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The Moderating Role of Liquidity on Financial Leverage and Profitability of Banks in Ghana

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ABSTRACT

Purpose: In the banking industry, profitability has always been a key metric for determining or analyzing profitability. Changes in bank profitability could have an impact on economic advancement since earnings influence company investment decisions. As a result, significant profitability is necessary for a bank's long-term survival and growth. The paper examined the role of liquidity on the nexus between financial leverage and profitability of banks from the perspective of Ghana.

Methodology: Based on convenience sampling techniques and the availability of reliable data, the study covered six (2018-2023) financial years of the twenty (20) banks. The study employed quantitative research with descriptive and exploratory research design. SPSS (v23) and Microsoft Excel were used in analyzing the secondary data collected from the PwC Ghana Banking Survey Report and the Ghana Statistical Service.

Findings: Per the study analysis, it is established that in Model 1 (ROE), liquidity has no substantial influence on the profitability of the banks and when profitability is measured by ROE, it has an insignificant relationship with liquidity but in Model 2 where profitability is measured by ROA, it was revealed that there exists a significant relationship between profitability and liquidity. Financial leverage and profitability for both models 1 and 2 of the study show a significant relationship. It was also revealed that when profitability is measured by either ROE in model 1 or ROA in model 2, Liquidity has a greater moderating effect on the nexus between financial leverage and the profitability of banks.

Unique Contribution to Theory, Policy and Practice: Therefore, the study concludes that there is a significant moderating effect of liquidity on the link between financial leverage and profitability of banks quoted on the Ghana Stock Exchange and therefore recommends that banks map up a good strategy in maintaining a good financial leverage level to help increase profits thereby increasing shareholders' value.

Keywords: *Banks, Financial Leverage, Liquidity, Profitability, Ghana*

INTRODUCTION

The efficiency with which a corporation generates income or revenues, manages its assets and liabilities, and attends to the financial interests of its shareholders and other stakeholders are often critical factors in determining its effectiveness and financial success (Mahrani & Soewarno 2018). Stakeholders with a vested interest in an organization's financial success are employees, bondholders, trade creditors, investors, and management. Profitability is used to compare similar companies in the same industry and to assess a company's overall financial health over time. Effective performance is the main objective of any profit-making organization, and every manager must make sure that the objective of profitability is achieved (Tanko and Polycarp, 2019). A company's longevity is primarily based on its profitability and performance, which are significantly boosted by the combination of its capital. One of the toughest problems facing businesses is choosing monetary outcomes while considering the trade-off between risk and profitability. Even though effective management of liquidity and leverage is essential, some businesses succeed despite having a sub-par capital structure plan.

Banks may choose to raise capital through debt financing rather than issued stocks to maximize shareholder value. Their possible returns are therefore multiplied (Adenugba et al., 2016). Borensztein and Ye, (2018) defined "highly leveraged" as having a little bit more debt than equity in a company. Investors use leverage to raise their maximum possible return on a given investment. Also, investors use a range of products, including margin accounts, futures, and options, to leverage their investments. Leverage can be utilized to finance the assets of a business. Investors, market analysts, and lenders may analyze a variety of leverage ratios, including total assets, total equity, operating expenses, and incomes, which are believed to be extremely equivalent to debt.

According to Billah et al., (2015), firms use liquidity ratios to evaluate their financial health and liquidity. However, according to Berentsen and Schär, (2018), it is generally advised to have cash reserves equal to at least three months' worth of income because insufficient funds could force an organization to draw from savings or investment plans.

As an essential economic component, banks enable an economy to trade goods and services for financial assets or money. Banks with lower transaction costs, and operate as financial intermediaries, linking savers, and borrowers. Banks play an essential part in the transference of monetary policy, which is an important tool for buttressing economic development and forestalling inflation. Central banks supervise the monetary supply at a national scale, while banks facilitate the flow of money in the open market where they operate. The banking industry has a significant impact on economic trends. Banks have contributed various activities to the enhancement of economic events, including financial mediation and many other financial activities, which are essential for any country's economic development and growth.

Therefore, the profitability of banks has an impact on the economic development of any country. Banks mostly, boost profits by employing leverage, sometimes excessive leverage, which can be

attributed to the Great Recession of 2007–2009 (Gertler and Gilchrist, 2018). As per Heikal et al., (2014), a return on equity and, a return on assets can both be utilized to calculate profits, and likely banks make a significantly higher return on equity than they do on assets due to leverage. The leverage ratio is a calculation that compares a bank's fundamental capital to total assets. To ensure that banks have sufficient capital and to restrict the amount, financial institutions can leverage their capital stability (Gertler & Gilchrist, 2018).

Profitability has always been a key metric for determining or analyzing a business's performance in the banking industry. Changes in bank profitability could have an impact on national economic advancement since earnings influence company investment decisions. As a result, significant profitability is necessary for a bank's development and long-term survival (Menicucci & Paolucci 2016). The Ghanaian government has recently been faced with the difficulty of regaining economic stability in a country where many industries have collapsed as a result of the financial sector restructuring. This challenge demands the banking sector to play a vital role in restoring credit demand and attracting investment. As a result, the banking sector must be mindful of its profitability, as it is vital for bank management achievement and has an impact on the financial system. In several countries, numerous research has been undertaken to try and identify the characteristics that influence bank profitability.

Logically, there is no one-size-fits-all profitability metric that is superior to all others based on the differences in each company in an industry which include age, size, etc. There are various choices of profitability measurement which include return on assets (ROA) (Ehiedu 2014; Kartikasari & Merianti, 2016) return on equity (ROE) (Ichsani & Suhardi 2015; Kadioglu et al., 2017) and net interest margin (Le et al., 2017). Several factors influence bank profitability in a variety of ways, based on the bank's goals when it comes to how to achieve profit (Menicucci & Paolucci, 2016). Previous studies focused on the relationship, determinants, and characteristics of leverage, liquidity, and profitability but this research aims to explore the effects of financial leverage on profitability, the effect of liquidity on profitability, and the moderating effect of liquidity on the relationship between financial leverage and profitability of banks.

The remaining sections of the research are arranged as follows: literature relating to the study is further explained in section 2. Our approach and methodology are defined in Section 3. The data analysis and discussion are outlined in Section 4, and Section 5 outlines the conclusions and recommendations.

LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Profitability Concept

According to Kaul and Luo, (2018), profitability is similarly related to profit with an important distinction; profit is a complete sum, whereas profitability is relative. Profitability is a measure

used to compute the scope of a company's earnings concerning its size. Profitability may also be defined as a company's ability to yield a return on an investment based on its resources as equated to an alternate investment (Kaul & Luo, 2018). A business venture is said to be profitable when its total revenue outstrips its total expenditure. Even though a firm can make a profit, this does not always suggest that the firm's activities are profitable. Banks' major profit comes from fees charged for services rendered to their customers which sometimes include overdraft facilities, monthly accounts maintenance, direct or wire transfers, excessive withdrawals, etc. Banks also earn interest on assets (loans given out to businesses, other banks or financial institutions, individuals) and investments while their expenditures come in the way of interest payment on its obligations or liabilities (customer deposits, borrowing from individuals, other banks, and corporations, especially through the issue of commercial paper).

The signaling theory states that strong company profitability is a signal for investors, which means that investors hope to earn a return or a high rate of return on investment in the firm so that investors are willing to pay high prices for the company's shares (Liu & Chen, 2015). Profitability is important to investors, who use it to decide whether or not to purchase or trade a company's stocks and bonds. Luo et al., (2015) assert that managers utilize profitability data to make decisions about how to distribute corporate resources, and profitability data is used by analysts to anticipate future earnings and growth. This information is used by lenders to determine if a company is creditworthy.

According to Schramade, (2017), profitability measurement differs by industry, however, there are a few essential metrics that investors and management frequently analyze. According to Kaur, (2015), some measures include Net Profit Margin, Liquidity Ratios, Price-to-Earnings Ratio, Operating Cash Flow, and Earnings per share.

2.1.2 Financial Leverage Concept

Leverage, according to Kalemli-Ozcan et al., (2012) is nothing more than investing with borrowed capital. Businesses use leverage to expand, people use leverage to buy homes (in the form of mortgage debt), and financial gurus use leverage to improve their investing strategies (Sgambati, 2019). When a company, property, or investment is referred to as "highly leveraged," it suggests it has more debt than equity (Sánchez-Vidal, 2014). The distribution of equity capital divided by the total asset ratio is used to assess leverage. Leverage is the use of fixed-cost source assets by banks to raise the potential profit of shareholders, as well as a level of the company's ability to use fixed-cost fund assets or funds for a company to achieve its goals and maximize the wealth of the shareholders (Barakat, 2014).

According to Gambacorta and Shin, (2018), leverage ratio measures how much debt a bank has in comparison to its capital, which includes retained earnings, common stock, and a few other assets. Allahrakha et al., (2018) maintain that leverage ratio regulations are highly intricate in the banking sector, and bank-holding companies must adhere to specific standards; the limitations vary based

on the grade of the bank. In general, banks that are facing operational or financial challenges, or are expanding significantly, are required to maintain higher debt levels. According to Shamaileh and Khanfar, (2014), financial leverage permits an investor to evaluate a business's solvency and tackle any risk tangled in a monetary transaction it also assists in determining the yield on an investment and assessing if any, other potential returns. The formula to determine financial leverage is a simple ratio of total debt to shareholders' equity, which informs us how much the company is reliant on borrowing and how it generates revenue from its debt or borrowing (Allahrakha et al., 2018).

2.1.3 Liquidity Concept

Bonner et al., (2015) indicated that liquidity is the cash accessible shortly after considering the financial commitments for that period. When external financing is unavailable, a company can likely use liquid assets to fund its financial activities and investments. Higher liquidity might help a company deal with unexpected events and meet its financial obligations during periods of low earnings (Amihud & Mendelson, 2012).

Liquidity encompasses cash and other assets of banks and is accessible to swiftly pay off bills and as well as resolve their short-term financial and corporate obligations. Assets are known to be liquid if they can forthrightly be converted to cash swiftly when needed to counter financial obligations such as government bonds and central bank reserves which are instrumental for banks to remain viable and must be enough to meet withdrawals by bank depositors and other near-term obligations. The liquidity ratio is often used to analyze a corporation's ability to meet upcoming short-term commitments (Rahmawati, 2020).

According to Geromichalos and Herrenbrueck, (2016), liquidity primarily affects the organization's risk tolerance, changes in the sales dynamic, and financial growth or cost-saving. Given its critical importance, liquidity is both essential for business development and one of the most important endogenous factors affecting a company's position in the market. It is reasonable to conclude that liquidity determines a company's level of profitability given its significance to its profitability.

2.2 Theoretical Review

2.2.1 Signaling Theory

The field of information economics examines the idea of buyer-seller information asymmetry in market interactions and gives credence to signaling theory. A signal is an action taken by the more knowledgeable party to credibly communicate its true characteristics to the less knowledgeable party. According to Drover et al., (2018), information asymmetry is the rule in signaling theory, which suggests that information is not concurrently accessible to all parties in an equal manner.

According to signaling theory, a corporation sends signals to users of financial statements when the financial accounts of the company must be presented transparently by the management

(Kamalluarifin, 2016). Per Buzinskiene & Rudyte, (2021), the approach is based on pragmatic accounting theory, which emphasizes the role of information in changing the behavior of information users. They posit that signal theory can be used to reduce market information asymmetry by communicating more information to other parties. In the capital market, information asymmetry occurs when a firm (management) has more information than outsiders (investors). Cheffins & Armour, (2011) assert that companies with promising futures will try to avoid selling shares, even if it means defending them and seeking fresh financing through other means, such as debt.

2.2.2 Liquidity Theory of Interest

According to Modigliani, (1944), the liquidity theory of interest is a Keynesian explanation for how the equilibrium interest rate is determined. The interest rate, in reference to Keynes, is mostly the reward obtained for relinquishing liquidity. The urge to hold riches is what drives the need for money. People want to keep the money since it can be used to make purchases. According to Rezende, (2015), there are three reasons to keep money: transactional, speculative, and precautionary demands. The want for money to transact or exchange goods and services, and regard money as a means of exchange are known as transactional demand.

According to Farley et al., (2013), speculative demand for money is utilized in buying bonds (government-issued fixed-interest instruments) and storing wealth. It is interest elastic and is affected by future bond price forecasts. In situations where bond prices are high and interest rates are low, the relationship between the two is inverse. When interest rates are extremely low, money demand may become fully elastic, and this section of the function is referred to as the liquidity trap. Precautionary demand for money, on the other hand, is the keeping of money in anticipation of unforeseen circumstances. Bragg, (2012) asserts that a company may keep reserve funds to cover expenses if a business partner's payments are delayed. The greater the level of real revenue or profits, the more operative balances they will hold.

The equilibrium interest rate is established when the money supply curve and the liquidity period (LP) curve cross, and its position is not likely to change. The law of demand states that this rise in demand will result in a rise in bond prices, which will drive the interest rate down to its equilibrium level the reverse is true. Furthermore, interest rates will adjust if shifts in the money supply take place when money demand is fully elastic that is, during the liquidity period trap (Ahiakpor 2018). To conclude, capital structure with inference to liquidity and leverage decisions remains multifaceted, as reflected in the statement of financial condition.

2.3 Empirical Review

2.3.1 Determinants of Profitability

Various factors have been discovered to affect profitability in the search for optimal liquidity and leverage levels. Two of such factors are:

Firms Age: The length of time that an entity has existed is its age. While others claim that the listing date should define the company's age, this study defines firm age as the number of years since a company first issued its initial public offering. According to Coad et al., (2018), it is obvious that profitability has no bearing on firm age because age cannot be changed. Profitability is influenced by age, most likely through intermediary mechanisms such as re-utilization, reputation, and organizational rigidity (Furtado et al., 2021). According to (Liargovas & Skandalis, 2012), old entities are extra skillful because they have reaped the rewards of learning and are not subject to the risks of being new, resulting in greater profitability. Meaning the relationship between firm age and profitability appears to be important in both theory and practice and there is a positive and significant nexus between a company's age and profitability.

Firm Size: According to Nurmalitasari et al., (2022), Return on Equity (ROE) was found to have an impact on firm value in the study on the relationship between firm size, leverage, and ROE. Meanwhile, firm size and leverage do not affect firm value. The scrutiny of a company's size is critical since it has a significant influence on the firm's efficiency and profitability (Hermawan & Mulyawan, 2014). Small businesses have high risks, which makes it difficult for them to secure capital through debt issuance. As a result, they rely on retained earnings, equity capital, and short-term loans to fund their operations.

According to the trade-off theory, major organizations' risks are decreased by diversifying into multiple industry operations and dealings in exceptional items, resulting in a low probability of bankruptcy. There is a positive link between financial leverage and a firm’s size (Nalarreason et al., 2019). Small businesses prefer short-term borrowings such as bank loans to debt and equity issues, which come with higher fixed charges and are therefore more expensive.

2.3.2 Financial Leverage and Profitability

According to Perinpanathan, (2014), it is crucial to establish whether there's a favorable relationship between financial leverage and profitability when assessing the influence of financial leverage on a company's financial health. As a result, Perinpanathan, (2014) research aimed to determine the relationship between financial leverage and profitability of John Keells Holdings PLC in Sri Lanka from 2006 to 2012. The study's findings reveal a negative association between financial leverage and J. Keells Holdings PLC's profitability.

Akhtar et al., (2012) examined the link between financial leverage and profitability of Pakistan's fuel and energy sector. Using various statistical approaches, the research investigated the generality that enterprises with greater profitability may adopt large leverage. Their findings

demonstrated a favorable correlation between financial leverage and company profitability with an indication that the fuel and energy industry participants in Pakistan can improve their profitability by utilizing financial leverage and can help attain long-term development and growth by making critical decisions about their appropriate structure of capital.

The study of Abubakar, (2020) investigated the relationship between financial leverage and financial success for the period of 2005-2013 by using both descriptive and correlation analysis with convenience sampling in choosing 11 deposit monetary organizations from the Tier 1, Tier 2, and Tier 3 classifications of banks. The research revealed that the debt-equity ratio and the profitability metric of return on equity have a substantial link. However, the findings show that debt ratio and profitability as measured by ROE have no meaningful association and also reveal that debt finance is around 84 percent of the total assets of Nigerian deposit money banks, demonstrating that banks are highly leveraged financial institutions.

2.3.3 Liquidity and Profitability

The research of Khati, (2020), was focused on the relationship between the profitability and liquidity of Nepali commercial banks. Ten listed commercial banks were selected for the study. Published reports and the annual reports of commercial banks provided the secondary data for this investigation. As indicators of liquidity, the credit-deposit ratio, cash-deposit ratio, and asset quality were used, while the return on equity and return on assets approximated profitability. The results of the Hausman test, using the fixed effects approach, showed that asset quality is strongly and favorably correlated with return on equity but negatively and significantly correlated with return on assets. There was a positive but negligible relationship between the cash deposit ratio, return on equity, and return on assets. Nonetheless, the analysis demonstrated that there is a positive correlation between return on assets and credit-deposit ratio and that the relationship between credit deposit and return on equity was negligible.

Anandasayanan et al., (2020), study focused on how Sri Lankan banks' profitability was impacted by liquidity management. A total of 26 Sri Lankan banks were considered for the study, which drew upon twenty years of annual data from licensed commercial banks operating in Sri Lanka between 1998 and 2017. The study used return on assets in measuring profitability, capital adequacy ratio, liquidity ratio, non-performing loan ratio, and interest margin in measuring liquidity management. The study used correlation, regression, and descriptive statistics. The findings revealed a negative correlation between the capital adequacy ratio and return on asset, while a favorable correlation was found between the capitalization ratio and return on asset. The results of the analysis showed that profitability is greatly impacted by liquidity.

2.3.4 Liquidity, Financial Leverage, and Profitability

Goel et al., (2015) examined the impact of financial leverage on various operating liquidity indicators. The impact of operating liquidity and financial leverage on the firm's performance is also examined in this study. They obtained 10-year annual financial standalone data from 151

Indian equipment firms using the CMIE Prowess dataset. Regression modeling with panel data and ratio analysis were used to examine the association. It was discovered that financial leverage significantly affected several operating liquidity metrics. The profitability of Indian machinery manufacturers is significantly impacted by additional operating liquidity and financial leverage.

According to Gatsi et al., (2013), any business's profitability during a given time frame can be understood as the result of its operating and investment activities. The current ratio was regarded as a distinguishing feature of the outcome of the working capital management strategy, with operating and financial leverage serving as the benchmarks for capital structure. Further examination was conducted to evaluate the influence of GDP, firm size, and premium growth on profitability. The profitability of eighteen insurance companies was examined using panel data methodology to assess whether the chosen indicators under accepted finance theory were related to the profitability of the companies. The research revealed that working capital management and leverage have an impact on the profitability of insurance companies in Ghana. It also discovered that while operating leverage has a positive relationship with profitability, financial leverage, and liquidity have an inverse relationship.

The study by Megawati, (2020) postulated that the inventiveness and innovation in the domestic telecommunication sector are steady as compared to that of those established outside Indonesia and this has an adverse effect on ROA based on profitability for five IDX-listed telecommunications firms. The study utilizing multiple regression analysis with panel data from 2012 to 2018, assessed the impact of operating leverage, financial leverage, and liquidity on profitability (ROA) through descriptive analysis, explanatory survey approach, and hypothesis testing. The study's conclusions stated that while operating leverage, financial leverage, and liquidity all have negative effects on profitability at the same time, operating leverage and financial leverage do not significantly improve profitability. Liquidity, on the other hand, significantly reduces profitability. Also, Jihadi et al, (2021) revealed that the ratios of liquidity, activity, leverage, and profitability are significant to firm value for a period of 2014 to 2019.

RESEARCH METHODOLOGY

The study used a quantitative research method and employed a descriptive and explanatory research design. The descriptive research design was used in analyzing and synthesizing historical data of the banks to recognize the trends. Exploratory research was used in answering and deeply investigating the general idea or specific questions under study. The study also used panel data which helped in the application of the regression models and controlling of the variables and their measurement.

The research population consisted of the twenty-three (23) commercial banks operating in Ghana, as indicated by the Bank of Ghana. Using the convenience sampling technique, twenty (20) banks out of the twenty-three (23) were used for the study. The secondary data was sourced from the 2024 PwC Ghana Banking Survey Report and the Ghana Statistical Service from 2018 to 2023.

This period was selected based on the fact that there existed reliable data and persistent trends in the financial and management reporting of the banks. The collected data was analyzed using SPSS software version 23, the study used Regression analysis to find the relationship among the variables under investigation. Cross-sectional and time series data were consolidated in the data analysis. Multiple linear and panel regression data analysis methods were additionally deployed in evaluating the information gathered, thus, both descriptive and correlation. Descriptive statistics were used to quantify the main profitability variables by utilizing the standard deviations, mean, maximum, and minimum.

For the model specifications, the paper adopted a regression model to institute the connection among the variables under study. The model specification is presented as:

$$ROE = \beta 0 + \beta 1FiL + \beta 2Liq + \beta 3FAge + \beta 4\,FSize + \varepsilon \ldots\ldots Model\ 1$$

$$ROA = \beta 0 + \beta 1FiL + \beta 2Liq + \beta 3FAge + \beta 4\,FSize + \varepsilon \ldots\ldots Model\ 2$$

Where: ROA represents Return on Assets, ROE signifies Return on Equity, FiL signifies Financial Leverage, Liq denotes Liquidity, FAge represents Firm Age, FSize represents Firm Size, α represents the intercept, β coefficient of independent variables, and ε error term within a confidence interval of 5%.

Table 1: Variables Measurement

Variables	Definition	Formulas	References
Dependent			
Profitability	Return on Assets (ROA): it evaluates how much money a company earns by utilizing its assets.	$\frac{\text{Net Profit}}{\text{Total Assets}}$	Choiriyah et al., (2020)
	Return on Equity (ROE): is a measure of a business's profitability and how well-organized it is in creating profits.	$\frac{\text{Net Income}}{\text{Shareholders' Equity}}$	Choiriyah et al., (2020)
Independent			
Financial Leverage	The amount of debt taken on by a corporation to fund its operations, whether large or small.	$\frac{\text{Total Debt}}{\text{Total Equity}}$	Appiah et al., (2020)
Moderator			
Liquidity	The company's capability to pay off short-term debt (debt with a maturity of less than a year) with current assets	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	Zimon et al., (2021)
Control			
Firm Age	The number of years (plus one) from the company's initial public offering (IPO) is hence the firm's age.	Year from issuing IPO	Siev & Qadan, (2022)
Firm Size	The size of the total assets owned by the company	Log of total assets	Al-Slehat et al., (2020)

Source: Author's Construction (2024).

DATA ANALYSIS AND RESULTS DISCUSSION

4.1 Descriptive Statistics

Table 2 below displays the descriptive statistics of the variables, including the total number of observations, the mean, standard deviation, and the lowest and maximum values of the variables under study.

Table 2: Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Max
ROA	120	0.016	0.035	-0.142	0.066
ROE	120	0.100	0.611	-4.083	3.679
Leverage	120	0.868	0.082	0.1202	1.126
Liquidity	120	0.897	0.327	0.000	2.810
FAge	120	42.867	33.248	7.000	124.000
FSize	120	7.048	0.937	5.760	9.710

Source: Author's Estimate (2024).

As shown in Table 2, on average, firms have a return on assets of 1.6%. The variation is relatively small, with the standard deviation indicating that most firms' ROA is within 3.5% of the mean. The minimum and maximum values suggest that some firms are experiencing negative returns, while others are performing better. The average return on equity is 10%. There is significant variability in ROE, as shown by the large standard deviation. The range is quite broad, indicating that while some firms have very high positive returns, others have substantial negative returns.

The mean leverage ratio is 0.868, suggesting that firms, on average, have high levels of debt relative to equity. The relatively small standard deviation indicates that leverage ratios do not vary widely among the firms. Firms have an average liquidity ratio of 0.897, indicating they have slightly less than 1 unit of liquid assets for every unit of current liabilities. There is a moderate level of variability in liquidity among the firms, with some firms having no liquidity and others having significantly higher levels.

The firms in the sample have been in existence for an average of approximately 43 years. The standard deviation is quite high, indicating substantial variability in the ages of the firms, ranging from 7 to 124 years. The average firm size, measured on some logarithmic scale, is around 7. The standard deviation shows moderate variability in firm sizes. The range indicates that the smallest firm has a size of 5.76, and the largest has a size of 9.71 on this scale.

4.2 Correlation Matrix

The correlation analysis of the study is presented in Table 3, in the correlation analysis, the correlation value should not be above 0.8 for each variable. In any case where the correlation value

exceeds 0.8 then it is a signal beckoning the existence of a multicollinearity problem. The trend and strength of the linear relationship between the variables were examined in the study using the Pearson correlation coefficient. The value of the correlation coefficient spans from -1 to +1. The stronger the correlation between the variables, the higher its absolute value.

Return on Equity is found to correlate with all the other variables, which include Return on Assets (r=0.700, p=0.00), Liquidity (r=0.630, p=0.00), Financial Leverage (r=0.720, p=0.00), Firms Age (r=0.320, p=0.03) and Firm Size (r=0.704, p=0.00). Return on Assets is found to be correlating with Liquidity (r=0.787, p=0.00), Financial Leverage (r=0.941, p=0.00), and Firm Size (r=0.799, p= 0.00) but no reliable correlation is found in the case of Firm Age (r=0.233, p=0.12). Liquidity correlates with Financial Leverage (r=0.791, p=0.00), and Firm Size (r=0.788, p= 0.00) but no correlation with Firm Age (r=0.22, p=0.15). Financial Leverage also correlates with Firm Size (r=0.727, p=0.00) but has no reliable correlation with Firm Age (r=0.247, p=0.101). Firm Age on the other hand correlates with (r=-0.054, p=0.727).

Table 3: Correlation matrix

		Firm Size	Firms Age	Financial Leverage	Liquidity	Return on Assets	Return on Equity
Firm Size	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	**120**					
Firms Age	Pearson Correlation	-0.054	1				
	Sig. (2-tailed)	0.727					
	N	**120**	**120**				
Financial Leverage	Pearson Correlation	.772**	0.247	1			
	Sig. (2-tailed)	0.000	0.101				
	N	**120**	**120**	**120**			
Liquidity	Pearson Correlation	.788**	0.22	.791**	1		
	Sig. (2-tailed)	0.00	0.15	0.00			
	N	**120**	**120**	**120**	**120**		
Return on Assets	Pearson Correlation	.799**	0.233	.941**	.787**	1	
	Sig. (2-tailed)	0.00	0.12	0.00	0.00		
	N	**120**	**120**	**120**	**120**	**120**	
Return on Equity	Pearson Correlation	.704**	.320*	.720**	.630**	.700**	1
	Sig. (2-tailed)	0.00	0.03	0.00	0.00	0.00	
	N	**120**	**120**	**120**	**120**	**120**	**120**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Author's Estimation (2024)

4.3 Diagnostic Tests

To resolve the various forms of bias that could exist in the research and as part of the validity and reliability assessments, the study also performed the following diagnostic tests: multicollinearity and heteroscedastic test.

4.3.1 Test of Multicollinearity

The Multicollinearity of the data is checked using the variance inflation factor (VIF) values. The proportion of Multicollinearity in a set of multiple regression variables is measured by the variance inflation factor (Kiama 2014). The results for the two models are provided in Table 4.3.

Table 4: Collinearity Statistics

	Model 1		Model 2	
Variables	**Tolerance**	**VIF**	**Tolerance**	**VIF**
Firms Age	0.484	2.064	0.484	2.064
Firm Size	0.354	2.822	0.373	2.68
Leverage	0.890	1.123	0.89	1.123
Liquidity	0.947	1.056	0.947	1.056
Leverage x Liquidity	0.366	2.732	0.339	2.948

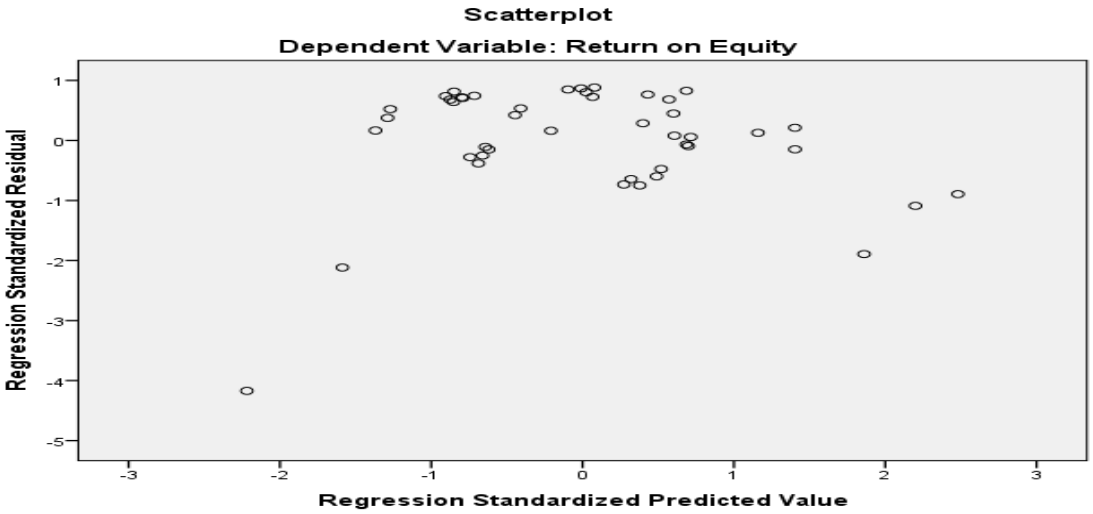
Source: Author's Estimate (2024)

Table 4 shows the Multicollinearity status of the independent and control variables. The thumb rule is that there is no multicollinearity if the tolerance values of these variables are less than 1.0 and the Variance Inflation Factor is greater than 1.0. Therefore, there was no problem of multicollinearity among the independent variables because the tolerance values were all less than 1.0 and the VIF values were all above 1.0.

4.3.2 Test of Heteroscedasticity

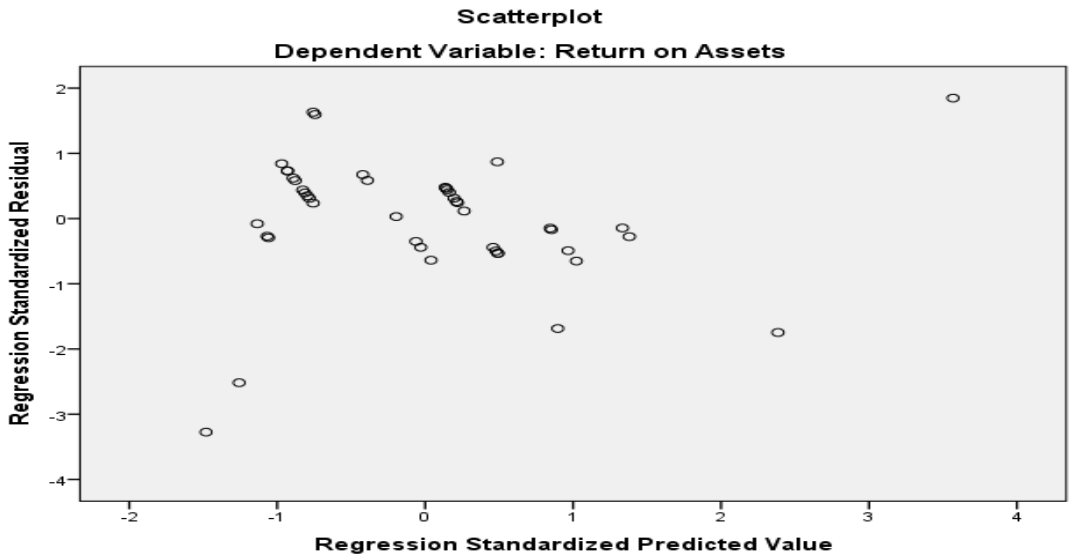
The heteroscedasticity is used to produce a distinctive fan or cone shape in residual plots and to test for heteroscedasticity, the researcher must use well-shaped value plots to assess the residuals Cleasby and Nakagawa, (2011). The tell-tale sequence for heteroscedasticity is that the residuals' variance increases in proportion to the fitted values. The study employs the Heteroscedasticity Chart Scatterplot Test from SPSS and the outcome is presented in Figures 2 and 3.

Figure 2: **Heteroscedasticity Test Model 1**



Source: Author's Estimation (2024).

Figure 3: Heteroscedasticity Test Model 2



Source: Author's Estimation (2024).

Figure 2 is the heteroscedasticity test for model 1, where the return on equity is used as the dependent variable and figure 3 is also the test for model 2 which has a return on assets. According to Cleasby and Nakagawa, (2011), in a scenario where there is a specific pattern in the Statistical Package for Social Sciences (SPSS) scatterplot graph with regularly patterned points, heteroscedasticity is found to be an issue. Conversely, the absence of a distinct pattern and dispersing dots suggests no heteroscedasticity issue. There is no obvious pattern or spreading dots, as can be seen in Figures 2 and 3, which suggests that there is no heteroscedasticity issue.

4.4 Panel Regression

Multivariate linear regression analysis is a model that establishes the link between independent and dependent variables. It is to configure the link between the variables of explanation and response. This analysis is intended to know the result of the response variable.

Table 5: Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.808a	0.724	0.802	0.05187	1.951
2	.851a	0.804	0.892	0.0071	1.634

a. Explanatory Variables: (Constant), Leverage × Liquidity, Firms Age, Firm Size, Financial Leverage, Liquidity

b. Dependent Variables: Return on Assets, Return on Equity

Source: Author's Estimation (2024).

The Durbin-Watson value in Table 5 must be between 1 and 3. If the value falls within this range, then it is within the normal range. This would imply that there is no autocorrelation. Per the data under Durbin-Watson, the value is 1.951 for model 1 and 1.634 for model 2, which is within the normal range. The Model table indicates the R and R^2 values. The R-value suggests a simple correlation and it is 0.808 for model 1 and 0.851 for model 2, which shows a high degree of correlation. The R^2 value shows how much of the total variation in the dependent variables, can be described by the independent variables.

In the case of model 1, 72.40% of the variable can be explained, which is very large. This implies the variables Leverage/Liquidity, Firms Age, Firm Size, Financial Leverage, and Liquidity can explain the dependent variable (Return on Equity) by 72.40%. With model 2 where Return on Assets is the dependent variable, it can be explained by the dependent variables, and moderating variable by 80.40%. Errors account for the remaining 27.6% and 19.6% for models 1 and 2 respectively of the total. These results imply the percentage of the dependent variable of which the predicting variable failed to predict is low.

Table 6: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.493	14	0.099	36.617	.000[b]
	Residual	0.105	105	0.003		
	Total	**0.597**	**119**			
2	Regression	0.018	14	0.004	73.339	.000[b]
	Residual	0.002	105	0.000		
	Total	**0.02**	**119**			

a. Dependent Variables: Return on Assets, Return on Equity

b. Explanatory Variables: (Constant), Leverage × Liquidity, Firms Age, Firm Size, Financial Leverage, Liquidity

Source: Author's Estimation (2024).

The Anova which is in Table 6 depicts how the independent variables influence the dependent variables. It is considered significant if the independent variable influences the dependent variable, and vice versa. The most central interest of the ANOVA table is fixated on the value located in the "Sig" column. To be significant, the number in the "Sig" column must have a P-value less than 0.05. A value greater than the P-value of 0.05 is regarded as not significant. In Table 6, the value is significant because it is 0.000 each is recorded for both models, which is below the P-value of 0.05. The data presented above demonstrates that the independent variables significantly influence the dependent variables.

The Coefficients are also in Table 7, which provides the necessary data to predict the Leverage × Liquidity, Firms Age, Firm Size, Financial Leverage, and Liquidity. Additionally, the values in the "B" column under the "Unstandardized Coefficients" column show how the variable interacts.

Table 7 Coefficients

Model		Unstandardized Coefficients	Standardized Coefficients			
		B	Std. Error	Beta	T	Sig.
1	**(Constant)**	**-0.82**	**0.15**		**-5.56**	**0.00**
	Firms Age	0.00	0.00	0.16	1.44	0.16
	Firm Size	0.07	0.03	0.52	2.31	0.03
	Leverage	0.09	0.02	1.24	5.55	0.00
	Liquidity	0.02	0.03	0.26	0.57	0.58
	Leverage x Liquidity	-0.01	0.00	-1.26	-2.69	0.01
2	**(Constant)**	**-0.08**	**0.02**		**-3.76**	**0.00**
	Firms Age	0.00	0.00	0.08	0.99	0.33
	Firm Size	0.00	0.00	1.14	2.85	0.04
	Leverage	0.01	0.00	1.00	6.01	0.00
	Liquidity	-0.01	0.00	-0.71	-2.06	0.05
	Leverage x Liquidity	0.00	0.00	0.47	1.37	0.01

a. Dependent Variable: Return on Assets, Return on Equity

Source: Author's Estimation (2024).

Regression coefficients signify the mean change in the response variable for one unit of alteration in the instructive variable while maintaining the stability of the other independent variables in the model.

A significant value is defined in the coefficient table with a P-value less than 0.05. In model 1, firms' age and liquidity have the "Sig" values of 0.16 and 0.58 which is greater than the 0.05 (p-value), indicating that the relationship between return on equity and the firms' age as well as liquidity is insignificant and firm size and leverage recorded 0.03 and 0.00, respectively. This demonstrates that two variables are significant to the dependent variable, thus return on equity.

Also, it is revealed that liquidity has a significant moderation influence on the link in financial leverage and profitability measured by the return on equity of the selected banks in Ghana.

Also, with model 2, it is revealed that firms' age recorded a p-value of 0.33 which is greater than 0.05, indicating that the relationship between firms' age and return on assets is not significant. The other three variables, firm size, leverage, and liquidity are 0.04, 0.05, and 0.01, respectively. This demonstrates that these three variables are significant to the dependent variable of return on assets. Also, it is revealed that liquidity has a substantial controlling effect on the nexus between financial leverage and profitability measured by the return on assets of the selected banks in Ghana.

4.5 Results Discussion

4.5.1 Firm Age and Profitability

It is found that firm age has an insignificant relationship with profitability either measured by ROA or ROE. The results do confirm the assertion of Coad et al. (2018). According to Coad et al. (2018), it is obvious that firm profitability has no bearing on age because age cannot be changed as there is nothing a company can do to turn back the clock. Furtado et al. (2021) also argue that profitability is influenced by age, most likely through intermediary mechanisms such as re-utilization, reputation, and organizational rigidity.

But the result is in contradiction to Akhtar et al., (2012) assertion that age may aid in the efficiency of businesses and old age, on the other hand, can render knowledge, and abilities, as well as cause organizational deterioration. Similarly, Ilaboyaz and Ohiokha (2016) found that there is a favorable and significant association between a company's age and profitability.

4.5.2 Firm Size and Profitability

Firm Size is found to have a significant connection with profitability in terms of either ROE or ROA. According to Alarussi and Alhaderi (2018), the analysis of a company's size is critical since it has a significant impact on the firm's efficiency and profitability. Similarly, Nalarreason et al. (2019) results also found that there is a favorable link between profitability and the size of the firm but Burca and Batrinca (2014) contradict these findings, they argue that financial leverage in insurance, the size of the firm, increase of gross written premiums, risk retention ratio, and solvency margin are all factors of profitability in the Romanian insurance industry.

4.5.3 Financial Leverage and Profitability

The study found that there is a significant relationship between the banks' financial leverage and profitability in both models 1 and 2. Similarly, Akhtar et al., (2012) findings demonstrate a favorable association between financial leverage and company profitability. The relationship between financial leverage as examined by Perinpanathan (2014) argues that it is crucial to establish whether there's a favorable connection between financial leverage and profitability when

assessing the influence of financial leverage on a company's financial health but the findings reveal a negative association between financial leverage and John Keells Holdings PLC's profitability.

Also, Abubakar, (2017) indicates that financial leverage, on the other hand, has a favorable influence on ROE but no effect on EPS. Although the study of Abubakar, (2020) confirms the results of model 2 of this study, it contradicts the finding of model 1. The findings of Abubakar, (2020) shows that debt ratio and profitability as measured by ROE have no meaningful association but profitability, as measured by ROA, has a meaningful association among Nigerian deposit money.

4.5.4 Liquidity and Profitability

The study found that in the case of Model 1 (ROE), liquidity has no significant influence on the profitability of the banks. This means when profitability is measured by ROE, it has an insignificant relationship with liquidity. But in the case of Model 2 where profitability is measured by ROA, it is revealed that there exists a significant relationship between profitability and liquidity. This finding aligns with the assertion of Geromichalos and Herrenbrueck, (2016) that because of the significance of liquidity to a business's profitability, one could conclude that it establishes the profitability level of the enterprise. The results also confirm the findings of Abubakar, (2017) study which disclosed that short-term debt ratios and long-term debt ratios have a significantly positive impact on profitability as measured by return on equity (ROE), whereas total debt ratios and total debt-equity ratios have a significantly negative impact on the f profitability of health-care firms.

4.5.6 Moderating Effect of Liquidity

As part of the research to examine the moderating influence of liquidity on the relationship between financial leverage and profitability of the listed banks, it was revealed that when profitability is measured by either ROE in model 1 or ROA in model 2, liquidity has a substantial moderating impact on the correlation between financial leverage and profitability of the listed banks. This finding is similar to Goel et al., (2015) that operating liquidity and financial leverage have a significant influence on Indian machinery manufacturers' profitability. Arguing further that financial leverage has a considerable influence on various indicators of operating liquidity.

Also, Abdulrahman, (2021) revealed that liquidity's moderating effect had a major impact on the profitability of Nigeria's listed deposit money institutions. Akhtar et al., (2019) study on textile companies on the Pakistan Stock Exchange, found that liquidity is a strong moderator in the debt ratio and return on assets, while the liquidity factor is important in the relationship between the debt to equity variable and the two profitability variables return on assets and earnings per share. Zainudin et al., (2019) study also revealed that liquidity influences the relationship between profitability and debt while maintaining a specific level of liquidity has a negative influence on the debt to profitability relationship. To achieve the ideal level of liquidity and to optimize profitability, a suitable level of liquidity must be maintained.

CONCLUSIONS AND RECOMMENDATIONS

As the study focuses on the moderating effect of liquidity on the relationship between financial leverage and profitability of selected banks listed in Ghana, the results show that, on average, firms are moderately leveraged and finance their operations with more equity than debt. The study also found that, in terms of firm age, there is no significant relationship between profitability as measured by ROA or ROE. On the other hand, firm size, as determined by the log of the total assets, was found to have a significant relationship with profitability in terms of either ROE or ROA. With financial leverage and profitability for both models 1 and 2, the study revealed a significant relationship.

Also in the case of Model 1 (ROE), liquidity has no substantial influence on the profitability of the banks implying that, on average, each of the banks can satisfy its current bills and when profitability is measured by ROE, it has an insignificant relationship with liquidity. But in the case of Model 2 where profitability is measured by ROA, it turns out that profitability and liquidity has a significant relationship. It was revealed that when profitability is measured by either ROE in model 1 or ROA in model 2, liquidity has a significant moderating effect on the relationship between financial leverage and profitability of the listed banks. Therefore, the study finally concludes that there exists a significant moderating effect of liquidity on the connection between financial leverage and profitability of the selected banks.

Based on the findings of the study it is recommended that businesses like banks map up a good strategy in maintaining a good financial leverage level. When this is done the business profits will increase thereby increasing shareholders' value. Banks or firms should make sure the right assets are acquired for their businesses. When banks are leveraging they should consider managing their liquidity level to improve their profitability. Also for further studies, the current study recommends: A study on the effect of liquidity and leverage on the profitability of other sectors of the economy like tourism, and agriculture, and a study on the level of return on equity (ROE) and liquidity a company needs to make profit.

Finally, this research paper has the following practical implications: Regulators may need to reevaluate the capital adequacy requirements for banks if liquidity is shown to significantly moderate the relationship between financial leverage and profitability. To make sure that banks are resilient to fluctuations in leverage and profitability, this may entail establishing distinct capital requirements based on the liquidity profiles of banks. Understanding the moderating role of liquidity can help practices related to risk management and stress testing. Regulators should consider including scenarios related to liquidity risk in their stress tests so that they can assess potential effects on banks' profitability and leverage under different liquidity conditions. Regulatory guidance pertaining to banks can be informed by research on the moderating effect of liquidity. To help banks strike a healthy balance between taking on risk and making money,

regulators may offer specific advice or guidelines for managing liquidity in relation to financial leverage.

Regulators may consider enhancing disclosure requirements related to liquidity risk and its impact on financial leverage and profitability. This can promote transparency and enable market participants to make more informed assessments of a bank's risk profile. Policymakers may use insights from the moderating role of liquidity to develop macro-prudential policies aimed at promoting financial stability. This could involve implementing measures to address systemic risks associated with liquidity and leverage dynamics in the banking sector. Through this study, policymakers and management may consider strengthening disclosure guidelines regarding liquidity risk and how it affects profitability and financial leverage. In addition to fostering transparency, this can help market participants evaluate a bank's risk profile more intelligently. The moderating role of liquidity can provide policymakers with valuable insights for enacting macro-prudential policies that foster financial stability. This can entail putting policies in place to deal with systemic risks related to the dynamics of leverage and liquidity in the banking industry.

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