Institutions and Economies
Vol. 17, No. 2, April 2025, pp. 1-27 https://doi.org/10.22452/IJIE.vol17no2.1

Determinants of Capital Structure: Does Liquidity Matter?

Ndonwabile Zimasa Mabandla[a] and Godfrey Marozva[b]

Abstract: *This paper aims to investigate the effect of liquidity on banks' capital structure using a sample of banks registered in South Africa from 2012 to 2021. The study uses the bank liquidity mismatch index (BLMI), current ratio (CR), and liquidity coverage ratio (LCR) to measure liquidity. Total debt ratio (TDR), long-term debt ratio (LTDR), and short-term debt ratio (STDR) are used to measure capital structure. Despite a large body of literature on the subject, few notable studies have looked into this phenomenon in the banking industry despite banks being the primary creators of liquidity. Using the generalised method of moments (GMM) model, the researchers found positive but significant effects of BLMI and CR on capital structure. The study also reveals a significant positive link between LCR and TDR. Thus, banks' capital structure increased with liquidity. High liquidity gave banks leverage to increase gearing. The findings show a negative but insignificant connection between LCR and LTDR. More studies should interrogate this phenomenon using BLMI as the primary liquidity measure. Furthermore, the cointegration and causality association between liquidity and bank capital structure should be investigated.*

Keywords: Liquidity; Capital structure; Trade-off theory; Pecking order theory
JEL Classification: G3, G32, M400

[a] Corresponding author. Department of Finance, Risk Management and Banking, University of South Africa, Pretoria, South Africa. *Email: mabannz@unisa.ac.za*. ORCID ID: https://orcid.org/0000-0003-3871-9830

[b] Department of Finance, Risk Management and Banking, University of South Africa, Pretoria, South Africa. *Email: marozva@unisa.ac.za*.

1. Introduction

Researchers have long debated the effect of the liquidity of a company's assets on optimal leverage. According to Williamson (1988) and Shleifer and Vishny (1992), asset liquidity improves ideal leverage, whereas Morellec (2001) and Myers and Rajan (1998) contend that it has a negative or curvilinear impact. The justification for the positive influence of asset liquidity with leverage is based on the notion that lower liquid assets trade at greater rates, thereby raising the costs of liquidation, insolvency, as well as borrowing (Sibilkov, 2009). Reducing asset liquidity necessitates lowering leverage to decrease the likelihood of costly bankruptcy. However, models that anticipate a negative impact assert that lower asset liquidity renders it more expensive for managers to take away worth from the owners of bonds. As a result of lower asset liquidity, debt costs are lower, and firms employ greater levels of debt.

Liquidity may be a crucial indicator of a bank's capital since, to some extent, the liquidity ratio and the proportion of capital may serve as alternatives to each other (Yu, 2000). This is because excess funds can serve as independent insurance. Banks with smaller equity ratios could self-insure by keeping larger amounts of liquid assets on their balance sheets. Due to capital acting as a buffer stock towards the value of asset expenses, managers of banks may successfully minimise the probability of potential asset harm and will thus require equity to deal with this through retaining assets with greater liquidity. As a result, we anticipate that banks with greater liquidity will possess fewer capital proportions than their less-liquid rivals.

This paper investigates the effect of liquidity on the capital structure of banks in South Africa. Umar et al. (2016) argue that banks are critical financial counterparties. Since they play an essential part in providing liquidity while also financing long-term illiquid assets to short-term liquid liabilities, in other words, they create liquidity by holding illiquid assets and providing funds to the overall economy (Umar et al., 2016). As a result, examining the effect of liquidity on the capital structure is critical, as the need to retain liquid assets and liabilities appears contradictory to holding long-term debt. Similarly, the Basel III obligation that banks preserve the lowest Tier 1 capital hinders banks from expanding gearing ratios (Marozva & Makina, 2020). So even though banks handle depositors' funds, the minimum capital is needed, bringing up the fiduciary duty issue of fiduciary obligations.

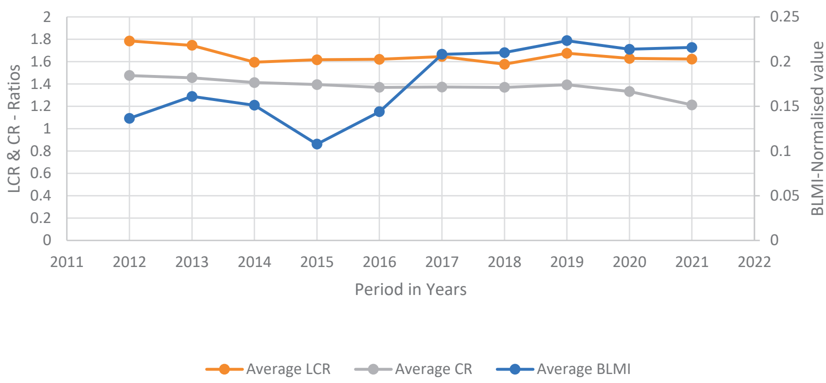
The debate over the ideal capital structure of financial and non-financial companies in academic research has yet to be addressed (Khan et al., 2021). Several empirical capital structure studies, for example, Ahmed-Sheikh and Wang (2013), Saif-Alyousfi et al. (2020), and Kritofk et al. (2022), exclude financial companies, particularly the banking sector. They contended that such financial companies, as lenders and consumers of capital, have a distinct business model influenced by various governing bodies, such as the capital adequacy ratio. Similarly, banks are deemed highly dependent compared to other firms as deposit recipients. As a result, the factors that influence capital structure in the banking industry, particularly banks, should be reconsidered. Despite distinctions regarding business dynamics and regulation limitations, banks serve a crucial part in a country's economic system (Khan et al., 2021). Bank capital requires scrutiny and oversight as it serves as a buffer against contagion risk, unforeseen liquidity spirals, and other unanticipated changes. Several researchers argue that the capital structure of banks illustrates their capability to deal with spikes (see, for instance, McDonough, 1999; BIS, 2022; IMF, 2022).

Although significant progress has been made in portraying the link between asset liquidity and leverage, research on this relationship remains scarce due to the challenge of gathering an accurate measure of asset liquidity (Sibilkov, 2009). However, existing studies that investigate the connection between asset liquidity and leverage tend to focus on small and samples of companies or assets (see, for example, Benmelech et al., 2005; Kim, 1998; & Alderson & Betker, 1995). On the other hand, Naik (2020) finds a positive but significant connection between bank size, liquidity, tangibility, and debt. The current study differs from Naik (2020) in two ways. The present study uses the bank liquidity mismatches index (BLMI) to measure liquidity. For robustness, the study also uses the current ratio (CR) and liquidity coverage ratio (LCR) to measure liquidity. Secondly, the present study also accounts for the pandemic period, where liquidity decreased as measured by CR. Thus, the paper seeks to ascertain the impact of liquidity on the capital structure of South African banks. The Covid-19 dummy was used to account for this period in the analysis.

The following figure discusses the trends in the average banks' liquidity ratios. Focusing on the period under investigation, Figure 1 shows that, on average, South African banks' LCR decreased from 1.78 in 2012 to 1.62 in 2021. Comparatively, the CR also reduced from 1.48 in 2012 to 1.21 in

2021. A decrease in the above liquidity measures, which are LCR and CR, especially from 2019 to 2021, may be caused by the Covid-19 pandemic. On the other hand, the BLMI increased from 0.14 in 2012 to 0.16 in 2013. In 2013, the BLMI decreased from 1.16 to 0.11 in 2015. Furthermore, the BLMI, on average, started to increase from 0.11 in 2015 to 0.22 in 2021. The finance industry's desire for liquidity becomes essentially intrinsic throughout the pandemic. The Basel III framework also calls for substantial changes in liquidity requirements (Marozva, 2017). The framework imposed stricter liquidity needs, sorted over several years. According to Marozva (2017), despite implementing the net stable funding ratio (NSFR) and the LCR, banks believe keeping more significant liquid asset buffers is prudent.

Figure 1: RSA Banks' Liquidity Ratios



Although the impact of liquidity on banks' capital structure has been extensively studied in developed countries (Barry et al., 2018; Chaabouni et al., 2018; Horváth et al., 2014) however, little is known about the issue in emerging markets (Fuad et al., 2021). The primary reason is a lack of data on emerging markets and their underdeveloped capital markets (Udomsirikul et al., 2011). On the other hand, the liquidity issue is commonly framed incorrectly from the standpoint of asset liquidity. Dencic-Mihajlvo et al. (2015) contend that capital adequacy and the capacity of an asset to be easily dissolved are the main liquidity indicators. They unquestionably do not address the issue of whether a company is liquid. Hence, this study investigates the effect of liquidity on bank capital structure in South Africa from 2012 to 2021.

This paper adds to the existing literature in several ways. Earlier research on the impact of liquidity on corporate capital structure relied on standard liquidity proxies to test liquidity (Paramita et al., 2021; Zafar et al., 2019 & Dencic-Mihajlvo et al., 2015). However, the present paper utilises three liquidity proxies to test liquidity: CR, LCR, and BLMI. The liquidity mismatch index was the principal liquidity indicator that had not been tested on capital structure. It is an accurate measure of liquidity since it integrates both assets and liabilities of the statement of financial position while considering the liquidity spirals that account for systemic or contagion risk.

BLMI was chosen as the main proxy because it considers both sides of the financial position statement, assets, and liabilities. Second, little attention has been paid in the theoretical and empirical finance literature to improving a liquidity proxy in the context of asset-liability mismatches. Notably, no previous scholars have investigated the impact of the liquidity mismatch index on capital structure regarding asset-liability mismatches (Bai et al., 2018; Marozva & Makina, 2020). Contrary to other studies, the study reveals a significant but positive link between BLMI and capital structure. Thirdly, South Africa is essential for many reasons. It is regarded as a connection to Africa and a far more influential and flourishing than many other countries in the region. Finally, as this research occurred during the Covid-19 crisis, it provided a unique opportunity to investigate the effect of the pandemic on a financial firm's capital structure. Thus, the current research sought to add to the expanding body of literature investigating the impact of Covid-19 on firm capital structure.

The rest of this paper is structured as follows: Section 2 reviews the existing literature on the effect of liquidity on firms' capital structure. This is followed by the methodology in Section 3, which details our econometric approach. The findings are presented and discussed in Section 4, with a conclusion and recommendations in Section 5.

2. Literature Review

The primary goal of this section is to discuss the contradiction in Modigliani and Miller's (1958) relevant and irrelevant capital structure theories. These theories include trade-off and pecking order and are made up of two propositions: one without tax and the other with tax. Second, there is proposition two without and with tax. Considering these theories, banks' capital structure is put into perspective. Banks' capital structures relate to how banks finance their balance sheets, and their drivers are still unclear despite receiving a lot of attention in recent empirical research (Mohammad, 2021). Nevertheless, non-financial companies' choices regarding capital structures have been thoroughly examined in corporate finance literature. Capital structure hypotheses such as trade-off and pecking have been empirically investigated, with evidence in favour of both approaches (Obadire et al., 2023; Tamara et al. 2022; Tran et al., 2020).

On the other hand, liquidity is significantly and positively associated with bank equity ratios (Yu, 2000). This contradicts the hypothesis that liquidity is an alternative to funds and that banks employ liquidity for self-insurance. Yet, this general positive link hides an observation that liquidity is negatively associated with the equity ratio for medium-sized banks, implying that these banks might utilise liquidity for self-insurance (Yu, 2000). However, the positive association for small banks suggests some individuals serve cautiously and have higher liquidity ratios when their equity ratios are higher (Yu, 2000). Because liquidity has a positive link, smaller companies with inadequate capital ratios are inclined to possess little liquidity. As a result, it appears that some small banks are attempting to take advantage of the deposit insurance service by maintaining low liquidity as well as ratios of capital.

The impact of liquidity on banks' capital structure has been widely investigated in advanced countries (e.g., Barry et al., 2018; Chaabouni et al., 2018; Horváth et al., 2014; Diamond & Rajan, 2000). However, not much has been done on the abovementioned matter in emerging economies (e.g., Fuad et al., 2021; Guizani & Ajmi, 2021). Barry et al. (2018) examines the impact of market liquidity shortages on bank capital structure and balance sheet adjustment from 2004 to 2014, utilising an unbalanced panel database of the United States (US) banking sector. Their research demonstrates that severe liquidity shortfalls cause small US banks, but not large ones, to alter their capital ratio positively. They assert that small banks typically limit their total capital ratio by justifying, restricting dividend payments, lessening the share of assets to significant risk weights, and tend to range lesser lending. Moreover, the findings of their study reveal that a positive impact on total capital ratios is robust for banks which depend so much on market liquidity and small banks operating below their target capital ratio.

Chaabouni et al. (2018) investigate the association between bank capital and liquidity creation and argue that earlier studies on the impact of bank capital and liquidity creation were limited to using traditional ordinary least squares (OLS). The OLS explains the minimal influence of bank capital on liquidity creation but does not present a clear overview of the linkage, as mentioned earlier (Chaabouni et al., 2018). The authors utilise quantile regression (QR), semi-parametric QR, and panel regression to fill the abovementioned gap. The findings of their study revealed a negative link between bank capital and liquidity creation, which would be coherent with the risk absorption assumption that tries to envisage a negative relation.

Horváth et al. (2014) look at the link between bank capital and liquidity creation from 2000 to 2010, utilising a large sample of Czech banks. They examined the link between those mentioned earlier by incorporating the Granger causality test into a dynamic generalised method of moments (GMM) assessment approach. They discovered a negative association between bank capital as well as the creation of liquidity. They also notice that Granger's liquidity creation results in a drop in capital. Such developments offer credence to the notion that Basel III can lower liquidity creation, while increasing liquidity creation can minimise bank capital structure. As a result, the authors demonstrate that this confounding situation creates a trade-off between the reimbursements of improved liquidity creation and the advantages of greater financial stability. An earlier study by Diamond and Rajan (2000) found that increasing bank capital reduces the likelihood of financial distress while decreasing liquidity creation. The amount of capital affects the amount that banks can charge lenders. Furthermore, the best possible bank capital structure balances the impacts of liquidity.

Regarding developing countries on the issue mentioned above, using a sample of 96 banks from a population of 114 banks, Fuad et al. (2021) study the impact of liquidity creation on bank capital in Indonesia from 2008 to 2018. The authors employ panel regression analysis methods using the Hayes approach. Their analysis shows the negative impact of liquidity creation on bank capital on the competition. Fuad et al. (2021) contend that their findings align with the notion that banks may enhance their capital in reaction to banking sector development, which might reduce the amount of bank liquidity produced.

However, Guizani and Ajmi (2021) examine how Islamic banks and conventional banks in Malaysia select their financial leverage and what variables affect their financing decisions. Their findings indicate a positive but not statistically significant effect on liquidity and Islamic banks' capital structure. However, their study reveals a negative link between liquidity and conventional banks' capital structure. This outcome could be due to the lower information asymmetry experienced by much more liquid conventional banks, which results in a more remarkable ability to raise equity (Belkhir et al., 2016). Moreover, Siaf-Alyousfi et al. (2020) contend that the negative relationship between liquidity and conventional bank capital structure might be due to their incapacity to meet short-term debts, attempting to force them to look for alternative funding sources.

Several studies looked at the determinants of capital structure for non-financial institutions in South Africa (e.g., Elomo, 2014; Gwatidzo et al., 2016; Tazvivinga et al., 2021). In South Africa, studies that have investigated the bank capital structure include Sibindi and Makina (2018) and Sibindi (2018). Sibindi and Makina's (2018) findings reveal that the standard firm-level determinants of banks' capital structure are like those observed for non-financial firms. Furthermore, they observed that the 2007–2009 global financial crisis had a negative impact on capital structures of banks, with the implication that banks reduced their gearing during the crises. On the other hand, Sibindi (2018) reveals that South African banks have a target capital structure that they strive for, as well as adjust to this target at a speed of adjustment of 44% or a half-life of 2.4 years, relatively quick when compared to non-financial companies. However, these studies have not added liquidity to their econometric models, hence this article puts liquidity into perspective. Specifically, the effects of BLMI on capital structure is tested empirically. The research hypothesis in this paper is explained as follows:

H_0 *Bank liquidity does not affect its capital structure*
H_a *Bank liquidity affects its capital structure*

The following section provides a discussion of the data and methodology employed to test the identified hypothesis.

3. Data and Methodology

3.1 Sample description and data sources

The population in the present study consists of South Africa's 16 licensed domestic banks. Nevertheless, sample consists of 11 registered banks in South Africa from 2012 to 2021, with five small banks omitted due to challenges in obtaining financial data for the duration of the study. These firms are deemed adequately representative of the licensed bank population in South Africa from 2012 to 2021. These are registered South African banks under the Bank Act 94 of 1990 as of December 31, 2020, and listed on the South African Reserve Bank (SARB) website. The monthly and annual financial and economic data was also extracted from SARB. The sample size is 11 banks over ten years, resulting in 110 observations. Although licensed banks in South Africa were chosen for this paper, it is affirmed that there were discrepancies in the sampled licensed banks' practices, as stated previously.

Following previous studies, this paper uses three proxies of capital structure—total debt ratio (TDR), long-term debt ratio (LTDR), and short-term debt ratio (STDR)—as dependent variables (Siaf-Alyousfi et al., 2020). According to Rajan and Zingales (1995), the ratios of short-term, long-term, and total debt over total assets are more appropriate measures of financial leverage than the ratio of liabilities to total assets, as they provide a more concise perception as to whether the corporation is likely to decline soon and display a more rational view of preceding sources of funding. In contrast, liquidity was used as an independent variable. Liquidity is essential to the activities of the banking sector (Nguyen & Vo, 2021). High liquidity improves the bank's capacity to raise capital, providing more options for bank loans and other securities. Nguyen and Vo (2021) argue, however, that a bank subjected to liquidity risks could diminish its sources of funds and harm its investments. Table 1 below shows details of the dependent and independent variables and data sources.

Table 1: Summary of Variables and Proxies

Variables	Proxies and definitions	Proxied by	Expected sign of coefficient
Capital structure proxies (dependent variable)			
Total debt ratio at book value (TDRB)	The ratio of total debt book value to total assets book value	Siaf-Alyousfi et al. (2020)	
Long-term debt ratio (LTDR)	The ratio of long-term liabilities over total assets	Palacin-Sancez et al. (2013) Handoo & Sharma (2014)	

Variables	Proxies and definitions	Proxied by	Expected sign of coefficient
Short-term debt ratio (STDR)	The ratio of short-term debts divided by total assets	Vo (2017) Siaf-Alyousfi et al. (2020)	
Independent variables			
Bank liquidity mismatches index (BLMI)	The mismatch between the market liquidity of assets as well as the funding liquidity of liabilities	Marozva & Makina (2020)	Negative
Current ratio (CR)	Current assets divided by current liabilities	Rao et al. (2017) Burksaitiene & Draugele (2018)	Negative or positive
Liquidity coverage ratio (LCR)	$LCR = \frac{\textit{High quality liquid assets}}{\textit{Cash outflows-Cash inflows}}$	Roberts et al. (2018)	Negative or positive
Control variables			
Gross domestic product (GDP)	The growth rate of real domestic product	Joeveer (2013) Dincergok et al. (2017)	Positive or negative
Interest rates	Effective interest rate	Karpavicius & Yu (2017)	Negative
Inflation rates	Annual consumer price index (CPI)	Harris and Roark (2019) Khan et al. (2020) Saif-Alyousfi et al. (2020)	Positive or negative
Size	The natural logarithm of total assets	Joeveer (2013) Bandyopadhyay & Barua (2016)	Positive or negative

3.2 Model specification

This paper utilises generalised GMM. The generic GMM dynamic approach has the following form:

$$y_{it} = \alpha y_{i\,t-1} + \beta x_{it} + \mu_i + \varepsilon_{it} \tag{1}$$

where:
y_{it} represents the book value of the leverage measures for banks i in time t; x_{it} is the vector of the independent variable for banks i for time t, representing the banks' firms-specific variable; α_0 denotes a constant term; β is the elasticity of the explanatory variables, i. e., slope of variables; μ_i denotes

fixed effects in banks and assets managers firms; ε_{it} is a random error term; and the subscript *i* denotes the cross-section *t* represents the time-series dimension.

The two-step GMM system forecasting model of Arellano and Bover (1995) and Blundell and Bond (1998) was used in this paper, of scale as well as lagged parameters serving as tools. Arellano and Bond's (1991) GMM estimation method is presumed to be improved by the one-step GMM system prediction model. The association between liquidity and capital structure was then examined using panel data regression analysis. Because our paper focuses on South Africa, we only used data from that country. This study aims to investigate the essential factors influencing leverage in the South African banking sector by regressing leverage (TDR, STDR, and LTDR) against the elements in the following equations. In particular, for empirical analysis, the association between capital structure and independent variable of bank-specific factors, macroeconomic factors, was commonly measured in (2) to (4).

$$\Delta TDR_{it} = (\alpha - 1)\Delta TDR_{it-1} + \beta 1 \Delta LIQit + \beta j \sum_{\frac{j}{t}=1}^{n} \Delta X_{ij} + \Delta\, \varepsilon it \quad (2)$$

$$\Delta LTDR_{it} = (\alpha - 1)\Delta LTDR_{it-1} + \beta 1 \Delta LIQit + \beta j \sum_{\frac{j}{t}=1}^{n} \Delta X_{ij} + \Delta\, \varepsilon it \quad (3)$$

$$\Delta STDR_{it} = (\alpha - 1)\Delta STDR_{it-1} + \beta 1 \Delta LIQit + \beta j \sum_{\frac{j}{t}=1}^{n} \Delta X_{ij} + \Delta\, \varepsilon it \quad (4)$$

where

$TDR_{B_{it}}$ indicates total debt ratio at book value for banks *i* in time *t*, measured by the ratio of the book value of total debt/book value of total assets;

$STDR_{it}$ represents the total debt ratio for banks *i* in time *t*, measured by short-term/book total assets;

$LTDR_{it}$ represents the long-term debt ratio for banks *i* in time *t*, measured by long-term/total assets;

LIQ_{it} is bank liquidity as measured by $BLMI_{it}$, CR_{it}, and LCR_{it};

$BLMI_{it}$ is the bank liquidity mismatch index for bank *i* banks *t*;

CR_{it} represents the current ratio measured by the current assets over current liabilities;

LCR_{it} is the liquidity coverage ratio for bank *i* banks *t*;

X_{ij} is a panel of macroeconomic control variables measurements at the end,

including size, growth rate (GDP), interest and inflation rates;
GDP economic growth is measured by gross domestic product;
IR represents interest rate as measured by the effective interest rate;
INF indicates the inflation rate as measured by the consumer price index; and
size is measured by the natural logarithm of total assets.

4. Results

4.1 Descriptive statistics

This section provides descriptive statistics for independent and dependent variables utilised during estimations. Table 2 shows an overview of statistics for the panel of chosen banks from 2012 to 2021. The foremost descriptive statistics for the metrics used in this paper are presented in Table 2. The mean for the banks' TDR capital structure measure was 2.19, implying the average proportion of the banks' assets funded by reserves and non-deposit debts, with a standard deviation of 13.81. The minimum TDR was 0.56, and the maximum TDR was 145.7, for a total range of 145.14. In contrast, the average for LTDR was 0.48, with a standard deviation of 3.18. The lowest LTDR was 0, and the highest was 33.57. The STDR had a mean of 0.75 and a standard deviation of 2.4. The lowest STDR was 0.02, and the highest STDR was 25.7. This implies that some banks might very well keep as little as 2% of their liabilities as short-term debt. However, banks may keep up to 26% of their liabilities as short-term debt.

Table 2: Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
TDR	2.190	0.920	145.700	0.560	13.810	10.340	108.000	52,493.330
LTDR	0.480	0.210	33.570	0.000	3.180	10.330	107.830	52,319.880
STDR	0.750	0.530	25.700	0.020	2.400	10.300	107.350	51,851.470
CR	1.380	1.410	2.560	0.000	0.270	-0.020	12.250	391.810
LCR	1.670	1.610	3.910	1.040	0.400	2.370	12.660	530.740
BLMI	-0.180	0.170	0.850	-39.610	3.800	-10.310	107.520	52,017.690
Size (000)	424,000.000	66,849.693	1,660,000.000	2,997.923	508,000.000	0.770	2.120	14.410
INF	4.600	4.700	5.600	3.100	0.850	-0.420	1.920	8.680
IR	3.890	3.710	5.890	2.310	1.090	0.390	2.270	5.260
GDPG	0.950	1.370	4.900	-6.430	2.770	-1.600	5.580	77.240

The mean CR was 1.38, and the standard was 0.27. A lower standard deviation than the mean result indicates that the banks' liquidity variable data has changed less. The average percentage suggests that the banks have a current ratio of 132%. Nonetheless, the minimal CR of 0.02 signifies those South African banks had at least a CR of 1% over the study period. The maximum CR was 2.56, implying that banks can pay up to 2.56% of their short-term debt. The higher the banks' total CR, the lower its short-term obligations on its current assets. The average LCR was 1.67. Although the financing gap was assumed to be positive, banks maintained a substantial number of high-quality liquidity assets based on the average LCR ratio. However, other banks were risk-averse, holding more than 333% high-quality liquid assets (HQLA) after foreseeing a negative asymmetry in their funding source.

The mean value of the BLMI was -0.18, implying that the banks are in bad shape. However, the standard deviation was 3.8. The BLMI assesses the funding and asset liquidity of a bank, the higher the ratio, the stronger the bank, and *vice versa*. The lowest BLMI was -39.61, and the highest BLMI was 0.85. The average inflation rate (INF) was 4.600, with a standard deviation of 0.850. Inflation shows the country's ability to keep prices competitive. A larger scale implies consumer price volatility, particularly damaging to the poor and small businesses because they lack a hedging strategy against economic shocks. The IR had a mean value of 3.89 and a standard deviation of 1.09. The minimum IR was 2.31, while the maximum was 5.89. The average rate of GDP growth (GDPG) was 0.95. The standard deviation was 2.77 in comparison. Yet, the minimum GDPG was -6.43 and the maximum GDPG was 4.9.

4.2 Correlation matrix

The correlation analysis depicts the correlations between dependent and independent variables employed in the banking industry, as shown in Table 3. The TDR is positively correlated with LTDR. In contrast, the INF was found to be negatively but significantly related to the TDR. However, the INF is found to be negatively correlated with LTDR, and the correlation was significant. Regarding liquidity, the findings reveal a positive but statistically significant link between BLMI and STDR. Since the correlation coefficients are less than 0.7, the potential multicollinearity issue was ruled out (Siddik et al., 2017). Furthermore, none of the independent variables employed in the same equation are highly correlated. Other variables were not addressed because their results were insignificant. The test for autocorrelation was done using AR(1) and AR(2). Both statistics were insignificant implying the absence of autocorrelation. All models exhibited the problem of non-constant variance (heteroscedasticity) and to correct for this problem, the models were run with Driscoll-Kraay robust standard errors. The Sargan test and Hansen test statistics were both insignificant for all the models, implying that the models were robust and were not weakened by many instruments. Moreover, the number of instruments were more than the number of groups supporting the fact that models were not weakened by many instruments.

Table 3: Correlation Matrix

Probability	TDR	LTDR	STDR	CR	LCR	BLMI	SIZE	INF	IR	GDGP
TDR	1.000									
LTDR	0.999***	1.000								
STDR	-0.020	-0.0218	1.000							
CR	0.004	0.0604	-0.0350	1.000						
LCR	-0.0176	0.004	-0.076	0.783***	1.000					
BLMI	0.011	0.015	0.998***	0.028	0.076	1.000				
SIZE	-0.007	-0.064	-0.070	-0.0241	0.073	0.100	1.000			
INF	-0.170*	-0.169*	0.117	0.169*	0.003	0.121	-0.157*	1.000		
IR	-0.012	-0.011	-0.026	-0.007	-0.034	0.032	0.028	-0.134	1.000	
GDPG	0.137	0.137	0.022	-0.074	0.023	-0.018	0.064	0.196**	0.297***	1.000

4.3 Empirical results

The results in Table 4 reveal a negative and significant association between TDR and STDR and their lagged values. Yet, there is a negative but insignificant link between the LTDR and its lag value. The negative connection between capital structure and the lag value indicates that the banks' capital structure is negatively tenacious. According to descriptive statistics, banks are massively geared on average; thus, they would benefit from reducing their debt ratios. The findings are in line with those of an earlier study by Gropp and Heider (2010), who reveal a negative but statistically significant impact on a bank's capital structure and its lagged values. The findings do not agree with those of Abbas and Masood (2020). They find a positive but statistically significant link between bank capital structure and lagged values in the US.

Table 4: Determinants of Capital Structure: Effects of BLMI

	2-step system GMM	2-step system GMM	2-step system GMM
Variables	**TDR**	**LTDR**	**STDR**
L.TDR	-0.622*		
	(0.254)		
L.LTDR		-0.603	
		(0.276)	
L.STDR			-1.090*
			(0.429)
EV	-4.500	-5.836	-4.635
	(2.850)	(3.638)	(2.949)
GO	-0.263	-0.345	-0.180
	(0.124)	(0.168)	(0.114)
TGB	80.160**	99.370**	91.220**
	(23.050)	(27.800)	(26.070)
BLMI	5.749**	7.227**	6.545**
	(1.751)	(2.047)	(1.639)
LSIZE	-107.000**	-133.400**	-123.600**
	(31.390)	(36.560)	(32.320)
GDPG	-0.323*	-0.426*	-0.340*
	(0.121)	(0.162)	(0.127)
IR	1.867	2.504	1.863*
	(0.865)	(1.192)	(0.755)
INF	2.497	3.250	2.048***
	(1.317)	(1.497)	(0.365)
COVID_19	2.379	3.445	1.679
	(2.767)	(3.505)	(2.254)
N	88	88	88
Groups	11	11	11
Instrument	9	9	9
AR(1)	-1.190	-0.190	-1.110
Pr (z)	0.058	0.097	0.068
AR(2)	-0.660	-0.880	-0.870
Pr (z)	0.533	0.385	0.382
Sargan Test	13.040	16.04	18.04
Pr (chi^2)	0.417	0.313	0.453
Hansen test	17.130	14.140	17.140
Pr (chi^2)	0.314	0.415	0.514
Heteroscedasticity	0.160	0.080	0.070
Pr (chi^2)	0.685	0.775	0.789

Notes: Driscoll and Kraay robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In this study, we find a positive and significant relationship between BLMI and capital structure. The positive relationship might mean that banks borrow both long-term and short-term to finance highly liquid assets. This is not surprising given that banks' primary objective is to create liquidity. In the context of asset-liability mismatches, the theoretical and empirical finance literature has paid little attention to developing a liquidity proxy. This is in contradiction with the narrative that liquidity is seen as an insurance buffer for banks' self-protection. Furthermore, these findings are contrary to the risk absorption hypothesis that envisages a negative relation. Consequently, these results confirm a complementary relationship between liquidity creation and the pros of greater financial stability. No earlier work has examined the impact of liquidity on capital structure in the context of asset-liability mismatches (Bai et al., 2018; Marozva & Makina, 2020). Banks in emerging markets are encouraged to improve their liquidity creation capabilities in a bid to gain the much-desired financial flexibility.

There was a significant and negative connection between size and capital structure. The findings back up the pecking order assumption, which contends that capital structure has a negative relation. The link between GDPG and capital structure was negative but significant. This implies that as the economy grows, banks are encouraged to strengthen their cash reserves instead of borrowing (Guizani, 2020). The negative association is in line with the results of Guizani (2020), who reveals an adverse connection between GDP growth and the capital structure of banking institutions.

The link between IR and STDR is positive and significant (Table 5). The capital structure becomes more complex as interest rates rise. A positive effect on IR and STDR implies that firms borrow more, expecting in the short term than in the long term, expecting interest rates to drop in the long term (Callaghan, 2019). The findings contrast with those of Muthee et al. (2016), who find a negative link between interest expense and firm gearing ratio. The positive link between IR and STDR could imply that firms borrow in the short term rather than the long term, as inflation is a sticky downturn. As a result, short-term lending is financially viable. The findings are in line with those of Phooi M'ng et al. (2017), who find a positive but not significant link between the inflation rate and capital structure.

Table 5: Determinants of Capital Structure: Effects of CR

	2-step system GMM	2-step system GMM	2-step system GMM
Variables	**TDR**	**LTDR**	**STDR**
L.TDR	1.690*		
	(0.315)		
L.LTDR		1.660*	
		(0.349)	
L.STDR			1.701**
			(0.324)
EV	16.540*	5.346	16.340*
	(6.148)	(3.823)	(6.107)
GO	0.190*	0.071	0.196*
	(0.076)	(0.075)	(0.085)
TGB	11.300	18.980	12.490
	(10.700)	(16.000)	(10.860)
CR	61.630***	57.670***	60.890***
	(2.150)	(5.120)	(1.950)
LSIZE	-1.648	1.121	-2.358
	(7.731)	(9.239)	(7.573)
GDPG	1.783***	1.574*	1.803***
	(0.300)	(0.294)	(0.302)
IR	-0.940	0.740	-1.120
	(0.733)	(0.706)	(0.788)
INF	2.441*	4.304*	2.158*
	(0.911)	(1.698)	(0.843)
COVID_19	7.620***	10.68***	6.831***
	(1.681)	(3.073)	(1.562)
N	88	88	88
Groups	11	11	11
Instrument	9	9	9
AR(1)	-1.290	-1.000	-1.280
Pr (z)	0.196	0.145	0.202
AR(2)	-0.870	0.66	-0.920
Pr (z)	0.383	0.509	0.359
Sargan Test	0.870	0.770	0.450
Pr (chi^2)	0.998	0.996	0.989
Hansen test	0.070	3.210	0.040
Pr (chi^2)	0.999	0.955	0.998
Heteroscedasticity	0.010	0.450	0.070
Pr (chi^2)	0.914	0.503	0.789

Notes: Driscoll and Kraay robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TDR, LTDR, and STDR have a positive and significant link with their lagged capital structure values. Furthermore, a negative but insignificant connection exists between the IR and TDR. Yet, a positive but non-significant association exists between IR and LTDR and STDR. Furthermore, TDR and STDR show a negative but insignificant link between size and capital structure. The results contradict with results of Sibindi and Makina (2018) and Sibindi (2018) who find a positive connection between size and bank capital structure in South Africa. The results of the study also show a positive and significant connection between CR and capital structure. According to Rao et al. (2017), corporations with higher liquid assets may need to boost their debt ratio to improve corporate liquidity. The findings are consistent with Rao et al. (2017), who discovered a positive association between debt and CR.

Regarding the macroeconomic variable GDPG, there was a positive and significant link between GDPG and capital structure. The findings are in line with the trade-off theory, which states that rapid economic growth is affiliated with a more influential bank's propensity to use debt to fund capital spending. Due to the greater tax benefits of debt financing (Guizani, 2020), the findings support the pecking order hypothesis, which contends that economic growth and capital structure have a positive relationship. A positive and significant connection existed between INF and capital structure. These findings contradict Almanaseer's (2019) claim that during periods of high inflation, banks tighten their policies to avoid the impact of inflation on interest rates, thereby lessening lending.

Lastly, the study results show a negative and significant relationship between Covid-19 and capital structure (Table 6). This implies that the pandemic had an adverse effect on capital structure. Due to the uncertainty, banks may have resorted to safer capital. The findings are in line with Mohammad (2021), who discovered a negative relationship between Covid-19 and capital structure.

There is a negative and significant link between TDR, LTDR, and STDR and their legged values. The findings contradict Aremu et al. (2013), who reveals a positive but insignificant link between all bank capital structure measures. Yet, earnings volatility (EV) and capital structure have a negative and significant association. This implies that when EV is high, banks are generally unable to issue debt or stock since banks and investors are hesitant to invest in a bank with an increased risk of failure or insolvency (Moradi & Paulet, 2019).

Table 6: Determinants of Capital Structure: Effects of LCR

	2-step system GMM	2-step system GMM	2-step system GMM
Variables	**TDR**	**LTDR**	**STDR**
L.TDR	-0.780***		
	(0.188)		
L.LTDR		-0.440*	
		(0.200)	
L.STDR			-1.031*
			(0.492)
EV	-16.950***	-23.000**	-17.340**
	(4.226)	(7.272)	(6.520)
GO	-0.214	-0.161	-0.929*
	(0.108)	(0.128)	(0.437)
TGB	2.324	36.19**	-191.700*
	(5.183)	(13.800)	(94.550)
LCR	13.890*	-17.670	46.770
	(5.651)	(14.240)	(34.070)
LSIZE	1.9420	-4.099	76.790*
	(3.861)	(4.342)	(36.430)
GDPG	-0.381***	-0.0734*	-4.543*
	(0.038)	(0.035)	(2.224)
IR	4.134*	-0.207	19.820*
	(1.513)	(1.783)	(9.539)
INF	3.523*	-1.631	24.89*
	(1.420)	(2.723)	(12.70)
COVID_19	10.740*	-9.332	105.900*
	(4.052)	(8.180)	(52.270)
_cons	17.870		
	(28.810)		
N	99	88	88
Groups	11	11	11
Instrument	10	10	10
AR(1)	-1.420	-0.32	-1.220
Pr (z)	0.151	0.255	0.221
AR(2)	-1.560	-1.440	-0.790
Pr (z)	0.119	0.149	0.427
Sargan Test	0.880	30.570	14.630
Pr (chi^2)	0.899	0.002	0.146
Hansen test	0.00	0.850	4.010
Pr (chi^2)	0.999	0.998	0.947
Heteroscedasticity	0.020	0.870	0.050
Pr (chi^2)	0.883	0.350	0.829

Notes: Driscoll and Kraay robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Moreover, the results indicate a negative and significant link between growth opportunity (GO) and capital structure. In addition, there is a positive and significant link between LCR and capital structure. The study found a positive and significant link between capital structure. The results are in line with the results of Sibindi and Makina (2018) and Sibindi (2018), who find a positive connection between South African bank size and capital structure. However, the findings contradict those of Abeysekara (2020), who reveal a negative association between bank size and capital structure.

The research reveals a negative and significant connection between GDPG, and capital structure measured by TDR, LTDR, and STDR. According to Guizani (2020), adverse economic indicators can significantly alter an industries and banks' financial position, limiting sources of financing. The findings are consistent with Abeysekara (2020), who finds a negative link between economic growth and capital structure. There is a positive and significant effect on IR with TDR and STDR. This implies that a higher interest rate increases TDR and STDR by 0.04134 and 0.1982. The finding is inconsistent with Karpavicius and Yu (2017), who find a negative influence on IR with capital structure. However, the study reveals a negative but insignificant link between IR and LTDR. In terms of INF, the study finds a positive significant connection between INF and the capital structure measured by TDR and STDR. A positive inflation ratio raises the TDR and STDR by 0.04 and 0.25 percent, respectively. The findings contradict those of Almanaseer (2019), who discover a negative link between INF and bank capital structure. Finally, the study found a positive and significant link between Covid-19 and capital structure measured by TDR and STDR. The findings contradict the findings of Mohammad (2021) who finds a negative association between Covid-19 and capital structure. However, a negative but not significant link exists between Covid-19 and capital structure as measured by LTDR.

5. Conclusion

The present study aimed to investigate the effects of liquidity on banks' capital structure from 2012 to 2021. Using the generalised method of moments model, the researchers found a positive but significant effect on the liquidity mismatches index, current ratios, and capital structure. The study also reveals a positive and significant link between liquidity coverage ratio and capital structure. Thus, the banks' capital structure increased with liquidity. High liquidity meant banks had sufficient cashflows to pay their obligations as they were due, giving them the leverage to increase gearing. Yet, the study reveals a negative but insignificant connection between liquidity coverage ratio and capital structure. This implies that the nexus between liquidity and capital structure depends on the liquidity measure used. Future studies should interrogate this phenomenon using the bank liquidity mismatch index as the primary liquidity measure, since this is a multidimensional measure of liquidity which has been empirically proven to capture bank liquidity better. Furthermore, the cointegration and causality association between liquidity and bank capital structure should be investigated, as the deterministic relationship may be misleading.

References

Abbas, F., & Masood, O. (2020). How do large commercial banks adjust capital ratios: empirical evidence from the US? *Economic Research-Ekonomska Istraživanja*, *33*(1), 1849-1866. https://doi.org/10.1080/1331677X.2020.1763823

Abysekare, N.L. M. 2020. Determinant of capital structure, Peradeniya *Management Review*, *2*(1), 72-95.

Alderson, M. J., & Betker, B. L. (1996). Liquidation costs and accounting data. *Financial Management*, *25*(2), 25-36.

Almanaseer, S. R. (2019). Determinants of Capital Structure: Evidence from Jordan. *Accounting and Finance Research*, *8*(4), 186. https://doi.org/10.5430/afr.v8n4p186

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, *58*(2), 277-297.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, *68*(1), 29-51.

Aremu, M., A, EKPO, I., C, Mustapha, A., M. 2013. Determinants of capital structure in the Nigerian banking sector, *International Journal of Academic Research in Economics and Management Sciences*, *2*(4), 2226-3624.

Bai, J., Krishnamurthy, A., & Weymuller, C. H. (2018). Measuring liquidity mismatch in the banking sector. *The journal of Finance*, *73*(1), 51-93. https://doi.org/10.1111/jofi.12591

Barry, T., Diabate, A., & Tarazi, A. (2018, December). *Market liquidity shortage and banks capital structure and balance sheet adjustment: Evidence from US commercial banks* [Paper presentation]. 31st Australasian Finance and Banking Conference 2018, Sydney, Australia. https://ssrn.com/abstract=3221498

Belkhir, M., Maghyereh, A., & Awartani, B. (2016). Institutions and corporate capital structure in the MENA region. *Emerging Markets Review*, *26*, 99–129. https://doi.org/10.1016/j.ememar.2016.01.001

Benmelech, E., Garmaise, M. J., & Moskowitz, T. J. (2005). Do liquidation values affect financial contracts? Evidence from commercial loan contracts and zoning regulation. *The Quarterly Journal of Economics*, *120*(3), 1121-1154. https://doi.org/10.1093/qje/120.3.1121

BIS (Bank for International Settlement). 2022. Annual Economic Report; Promoting global monetary and financial stability. https://www.bis.org/publ/arpdf/ar2022e.htm.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115-143.

Burksaitiene, D., & Draugele, L. (2018). Capital structure impact on liquidity management. *International Journal of Economics, Business and Management Research*, *2*(1), 110–127. https://ijebmr.com/uploads/pdf/archivepdf/2020/IJEBMR_02_128.pdf

Callaghan, M. (2019). Expectations and the term premium in New Zealand long-term interest rates (No. AN2019/02). Wellington: Reserve Bank of New Zealand.

Chaabouni, M. M., Zouaoui, H., & Ellouz, N. Z. (2018). Bank capital and liquidity creation: New evidence from a quantile regression approach. *Managerial Finance*, *44*(12), 1382–1400. https://doi.org/10.1108/MF-11-2017-0478

Dencic-Mihajlov, K., Malinic, D., & Grabinski, K. (2015). Capital structure and liquidity during the financial crisis in Serbia: Implications for the sustainability of the economy. *Post-Communist Economies*, 91–105. https://doi.org/10.1080/14631377.2015.992234

Diamond, D. W., and Rajan, R. G. (2000). A theory of bank capital. *Journal of Finance*, *55*(6), 2431–2465. https://doi.org/10.1111/0022-1082.00296

Elomo, P. N. (2014). Determinants of capital structure of start-up firms in South Africa [Master's thesis, University of the Witwatersrand]. https://wiredspace.wits.ac.za/server/api/core/bitstreams/ab6f9f1b-43da-44d5-b217-a1dfceb049cc/content

Fuad, A., Disman, D., Nugraha, N., Mayasari, M., & Fuad. A. (2021). The effect of liquidity creation on bank capital: A case study in Indonesia. *Journal of Asian Finance, Economics and Business*, *8*(5), 649–656. https://doi.org/10.13106/jafeb.2021.vol8.no5.0649

Gao, W., & Zhu, F., (2015). Information asymmetry and capital structure around the world. *Pacific-Basin Finance Journal*, *32*, 131–159. https://doi.org/10.1016/j.pacfin.2015.01.005

Gropp, R., & Heider, F. (2010). The determinants of bank capital structure. *Review of Finance*, *14*(4), 587-622. https://doi.org/10.1093/rof/rfp030

Gwatidzo, T., Ntuli, M., & Mlilo, M. (2016). Capital structure determinants in South Africa: A quantile regression approach. *Journal of Economic and Financial Sciences*, *9*(1), 275–290. http://doi.org/10.4102/jef.v9i1.42

Guizani, M., & Ajmi, A. N. (2021). The capital structure decision of Islamic and conventional banks: Empirical evidence from Malaysia. *Asia-Pacific Journal of Business Administration*, *13*(2), 216–234. https://doi.org/10.1108/APJBA-06-2020-0218

Handoo, A., & Sharma, K. (2014). A study on determinants of capital structure in India. *IIMB Management Review*, *26*, 170–182. https://doi.org/10.1016/j.iimb.2014.07.009

Haron, T. W. R., Kamil, N. K. M., & Ramly, Z. (2021). Bank liquidity risk and capital structure: A conceptual review of theoretical and empirical research on Islamic banking perspective. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *11*(3), 539–553. http://doi.org/10.6007/IJARAFMS/v11-i3/11161

Horváth, R., Seidler, J., & Weill, L. (2014). Bank capital and liquidity creation: Granger-causality evidence. *Journal of Financial Services Research*, *45*(3), 341–361. http://doi.org/10.1007/s10693-013-0164-4

IMF (International Monetary Fund). 2022. Annual Report; Crises Upon Crises. https://www.imf.org/external/pubs/ft/ar/2022

Karpavičius, S., & Yu, F. (2017). The impact of interest rates on firms' financing policies. *Journal of Corporate Finance*, *45*, 262-293.

Khan, S., Bashir, U., & Islam, M. S. (2021). Determinants of capital structure of banks: evidence from the Kingdom of Saudi Arabia.

International Journal of Islamic and Middle Eastern Finance and Management, *14*(2), 268-285.

Kim, C. E. (1998). The effects of asset liquidity: Evidence from the contract drilling industry. *Journal of Financial Intermediation*, *7*(2), 151-176.

Kraus, A., & Litzenberger, R. H. (1973). A state preference model of optimal capital financial leverage. *Journal of Finance*, *28*(4), 911–922. https://doi.org/10.2307/2978343

Krištofík, P., Medzihorský, J., & Musa, H. (2022). Capital structure and its determinants—A comparison of European top-rated CSR and other companies. *Journal of Risk and Financial Management*, *15*(8), 325. https://doi.org/10.3390/jrfm15080325

Lie, A. C. H., & Song, Z. (2013). Liquidity and bank capital structure in China. *Global Finance Journal*, *24*, 188–202. https://doi.org/10.1016/j.gfj.2013.10.004

McDonough, W. J. (1999). Global Financial Reform: A Regulator's Perspective. Federal Reserve Bank of New York 1999 Annual Report, 2-12. https://www.newyorkfed.org/newsevents/speeches/1999/mcd991117

Marozva, G. (2017). An empirical study of liquidity risk embedded in banks' asset liability mismatches. Unpublished PhD thesis. University of South Africa.

Marozva, G., & Makina, D. (2020). Liquidity risk and asset liability mismatches Evidence from South Africa. *Studies in Economics and Econometrics*, *44*(1), 73–112. https://doi.org/10.180/10800379.2020.12097357

Meyers, S. C., & Majluf, N., S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0

Meyers, S. C. (1984). The capital structure puzzle. *Journal of Finance*, *39*(3), 574–592. https://doi.org/10.1111/j.1540-6261.1984.tb03646.x

Meyers, S. C., & Rajan, R. G. (1998). The paradox of liquidity. The Quarterly Journal of Economics, 113(3), 733-771.

Modigliani, F., & Miller, M. (1958). The cost of capital, corporation finance, and the theory of investment. *American Economic Review*, *48*(3), 261–297. https://www.jstor.org/stable/1809766

Modigliani, F., & Miller, M. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review*, *53*(3), 433–443. https://www.jstor.org/stable/1809167

Mohammad, K. U. (2021). How bank capital structure decision-making change in recessions: Covid-19 evidence from Pakistan. *Asian Journal of Economics and Banking*, *6*(2), 255–269. https://doi.org/10.1108/AJEB-04-2021-0049

Moradi, A., & Paulet, E. (2019). The firm-specific determinants of capital structure–An empirical analysis of firms before and during the Euro Crisis. *Research in International Business and Finance*, *47*, 150-161.

Morellec, E. (2001). Asset liquidity, capital structure, and secured debt. *Journal of Financial Economics*, *61*(2), 173–206. https://doi.org/10.1016/S0304-405X(01)00059-9

Muthee, B., Adudah, J., & Ondigo, H. (2016). Relationship between Interest Rates and Gearing Ratios of Firms Listed in the Nairobi Securities Exchange. *International Journal of Finance and Accounting*, *1*(1), 30-44. https://doi.org/10.47604/ijfa.20

Naik, P. K. (2020). Determinants of banks' debt: Dynamic panel evidence from Indian public sector banks. *International Journal of Accounting and Finance*, *10*(1), 24–39. https://doi.org/10.1504/IJAF.2020.111231

Nguyen, H. T. V., & Vo, D. V. (2021). Determinants of liquidity of commercial banks: Empirical evidence from the Vietnamese Stock Exchange. *Journal of Asian Finance, Economics and Business*, *8*(4), 0699–0707. https://doi.org/10.13106/jafeb.2021.vol8.no4.0699

Obadire, A. M., Moyo, V., & Munzhelele, N. F. (2023). An empirical analysis of the dynamics influencing bank capital structure in Africa. *International Journal of Financial Studies*, *11*(4), 127. https://doi.org/10.3390/ijfs11040127

Paramita, A. S., Suhardjo, Y., Asri, M. (2021). The influence of liquidity toward capital structure. *E-Jurnal Akuntansi*, *31*(11), 2800–2811. https://doi.org/10.24843/eja.2021.v31.i11.p10

M'ng, J. C. P., Rahman, M., & Sannacy, S. (2017). The determinants of capital structure: Evidence from public listed companies in Malaysia, Singapore and Thailand. *Cogent Economics & Finance*, *5*(1), 1418609. https://doi.org/10.1080/23322039.2017.1418609

Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The Journal of*

Finance, *50*(5), 1421-1460. https://doi.org/10.1111/j.1540-6261.1995.tb05184.x

Rao, K. V., Joshi, B. P., & Khurana, I. (2017). Capital structure determinants: Empirical evidence from listed manufacturing firms in India. *Pacific Business Review International*, *10*(4), 17–21. http://www.pbr.co.in/2017/2017_month/Oct/2.pdf

Roberts, D., Sarkar, A., & Shachar, O. (2018). Bank liquidity creation, systemic risk, and Basel liquidity regulations. *FRB of New York Staff Report*, *852*. https://metaintelligence.org/wp-content/uploads/2021/10/roberts-sarkar-shachar_bank-liquidity-creation-systemic-risk-basel-liquidity-regs.pdf

Sibilikov, V. (2009). Asset liquidity and capital structure. *Journal of Financial and Quantitative Analysis*, *44*(5). 1173–1196. https://www.jstor.org/stable/40505964

Siddik, M. N. A., Kabiraj, S., & Joghee, S. (2017). Impact of capital structure on the performance of banks in developing economy: Evidence from Bangladesh. *International Journal of Financial Studies*, *5*(2), 1–18. https://doi.org/10.3390/ijfs5020013

Saif-Alyousfi, A. Y. H., Md-Rus, R., Taufil-Mohd, K. N, Taib, H. M., & Shahar, H. K. (2020). Determinants of capital structure: Evidence from Malaysian firms. *Asia-Pacific Journal of Business Administration*, *12*(3), 283–326. https://doi.org/10.1108/APJBA-09-2019-0202

Sharma, P., & Paul, S. (2015). Does liquidity determine capital structure? Evidence from India. *Global Business Review*, *16*(1), 84–95. https://doi.org/10.1177/0972150914553

Sheikh, N., A & Wang, Z. (2013). The impact of capital structure on performance: An empirical study of non-financial listed firms in Pakistan. *International Journal of Commerce and Management*, *23*(4), 354-368.

Shleifer, A., & Vishny, R. W. (1992). Liquidation values and debt capacity: A market equilibrium approach. *The Journal of Finance*, *47*(4), 1343-1366.

Sibindi, A. B., 2018. Dynamic adjustment towards a target bank capital structure: South African evidence. *Euro Economica*, *37*(3), 102–115. https://ideas.repec.org/a/dug/journl/y2018i3p102-115.html

Sibindi, A. B., & Makina, D. (2018). Are the determinants of banks' and insurers' capital structure homogeneous? Evidence using South African data. *Cogent Economics and Finance*, *6*(1), 1519899. https://doi.org/10.1080/23322039.2018.1519899

Tamara, D., Heraini, N., & Ivan, D., 2022. Determinants of bank capital structure: Evidence from Indonesia. *Ultmaccounting Jurnal Ilmu Akuntansi*, *14*(1), 145–161. http://dx.doi.org/10.31937/akuntansi.v14i1.2619

Tazvivinga, J. E., Mouton, M., M., & Pelcher, L. (2021). Determinants of capital structure for listed retailing firms on the JSE. *Retail and Marketing Review*, *17*(1), 1–15. https://hdl.handle.net/10520/ejc-irmr1-v17-n1-a2

Tran, D. V., Hassan, M. K., Paltrinieri, A., & Nguyen, T. D. (2020). The determinants of bank capital structure in the world. Singapore Economic Review, 65(6), 1457–1489. https://doi.org/10.1142/S0217590820500010 Udomsirikul, P., Jumreornvong, S., & Jiraporn, P. (2011). Liquidity and capital structure: The case of Thailand. *Journal of Multinational Financial Management*, *21*(2), 106–117. https://doi.org/10.1016/j.mulfin.2010.12.008

Umar, M., Sun, G., & Majeed, M. A. (2016). Bank capital and liquidity creation: Evidence of relation from India. *Journal of Asia Business Studies*, *11*(2), 152–166. https://doi.org/10.1108/JABS-12-2015-0208

Yu, H. C. (2000). Banks' capital structure and the liquid asset–policy implication of Taiwan. *Pacific Economic Review*, *5*(1), 109–114. https://doi.org/10.1111/1468-0106.00093

Williamson, O.E. (1988). Corporate finance and corporate governance. *Journal of Finance*, *43*(3), 567–591. https://doi.org/10.1111/j.1540-6261.1988.tb04592.x

Zafar, Q., Wongsurawat, W., & Camino, D. (2019). The determinants of leverage decisions: Evidence from Asian emerging markets. *Cogent Economics and Finance*, *7*(1), 1–28. https://doi.org/10.1080/23322039.2019.1598836