its activity had been affected by the recession. Banks remained profitable despite the increase in impaired loans to 6 per cent of gross loans and advances in January 2010 from 2 per cent two years earlier. The IMF noted that no public support was extended during the recession and capital-adequacy ratios had remained above their regulatory minima throughout the crisis period. The South African banking sector managed to shrug off the effects of the recession.

REFERENCES

1. Abreu, M. and Mendes, V., 2001, May. Commercial bank interest margins and profitability: evidence for some EU countries. In Pan-European Conference Jointly Organised by the IEFS-UK & University of Macedonia Economic & Social Sciences, Thessaloniki, Greece, May (pp. 17-20).
2. Albertazzi, U. and Gambacorta, L., 2010. Bank profitability and taxation. Journal of Banking & Finance, 34(11), pp.2801-2810.
3. Ali, K., Akhtar, M.F. and Ahmed, H.Z., 2011. Bank-specific and macroeconomic indicators of profitability-empirical evidence from the commercial banks of Pakistan. International Journal of Business and Social Science, 2(6), pp.235-242.
4. Al-Jafari, M.K. and Alchami, M., 2014. Determinants of bank profitability: Evidence from Syria. Journal of Applied Finance and Banking, 4(1), p.17.
5. Anbar, A. and Alper, D., 2011. Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Turkey. Business and Economics Research Journal, 2(2), pp.139-152.
6. Athanasoglou, P.P., Asimakopoulos, I.G. and Georgiou, E.A., 2005. The effect of merger and acquisition announcement on Greek bank stock returns. Economic Bulletin, (24), pp.27-44.
7. Barclay, M.J. and Smith, C.W., 1995. The maturity structure of corporate debt. The Journal of Finance, 50(2), pp.609-631.
8. Berger, A.N. and Di Patti, E.B., 2006. Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. Journal of Banking & Finance, 30(4), pp.1065-1102.

9. Bourke, P., 1989. Concentration and other determinants of bank profitability in Europe, North America and Australia. Journal of Banking & Finance, 13(1), pp.65-79.
10. Brigham, E. F. & Ehrhardt, M. C. 2008. Financial management: Theory and Practice.12th Ed. New York: Thomson South-Western.
11. Brigham, E., Gapenski, L & Daves, P. (1998). Intermediate Financial Management. 6th Edition Florida: Harcourt Brace College Publishers.
12. Caminal, R., 2003. Taxation of banks: modeling the impact. Taxation of financial intermediation: Theory and practice for emerging economies, 235, p.81.
13. Damodaran, A., 2009. Equity Risk Premiums (ERP): Determinants, Estimation and Implications–A Post-Crisis Update. Financial Markets, Institutions & Instruments, 18(5), pp.289-370.
14. Demirgüç-Kunt, A. and Huizinga, H., 1999. Determinants of commercial bank interest margins and profitability: some international evidence. The World Bank Economic Review, 13(2), pp.379-408.
15. Dietrich, A. and Wanzenried, G., 2009, February. What determines the profitability of commercial banks? New evidence from Switzerland. In 12th Conference of the Swiss Society for Financial Market Researches, Geneva (pp. 2-39).
16. Eastman, B., 1984. Interpreting mathematical economics and econometrics. Springer.
17. Fama, E.F. and French, K.R., 1988. Dividend yields and expected stock returns. Journal of financial economics, 22(1), pp.3-25.
18. Farlex Financial Dictionary. (2009). rom http://financialdictionary.thefreedictionary.com/efficiency+ratio [Accessed June 15 2015].
19. Ferati, R. and Ejupi, E., 2012. Capital structure and profitability: The Macedonian case. European Scientific Journal, 8(7).
20. Flamini, V., Schumacher, M.L. and McDonald, M.C.A., 2009. The determinants of commercial bank profitability in Sub-Saharan Africa (No. 9-15). International Monetary Fund.
21. Graham, J.R. (2000), 'How big are the benefits of debt?' Journal of Finance.55 (2):1901-41.
22. Guru, B.K., Staunton, J. and Balashanmugam, B., 2002. Determinants of commercial bank profitability in Malaysia. Journal of Money, Credit, and Banking, 17, pp.69-82.
23. Haron, S., 2004. Determinants of Islamic bank profitability. Global Journal of Finance and Economics, 1(1), pp.11-33.
24. Haron, S., 2004. Determinants of Islamic bank profitability. Global Journal of Finance and Economics, 1(1), pp.11-33.
25. Hashemi, R., 2013. The Impact of Capital Structure Determinants on Small and Medium size Enterprise Leverage.
26. Hassan Al-Tamimi, H.A., 2008. Implementing Basel II: an investigation of the UAE banks' Basel II preparations. Journal of Financial Regulation and Compliance, 16(2), pp.173-187.
27. Hassan, M.K. and Bashir, A.H.M., 2003, December. Determinants of Islamic banking profitability. In 10th ERF Annual Conference, Morocco (pp. 16-18).
28. Javaria, B., Tufail, K.S. and Amjad, S., 2013. An investigation of costs of financial distress in case of ongoing manufacturing firms of Pakistan.
29. Kjellman, A. and Hansén, S., 1995. Determinants of capital structure: Theory vs. practice. Scandinavian Journal of Management, 11(2), pp.91-102.
30. Kosmidou, K., Tanna, S. and Pasiouras, F., 2005, June. Determinants of profitability of domestic UK commercial banks: panel evidence from the period 1995-2002. In Money Macro and Finance (MMF) Research Group Conference (Vol. 45, pp. 1-27).
31. Kwan, S., 2009. Capital structure in banking. FRBSF Economic Letter, 2009, p.37.
32. Maleki, A., Ansari, A. and Safari, A., 2013. A Study of Market Orientation and Its Effect on Small to Medium Sized Enterprises of Informatics Industry Located in Tehran. Journal of Novel Applied Sciences , pp.1150-1159.
33. Manoj, P.K., 2010. Financial soundness of old private sector banks (OPBs) in India and benchmarking the Kerala based OPBs: a 'CAMEL'approach.bAmerican Journal of Scientific Research, 11, pp.132-149.
34. Miller, E.M., 1977. Risk, uncertainty, and divergence of opinion. The Journal of finance, 32(4), pp.1151-1168.
35. Miller, S.M. and Noulas, A.G., 1997. Portfolio mix and large-bank profitability in the USA. Applied Economics, 29(4), pp.505-512.
36. Modigliani, F. and Miller, M.H., 1958. The cost of capital, corporation finance and the theory of investment. The American Economic Review, 48(3), pp.261-297.
37. Modigliani, F. and Miller, M.H., 1963. Corporate income taxes and the cost of capital: a correction. The American Economic Review, 53(3), pp.433-443.
38. Muradoglu, G. and Sivaprasad, S., 2009. An empirical analysis of capital structure and abnormal returns.
39. Naceur, S.B. and Omran, M., 2011. The effects of bank regulations, competition, and financial reforms on banks' performance. Emerging Markets Review, 12(1), pp.1-20.
40. Park, K. and Jang, S.S., 2013. Capital structure, free cash flow, diversification and firm performance: A holistic analysis. International Journal of Hospitality Management, 33, pp.51-63.
41. Rasiah, D., 2010. Review of literature and theories on determinants of commercial bank profitability. Journal of Performance Management, 23(1), p.23.
42. Richardson, S., 2006. Over-investment of free cash flow. Review of accounting studies, 11(2-3), pp.159-189.
43. Ross, S.A.; Westerfield, R.W.; Jordan, B.D. 2000. Fundamentals of corporate finance. Boston: The McGraw-Hill Companies. 694 p.
44. Shubita, M.F. and Alsawalhah, J.M., 2012. The relationship between capital structure and profitability. International Journal of Business and Social Science, 3(16).
45. South African Reserve Bank. (2010) SARB staff report for 2010 Article IV Consultation.
46. Sufian, F. and Chong, R.R., 2008. Determinants of bank profitability in a developing economy: Empirical evidence from the Philippines. Asian academy of management journal of accounting and finance, 4(2), pp.91-112.
47. Sufian, F. and Habibullah, M.S., 2009. Bank specific and macroeconomic determinants of bank profitability: Empirical evidence from the China banking sector. Frontiers of Economics in China, 4(2), pp.274-291.
48. Vong, A.P. and Chan, H.S., 2009. Determinants of bank profitability in Macao. Macau Monetary Research Bulletin, 12(6), pp.93-113.
49. Weston, J. and E. Brigham, 1981, Managerial finance, 7th ed. (Dryden Press, Hinsdale, IL).
50. Yang, C.C., Lee, C.F., Gu, Y.X. and Lee, Y.W., 2010. Co-determination of capital structure and stock returns—A LISREL approach: An empirical test of Taiwan stock markets. The Quarterly Review of Economics and Finance, 50(2), pp.222-233.
51. Zaman, G., Anwar & Javaid. (2001) determinant of banks profitability in Pakistan: internal factor analysis. Mediterranean Journal of Social Sciences, 2(1), pp.59-78.