Implications of Financial Leverage for Bank Profitability

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Abstract
Typically, two capital financing models available to companies: debt and equity. Capital sources determine the retention of control of a company, along with how important it is to major shareholders to relinquish sectoral control. We examine the implications of financial leverage as a financing model for bank profitability vis-a-vis equity capital in the Ghana banking sector. Risk Adjusted Return on Assets (RAROA) and Risk Adjusted Return on Equity (RAROE) are the response variables in the established financing model on which three explanatory variables (bank credit risk, liquidity risk, and bank capital sufficiency) are regressed. Analysis of data revealed among others, an inverse bank profitability-credit risk relationship in the case of RAROA, implying effective risk management reduces volatility and improves profitability. Although there is a contractionary effect on ploughed back accrued income, there is full control over business ownership as the case were with equity capital. A moderate use of equity capital over debt capital is recommended.

Keywords: Financial Leverage: Profitability: Capital Adequacy: Liquidity Risk: Credit Risk

JEL:

1. INTRODUCTION
The literature on the global economic crunch of 2007 has recurring updates that scrutinize the incidence with some attention drifting towards the best financial mix for companies (Llorens, 2019). Some scholars (Baily, Litan, & Johnson, 2016; Bernanke, 2018; Altunbas, 2011) have made attempts at concluding that those crises were as a result of excessive credit growth and relaxation in the application of credit standards by capital markets. In their study, Acharya, Engle, and Richardson (2012) alluded that deterioration of bank capital is one of many culprits of bank risky decisions that portends such crises. The financial leverage of most banks had been one not worthy of emulation because it led to piles of debt as opposed to equity. This notwithstanding, it is argued that debt has an advantage over equity in terms of transformational cost (Tuncay, 2019). What appears better about equity is that it provides security for the firm and owners of equity capital. According to Acharya et al. (2012) the inadequacy of common equity capital of most banks and absence of operational guide explain why some banks struggle to raise new equity capital. Creditors are only willing and will oblige to lend funds if common shareholders bear a significant portion of the risk that goes with lent funds.

As a matter of clarification, banks are financial institutions charged with the responsibility of intermediation based on wholesale markets and depositors to finance loans and related investments (Llorens, 2019). Until the coming into operation of the Basel III accord, banks basically fulfilled their capital requirement through common equity and a hybrid instrument with lesser risky attributes. These included preferred shares and absolute subordinated debt (Llorens, 2019). The choice of a composition of a regulatory capital of a financial institution is mostly grounded in corporate finance theories. One of these capital structure theories is Modigliani and Miller’s (1958) Trade-Off Theory (TOT) that suggests that it is not optimal in holding 100% equity capital, but rather a combination of equity capital and investment instruments (debt). Contrary to this position of the trade-off capital structure theory, the Pecking Order Theory (POT) made popular by Myers and Majluf (1984) holds that it is rather economical to issue debt-like instruments before deciding on equity capital because the TOT option holds less informational cost (Almazan, Martin-Oliver & Saurina, 2015). In both these alternative financial leverage mixes, none of them predicts a non-zero or total absence of debt-like capital combined with regulatory capital (Loutskina, 2011).
In this paper, we test whether the prediction from corporate finance theories of financial leverage perfectly fits in the bank sector, using the Risk Adjusted Return on Assets (RAROA) and Risk Adjusted Return on Equity (RAROE). In testing this, it is prudent to reflect on risk management practices even after one has had a perfect combination of regulatory capital and debt-instrument with lower loss attributes. According to Conway (2010), the International Monetary Fund highlights that the 2007-2009 global financial crunch was as a result of poor credit management practices and how returns are computed without adjusting for possible associated risk elements. Added to this allusion is the over-reliance of banks on wholesale funding which indeed facilitates bank failure. Aside these revelations, the issue of how much liquid asset or the combination of equity-debt ratio should a bank have at a given time is still contested. There is an assertion (Pasaribu & Sari 2011) that high equity-debt ratio boosts the confidence of the public about how sound and stable a bank. The contention of this study is based on the reality that, however best a bank’s financial leverage mix, if the Basel III capital regulatory threshold and level of liquidity is out of play, we should expect crisis tendencies mostly due to unregulated lending behaviours of banks. It is therefore economical to consider how much equity capital should be maintained, the level of liquid assets to hold for precautionary reasons and lending threshold for banks to their customers.

2. LITERATURE

2.1 The Trade-Off Theory (TOT)
The composition of an operational capital of a financial institution is mostly grounded in corporate finance theories. One of these capital structure theories is Modigliani and Miller’s (1958) trade-off theory (TOT) that suggests that it is not optimal in holding 100% equity capital, but rather a combination of equity capital and investment instruments (debt). The other theory that is linked to financial leverage is Pecking Order Theory (POT) by Myer and Majluf (1984) which is looked at vis-a-vis the TOT. Keynes (1936) explains that banking institutions need liquid assets to face daily expenses. Firms have to raise adequate funds in one of two ways in this regard; capital markets or liquidating their existing assets (Banafa, 2016). In the case of capital markets, it is argued that lots of imperfections loiter the market with lingering high transaction costs which could be skipped if firms practice the policy of holding sufficient cash level (Keynes, 1936). What seems similar comparing debt to holding cash in the vault is the cost and benefit theories that come to play. However bad it is to hold cash; it is better off because it constitutes a safety net for the firm making it easy to avoid cost of sourcing funding externally or liquidating existing assets in the organisation (Banafa, 2016).

Also known as the Tax-Bankruptcy trade-off theory, the TOT posits that in deciding on the best capital mixed and how it is used; firms consider the absolute cost of bankruptcy and the tax benefits that may come from debt (Kale, 2014). Raising an argument, Voutsinas, and Werner (2011) think that most firms regard debt-to-equity as a trade-off between tax shield of debt and cost of leverage just as the case of the agency cost. The TOT further says debt financing is usually adopted when a firm’s tangible assets are at a high level as opposed to equity which is used when the level of intangible assets is high. By extension, a firm should maintain preferably an optimal debt-equity mix (Al-Tally, 2014). In this sphere, a firm resort to the use of the TOT when it resolves that the cost involved in debt financing is comparatively lower than the benefits it will enjoy in debt financing. As a result, much leverage should be used by a profitable firm to finance its operations or investments. Again, the TOT holds that borrowing firms do so to the extent that tax shield on debt financing immediately off-sets the associated cost of undertaking such a debt finance option (Mohammed, 2016). Bontempi and Golinelli (2001) have emphasised that most companies borrow but at a gradual pace so that they optimise the debt-equity ratio. And at this level, market value of firms is maximised when juxtaposing the current anticipated gains against losses in debt capital financing.
2.2 Empirical Review from the Global Bank Sector

There is adequate evidence including an earlier study by Bourke (1989) on liquidity-firm performance relationship, that due to the ability of certain firms to strategically diversify their asset portfolio, they tend to have higher liquidity and higher profits. Conversely, Tran et al (2016) rather think holding too much liquidity leads to lower profits. Credit risk has equally been in the centre of controversy as to its role in the global financial crunch. Studies by Tarus, Chekol & Mutwol (2012) investigated the relationship between credit risk and firm performance and resolved that credit risk positively impacts bank profitability. Other studies have favoured the positive relationship between credit risk and bank performance included those of Angbazo (1997; Demirguc-Kunt & Huizinga, 1999; Carbo-Valverde & Rodrigue-S-Fernandez, 2007). A few strands of studies were identified to have linked credit risk negatively to firm performance (Dietrich & Wanzenried, 2011; Vong & Chan, 2009; Ongore & Kusa, 2013; Miller & Noulas, 1997). In their study of South African enterprises over half a decade ago, Islam and Nishiyama (2016) reported that credit risk as a measure of non-performing loans had a negative but significant influence on profitability.

Banafa (2016) investigated the effect of financial leverage and liquidity on firm performance in Nairobi and found that liquidity has a positive relationship with firm performance. Analysing 257 firms in South Africa using dataset spanning 1998-2009, Fosu (2013) established a positive leverage effect on firm performance. Enekwe, Agu and Eziedo (2014) undertook a study on the impact of leverage on firm performance using ROA as a profitability measure, both debt ratio and debt-to-equity ratio were negatively correlated with bank profitability. Akinlo and Asaolu (2012) used regression analysis model to investigate the relationship between leverage and profitability of firms. It was discovered that profitability inversely related with leverage.

With the issue of capital size and profitability, Ozili (2017) in Nigeria concludes in his research that regulatory capital has a positive relationship with bank profitability. Abbas, Iqbal, and Aziz (2019) established a negative effect of capital adequacy on bank profitability in US and Asian. Ibhagui and Olokoyo (2018) try to establish the role of firm size in the relationship between leverage and firm performance. They reported a negative and significant relationship between leverage and small firm performance. This negative effect, they emphasise diminishes as the firm grows and eventually vanishes when the firm reaches its growth potential. The study therefore concludes that much of the negative effect of leverage on firm performance rests on small-sized firms but not true of larger Nigerian firms.

2.4. Empirical Review from Ghana

With a focus on the Ghanaian banking sector, Gatsi and Akoto (2010) discovered that debt had a large negative impact on profitability. According to Hongli, Ajousu, and Bakpa (2019), despite the various writers who have sought to explain the influence of financial leverage on firm performance, the conclusions are extremely disparate, necessitating further research. As a result of their research on the impact of liquidity and financial leverage on business performance, they discovered that liquidity had a positive substantial effect on return on equity (ROE), which is regarded as a proxy for performance. The study confirms that financial leverage has a significant favourable impact on firm performance. The study then concludes that firm financial managers meet their short-term commitments to improve the firm’s performance. Outlining a number of drivers of performance in the Ghana bank industry, Gadzo and Asiamah (2018) think there certainly may be other propellers of bank performance in the near future aside what other studies have identified in the past. The research established that there is high leverage among unlisted banks in Ghana with high debt-to-equity ratio. Again, it was found that the gearing level of unlisted banks in Ghana is positively related to bank performance drivers (Etc. ROA & ROE). In another dimension, firm size was found to significantly relate
positively with bank performance. It concludes that cost of debt financing and type of debt contracted by banks are key in determining bank performance. It is recommended that stakeholders be more concerned about the optimal level of leverage and the efficient use of this debt.

3. DATA AND METHODS

In assessing the impact of financial leverage on bank performance, the study used a panel data analysis model. The panel data model refers to a longitudinal or cross-sectional time series data where the behaviour of entities in the sample is observed across time (Torres-Reyna, 2007). Using this model type allows a researcher control for variables that cannot be easily measured, such as age, culture etc. across those chosen entities. It also controls for differences in bank practices across selected banks. It allows for determination of heterogeneity and takes care of co-linearity issues among the regressor variables (Gujarati & Sangeetha, 2007).

3.1 Pane Data Estimation Approach

There are basically two techniques used in analysing panel data: the fixed effects (FE) and the random effects (RE) Models. The FE Model is functionally used to explore the relationship between a response variable and focus regressors usually within a company or countries. It is assumed that every entity has a unique feature that may or may not influence the regressor variables (Torres-Reyna, 2007). The FE Model therefore assumes that the unique element with an individual firm can bias the response variable or regressor variables and must be controlled for. This is where the issue of the error term and regressor variables is brought in. In this way the time-invariant characteristics are remove and taken care of so that the net result of the regressor variables on the response variables is ascertained without bias. Thus, the FE Model omits all time-invariant differences between individual entities so that coefficients obtained are without bias. In this case the errors terms and the constant are deem not correlated otherwise the FE Model will fail to hold.

Similarly, the RE Model is a special form of the FE Model where variations across entities are deem to occur by chance and that the error term is not correlated with the regressor variables in the Model. So, if it happens that there are differences across entities that can influence the outcome of the response variable to bias results then the RE is appropriate. Under the RE Model the time-invariant variables tend to explain the results but only if the error terms are not correlated.

The appropriateness of a model was tested using the Hausman Test. This test basically tests if there are correlations between the unique errors and the regressor variables. Having run the Hausman Test, the alpha value (0.05) is compared against the p-value of the test. If the p-value of the Hausman Test is less than the alpha value of 0.0, then the null hypothesis is rejected in favour of the alternative hypothesis that says the FE Model is appropriate. On the other side, if the Hausman Test gives a p-value more than the alpha value of 0.05 the null hypothesis is not rejected and therefore the RE Model is applied for analysis.

After running the Hausman Test for the first model which is Risk Adjusted Return on Assets (RAROA), it was realised that the Prob> (Chi²) was 0.9655 implying the null hypothesis is not rejected and therefore the RE Model is used for analysis. The regression equation used for RAROA is as follows.
\[ Y_{it} = B_0 + B_1 (CAP_{it}) + B_2 (LRISK_{it}) + B_3 (CRISK_{it}) + B_4 (SIZE_{it}) + B_5 (FUNDRIK_{it}) + \epsilon_{it} \]

Where,

\[ Y_{it} = \text{RAROA or RAROE for bank } i \text{ at time } t, \]

CAP = Capital Adequacy Requirement

LRISK = Liquidity Risk (Optimum liquid assets proxied by Cash to Total Assets)

SIZE = Bank Size (Proxied by log of total assets)

CRISK = Bank Risk Taking ability (Proxied by Total Loans to Total Assets)

FUNDRIK = Funding Risk (Proxied by Customer Deposits)

\[ B_0 = \text{Constant, } \epsilon_{it} = \text{Error term} \]

\[ B_1 \text{ to } B_6 = \text{Coefficients of respective independent variables in the study} \]

This study used RAROA and RAROE as proxies for bank profitability.

### 3.2. Identification and Definitions of Variables

\[
RAROA_{it} = \frac{ROA_{it}}{\sigma(ROA_{it})} \]

\[
RAROE_{it} = \frac{E_i}{\sigma(ROA_{it})} \]

ROA is return on assets, ROE is return on asset referred to as equity to asset ratio of bank \( i \) at time \( t \) and \( \sigma(ROA_{it}) \) is the standard deviation of ROA of bank \( i \) at time \( t \) over the sample period \( p \) (Kohler, 2015; Adusei, 2015).

### 3.3. Explanatory Variables

Capital adequacy is one of the three focus regressors that are used in this study. It is measured by dividing the total equity by total assets of the bank. A financial institution’s capital adequacy determines its soundness and safety. Capital ratios also protect shareholders from bankruptcy exposure by absorbing losses. In accordance with the Basel II Accord, banks are required to maintain a capital adequacy ratio of 8.5%, while the Bank of Ghana recommends a 10.5% adequacy ratio (Ghana Banking Survey, 2018).

### Table 1: Variables and Definitions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Acronym</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus Regressors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Adequacy</td>
<td>Total equity divided by total assets of the bank</td>
<td>CAP</td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>Cash and maturing income from balances held at other depository institutions divided by total assets</td>
<td>LRISK</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>Sum of loans over total bank assets</td>
<td>CRISK</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding Risk</td>
<td>Deposits to assets ratio plus equity to assets ratio divided by the standard deviation of deposits to assets ratio</td>
<td>FRISK</td>
</tr>
</tbody>
</table>
3.4. Testing for Normality

The regression model that affects the validity of all tests assumes that all residuals behave normal. The researchers used the Shapiro Wilk non-graphical test for normality in determining whether there was normal behaviour among data collected. The test identified that data was normally distributed across sample. This was ascertained through the p-value which was less than the alpha value of 0.05. Therefore, the hypothesis that data was not normally distributed was rejected.

4. RESULTS AND DISCUSSIONS

In establishing the effect of each proxy variable for bank performance, a number of tests were conducted to ascertain the suitable model to use in analysing debt capita and risks and their implications for the performance of Ghanaian banks.

**Table 2: Panel Regression Results - RAROE**

| VAR   | Coeff | Std.Error | t-stats | P>|t| | Coeff | Std.Error | z-stats | P>|z| |
|-------|-------|-----------|---------|------|-------|-----------|---------|------|
| CAP   | 0.6410| 3.205     | 0.20    | 0.020| -1.4117| 3.208     | -0.44   | 0.656|
| LRISK | -0.2938| 1.049     | -0.28   | 0.078| -1.6241| 1.055     | -1.54   | 0.122|
| CRISK | 0.2276| 0.065     | 3.52    | 0.001| 2.4988 | 0.922     | 2.71    | 0.007|
| BSIZE | 0.1988| 0.131     | 1.51    | 0.038| 0.0095 | 0.106     | 0.09    | 0.925|
| FRISK | 0.1893| 0.132     | 1.43    | 0.061| 0.2841 | 0.130     | 2.18    | 0.029|
| CONT  | 3.3555| 1.497     | 2.24    | 0.153| 4.9459 | 1.355     | 3.65    | 0.000|

R-sq: Within 0.3418 | R-sq: Within 0.283
Between 0.0132 | Between 0.644
Overall 0.2242 | Overall 0.298
F (6 48) 4.26 | Wald ch2 23.74
Prob>F 0.0011 | Prob>ch2 0.004
N 209 | N 209

Source: Author’s Construct (2023)

RAROA (Risk Adjusted Return on Assets), RAROE (Risk Adjusted Return on Equity), B-SIZE (Bank Size), F-RISK (Funding Risk), LRISK (Liquidity Risk), CRISK (Credit Risk).

*10% significance
**5% significance
***1% significance

A panel regression analysis was estimated using the fixed effects model. In arriving at the fixed effects model as the suitable model for analysis, the Hausman Test was run in which the null hypothesis (which prefers the random effects model) was rejected. The Hausman Test results (see Table 3) showed a p – value of 0.0248 being less than the alpha value of 0.05. This informed the rejection of the null hypothesis and therefore the fixed effects model was chosen as the appropriate model for analysis under the RAROE as the dependent variable (see Table 3). The $R^2$ under the fixed effects model for bank performance measurement is about 22 percent, signifying a weak fit. It however
means that the regressor variables combined in this model explain about 22 percent of variance in bank profitability determinants. The study’s F-statistics stands at 4.26 at less than one percent significant level.

Table 3: Hausman Test: Model 1-Risk Adjusted Return on Equity

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Fixed (b)</th>
<th>Random (B)</th>
<th>Difference (b-B)</th>
<th>sqrt (diag (V_b-V_B))</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAP</td>
<td>0.6410</td>
<td>-1.4117</td>
<td>2.0527</td>
<td>0.470839</td>
</tr>
<tr>
<td>LRISK</td>
<td>-0.2938</td>
<td>-1.6241</td>
<td>1.3303</td>
<td>0.134285</td>
</tr>
<tr>
<td>CRISK</td>
<td>0.2276</td>
<td>2.4988</td>
<td>-2.2712</td>
<td>-</td>
</tr>
<tr>
<td>BSIZE</td>
<td>0.1988</td>
<td>0.0095</td>
<td>0.1893</td>
<td>0.084669</td>
</tr>
<tr>
<td>FRISK</td>
<td>0.1893</td>
<td>0.2841</td>
<td>-0.0948</td>
<td>0.024624</td>
</tr>
</tbody>
</table>

b = consistent under \( H_0 \) and \( H_a \); obtained from xtreg
B = inconsistent under \( H_a \), efficient under \( H_0 \); obtained from xtreg
Test: \( H_0 \) : difference in coefficient not systematic

\[
chit^2 = (b-B)'[(V_b-V_B)^{-1}](b-B)
\]

\[
= 14.58
\]

\[
Prob> chit^2 = 0.0248
\]

(V_b-V_B is not positive definite)

4.1. Bank Capital Adequacy and Risk Adjusted Return on Equity

Bank capital adequacy showed a statistically significant positive link with bank profitability as measured by RAROE (see Table 2) using the fixed effects model. This result is directly supported by that of Ozili (2017), that adequate bank capital correlates favourably with bank profitability. This stems from the fact that buffer capital saves the firm from unexpected external shocks and also from bad trading periods that rake in losses. Again, Abbas, et al (2019) examined bank capital effects among others on firm profitability of US and Asian banks and showed that capital has a significant positive impact on profitability.

4.2. Bank Liquidity and Risk Adjusted Return on Equity

Liquidity Risk was found to have a negative connection with an average bank performance in Table 2, where RAROE acts as a proxy for bank profitability. In most cases, banks strive to reduce the occurrence of insolvency by maintaining a minimum required level of liquid assets to fulfill creditors’ maturing leverage. Under this variable, the study sought to determine the optimum amount of liquidity that an average bank in Ghana’s banking system should maintain in order to meet the payback obligations of borrowed funds. Whether investing these borrowed funds for interest-bearing investments or keeping these funds on average to meet maturing debts as soon as possible. Fortunately, the study result of Abbas et al (2019) corroborates this negative relationship of liquidity
risk with bank profitability. Impliedly, borrowed funds should be invested into interest earning assets to rake in returns. By elongation, leverage is negatively related with bank profitability.

In contrast, Hongli et al. (2019) in Ghana found that liquidity has a considerable positive impact on return on equity (ROE), a performance proxy, in their study on the impact of liquidity and financial leverage on company performance. In order to prevent insolvency soon, the study advised management to reduce the usage of debt financing and instead use more of their retained earnings for their operations. In contrast to the findings in Table 2, their analysis showed a positive correlation between financial leverage and bank performance.

### 4.3. Credit Risk and RAROE

The focus here is on credit risk as proxy for leverage and as an accounting-based measure. There is a statistically positive relationship between bank credit risk and bank profitability (see Table 2). By implication, financial leverage positively affects bank performance in the form of bank profitability as gauged by RAROE. If a bank has a leverage ratio of 3% then if credit rises by one percentage point, the value of equity will rise by about 3-percentage points. Vindicating the position of this paper, Tarus et al (2012) Demirgüc-Kunt and Huizinga (1999) and Valverde and Rodríguez-Fernandez (2007) all established a positive relationship between revealed direct links between credit risk and profitability.

### Table 4: Panel Regression Analysis-RAROA

| VAR     | Coeff | Std.Error | t-stats | P>|t| | Coeff | Std.Error | z-stata | P>|z| |
|---------|-------|-----------|---------|-------|-------|-----------|---------|-------|
| CAP     | 3.8904| 3.633     | 1.07    | 0.290 | 2.0881| 4.03      | 0.52     | 0.065 |
| LRISK   | 0.4197| 1.200     | 0.34    | 0.734 | -0.3811| 1.29      | -0.34    | 0.067 |
| CRISK   | -0.6553| 1.038    | -0.63   | 0.531 | -1.0271| 1.19      | -0.86    | 0.003 |
| BSIZE   | -0.1130| 0.149    | 0.76    | 0.452 | 0.2448| 0.18      | 1.37     | 0.140 |
| FRISK   | 0.0002| 0.150     | 0.00    | 0.999 | 0.0233| 0.16      | 0.14     | 0.000 |
| CONT    | 4.6877| 1.694     | 2.77    | 0.008 | 6.0877| 1.67      | 3.66     | 0.000 |

R-sq: Within 0.1617 Within 0.1493
R-sq: Between 0.4636 Between 0.6389
R-sq: Overall 0.2168 Overall 0.2115

F (6 48) 1.54 Wald ch2 15.93
Prob>F 0.1745 Prob>ch2 0.024

N 209 N 209

*Source: Author’s Construct (2022)*

RAROA (Risk Adjusted Return on Assets), RAROE (Risk Adjusted Return on Equity), B-SIZE (Bank Size), F-RISK (Funding Risk), LRISK (Liquidity Risk), CRISK (Credit Risk).

*10% significance

**5% significance

***1% significance
Table 5: HAUSMAN TEST: MODEL 2-RAROA

<table>
<thead>
<tr>
<th></th>
<th>Coefficients</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(b)</td>
<td>(B)</td>
<td>(b-B)</td>
<td>sqrt(diag(V_b-V_B))</td>
</tr>
<tr>
<td>Fixed</td>
<td>3.8904</td>
<td>2.0881</td>
<td>1.8023</td>
<td>1.911566</td>
</tr>
<tr>
<td>Random</td>
<td>0.4197</td>
<td>-0.3811</td>
<td>0.8008</td>
<td>0.662909</td>
</tr>
<tr>
<td>Difference</td>
<td>-0.6553</td>
<td>-1.0271</td>
<td>0.3718</td>
<td>0.535591</td>
</tr>
<tr>
<td>S.E</td>
<td>-0.1130</td>
<td>-0.2448</td>
<td>-0.3578</td>
<td>0.127794</td>
</tr>
<tr>
<td></td>
<td>0.0002</td>
<td>0.0232</td>
<td>-0.0231</td>
<td>0.086510</td>
</tr>
</tbody>
</table>

Source: Author’s Construct (2022)

b = consistent under $H_0$ and $H_a$; obtained from xtreg
B = inconsistent under $H_a$, efficient under $H_0$; obtained from xtreg

Test: $H_0$: difference in coefficient not systematic

\[
\text{\(chi^2\) (5)} = (\text{b-B})'[\{(V_b-V_B)^{-1}\} (\text{b-B})]
\]

\[= 1.406\]

\[\text{Prob}\times\chi^2 = 0.9566\]

(RAVAO was one of the proxies used to gauge bank profitability. R-square is around 22%, indicating that just 22% of the variability in the studied variables affects bank performance. This suggests that a 22% change in RAROA will result from a unit change in each explanatory variable. The information provided by the explanatory factors is statistically significant and superior to what the basic mean would provide given the \(p\)-value of 0.05. The null hypothesis, which favours the use of a random effects model, was not rejected because the Hausman Test demonstrates that the alpha value (0.05) is far lesser than that established by the test (see Table 5: \text{Prob}\times\chi^2 = 0.9566). As a result, the random effects model was chosen for RAROA analysis.

4.4. Capital and Profitability

The reported estimates show that except capital adequacy which has a positive relationship with profitability, the other two core independent variables (CRISK & LRISK) have negative significant impacts on profitability. The CAP-profitability relationship explains one economic implication; the usage of more leverage for bank commercial activities pays better than solely relying on owner equity. So, with a cautioned increase in leverage, there is an improvement in bank profitability. Ozili (2017) that regulatory bank capital cushioned by leverage positively relates to commercial bank profitability. This is directly in tandem with findings on Table 4. But a study in Ghana by Gatsi and Akoto (2010) observed that debt has a significant negative effect on profitability.
4.5. Liquidity and Profitability

With emphasis now on liquidity risk, the significance of reducing the incidence of bank insolvency is paramount for banks to hold optimum liquid assets that could easily be converted into cash (Adusei 2015). As observed from Table 4, the relationship between liquidity risk and bank profitability is negative. The revelation made by the study result of Abbas, et al (2019) justifies the established result of this current study. This presents an argument to the effect that idle liquid assets is synonymous to savings which yield almost no return or very marginal returns instead of investing in interesting-earning securities and stocks to accrue income.

4.6. Credit Risk and Profitability

Findings on Table 4 show that using the random effects model to analyse the effect of financial leverage on bank profitability through the RAROA lens, CRISK has a statistically significant negative relationship with bank profitability. By implication, a lesser debt capital ratio should be preferred. By extension, it pays off for firms to use less debt capital relative to equity capital financing.

5. CONCLUSION

The study set out to assess the implication of debt capital and risk for bank performance. Specifically, the explanatory variables that were used included capital adequacy, credit risk, and liquidity risk. Under the RAROE using the fixed effects model for analysis, it was identified that there are statistically significant relationships between these explanatory variables and bank profitability. This indeed qualifies them as good predictors of bank profitability. These results support the leverage-profitability hypothesis that banks enjoy high interest income on properly managed credit and also saves banks from liquidity crisis as and when there is the need to have enough liquidity to fulfill customer demands. Liquidity and credit risks were found to negatively impact bank performance under RAROA, implying that maintaining higher liquidity could reduce returns and default rate. Results similarly indicate that the well capitalised banks through leverage stand the chance of making more revenue and relatively stable in times of unexpected losses from trade.

6. RECOMMENDATIONS

It is suggested that banks strictly observe the Basel III accord (2020) on capital adequacy of 8% and Bank of Ghana’s directive (2017) on maintenance of a minimum capital against external shocks of GHC400m. It is further advised that banks retain a percentage of earnings after dividend distribution to boost their capital as against overly engaging in exorbitant bonuses to shareholders. Since well-capitalised banking system ensures stability and resilience in the industry, it is suggested that increased assets volume will bring about lower transaction cost thereby improving bank performance through profitability. One other suggestion that needs to be reconsidered is liquidity management. Although holding so much liquidity or tying much resource to liquid assets may be beneficial in times meeting maturing debts and protecting banks from insolvency challenges, it pays to invest idle funds into interest earning securities.

REFERENCES


DECLARATION OF CONFLICT OF INTEREST

There is no any such conflict of interest issues.