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-RESEARCH ARTICLE-

CAPITAL STRUCTURE, FINANCIAL FLEXIBILITY, AND BANK EFFICIENCY: A PANEL STUDY OF IRAQI COMMERCIAL BANKS

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─Abstract─

The current study presents the relation between financial efficiency and financial flexibility in the Iraqi banking sectors with special focus on Iraqi banks that are mentioned in the financial market. These banks are: These are five commercial banks operating in the private sector over the period 2011-2020. To calculate this mature relation, three methods are used to analyze longitudinal regression which includes ordinary small squares. Fixed Effects, and Random Effects. Moreover, , Financial efficiency was measured using specific financial indicators related to income and returns on both assets and equity. As for financial flexibility, debt-to-equity and interest-to-income ratios, as well as the liquidity ratio. The result clearly depicts that Debt-to-Equity Ratio considerably and positively affects Cost-to-Income Ratio for all three methods simultaneously. Yet, Interest Coverage Ratio shows clearly and significantly negative impacts on Cost-to-Income Ratio. A statistically significant relationship has emerged showing that a higher interest coverage ratio leads to better asset-based efficiency, and that return on equity positively affects financial efficiency but negatively affects the liquidity ratio.

Keywords: Financial Flexibility, Banking Efficiency, Panel Models, Banking Firms, Iraq.

INTRODUCTION

The role played by the banking sector in determining the growth and development of a nation's economy, especially within emerging markets, cannot be underestimated as it significantly affects and benefits from the efficient operation and functionality of the

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country's banking sector. Contemporary research studies have shown an increased focus on the relationship between business efficiency and several variables, which include business size and value, economies of scale, business and organizational performance, business and organizational performance enhancement, business and organizational decisions, and business and organizational services (Alarussi, 2021). Studies have shown that the cost efficiency of banks within the European Union shows higher efficiency compared with non-European Union banks.

Furthermore, capital adequacy ratio requirements have been discovered as factors that improve cost efficiency at banks, and thus impact positively on the performance of these financial institutions (Pessarossi & Weill, 2013). On the other hand, tighter regulatory constraints on banking activities have a negative impact on efficiency, with strengthened regulatory powers having a positive relationship with the performance of these financial institutions (Barth et al., 2013). Companies with high cash reserves or low leverage are considered more stable and better able to withstand financial shocks, thus possessing financial flexibility (Islam et al., 2022). Moreover, businesses with unused borrowing capacity have better dividend payout practices (Fliers, 2019).

Cherkasova and Kuzmin (2018) confirmed that companies with financial flexibility are able to implement more effective investment policies, especially during crises. Similarly, no difference in flexibility was observed between developing and developed countries, or between small and large companies. In the same vein, Miller and Modigliani (1966) assumed that capital markets are ideal and free of any financing obstacles, allowing companies to invest in all profitable projects, adapt to unforeseen events, adjust their financial positions, and seize growth opportunities. In such cases, financial flexibility is not essential for companies. However, capital markets are not ideal, as the costs associated with financing from external sources are high. Therefore, financial flexibility emerges as an important concept (Bilyay-Erdogan, 2020).

The research aims to study the relationship of influence of the financial flexibility variable on the financial efficiency variable of private commercial banks during the period 2011-2020. The result will help gain meaningful insights regarding inter-relationships among variables. To achieve it, five sections would be followed. The first will be dedicated to an overview of the related literature. The next would be on methodology. The third would be on data and variables. Consequently, the fourth would be on empirical. The fifth one will be the conclusion.

LITERATURE REVIEW

Efficiency is related to the ability to produce a result with minimum effort or resources. Kablan (2009) assessed the determinants of banking system efficiency in sub-Saharan Africa, confirmed that the banking system is cost-efficient, but that non-performing loans are a determinant of this efficiency. The research aimed at

determining the degree of efficiency and understanding factors that affect inefficiency. It suggested that costs for the main outputs were efficient and that an efficient credit market would increase efficiency. A previous research work examined factors influencing the efficiency in Czech banking. Variables like capitalisation, liquidity risk, and portfolio risk were significant and favourable factors, while return on assets, interest rates, and GDP were factors with negative effects. Banking factors and subsequent macro factors were examined as influencing factors. A research study, for instance, conducted by Adjei-Frimpong et al. (2014), on Ghanaian banks indicated inefficiency. It suggested that size had no impact on cost and inefficiency, and that loan loss provisions were inefficient, but GDP had a negative impact on costs. As regards efficient corporate governance, Agnihotri and Gupta (2019), underperformance and efficient ethical governance were closely linked factors. Smaller size reflected efficient performance.

A study of the relationship between bank size and profitability was conducted on a sample of 20 banks in Ghana. were factors that greatly affected technical efficiency-larger banks were less efficient, but more profits were associated with better efficiency. Large-sized banks were less efficient but better profits make a difference. Akin et al. (2009) examined the varying efficiency levels of a sample of Turkish banks through a number of variables such as (size, ownership, nationality, and stock exchange listing). The study concluded that all these variables have a significant impact on the level of efficiency. Institutions listed on financial markets were more efficient compared with unlisted ones. A study conducted on credit risk as a factor on monitoring bank inefficiency based on credit risk had risk varying due to changes in regulatory guidelines (Salim et al., 2017). On General Finance Institutions, it was discovered that reduced cost and revenue efficiency caused rising risks. Improving inefficiency fortified capitals. A study conducted on cooperative and savings institutions included previous literature on efficiency measurement and impact, and it confirmed previous literature. Efficient institutions engaged fewer costs compared with overall income and made better use of resources. A study conducted on efficiency and competition on institutions showed no statistical relationship. Increased cost inefficiency failed to validate more competition. Varesi (2015) examined the negative impact of crises on the efficiency of the banking sector in terms of size and ownership. The study concluded that large banks were less affected than small banks, and that government-owned banks were more efficient, while the efficiency of foreign-owned banks declined more than that of national banks. On the other hand, the level of efficiency was primarily affected by the country's economic conditions, high interest rates, and level of development. In a study by Yilmaz (2013) analyzing the efficiency of the Turkish banking system between 2007 and 2010, it revealed the different methods used to measure bank efficiency. The study examined studies that assert foreign-owned financial institutions are less efficient than domestic institutions, including the domestic market advantage hypothesis and the global advantage hypothesis. The study confirmed that foreign banks are not more efficient than

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domestic banks in terms of either cost advantage or economies of scale, despite their profitability. Another study indicated that economic liberalization has an impact on the efficiency of Turkish banks, with results suggesting that Turkish banks became more efficient after liberalization.

Greenwood et al. (2017) indicated that strengthening capital requirements and regulatory powers can improve the efficiency of banking operations. Supervisory and regulatory policies, such as oversight of the private sector, may lead to higher levels of inefficiency because they restrict banking activities. On the other hand, capital controls and official supervisory authority have a positive impact on the efficiency of banks with higher-quality institutions. Strengthening regulatory authority or increasing capital requirements can have a significant positive impact on bank efficiency, while restrictions on banking activities and private supervision can negatively affect operational efficiency.

Fungáčová et al. (2012) explores that financial flexibility is securing timely financial resources and capitalizing on opportunities to increase organizational value in a changing environment., make use of investment opportunities, and unlock maximum project value (Yang, 2019). It is also described as an organization's capacity and ability to gain access to financial resources at times when they are needed or as a reaction and response to unexpected changes and occurrences in cash flow as a means and approach to upgrade and improve the overall value and worth of the business organization as an entity (Al-Slehat, 2021). Increased financial flexibility will improve and increase an organization's debt capacity and amount that can be utilized at times when there is limited access and availability of external financing as a source and means to tap and make use of profitable and successful investment opportunities and at the same time solve and address an organization's investment deficiencies and constraints at times and thus reduce and mitigate stress and pressure associated with investment shortfalls and deficiencies at times and as an organization faces and experiences limited availability and access and sources as financial organization and as business entity (Islam et al., 2020). The global challenges and crises experienced in the global economy have brought out and underscored the need and importance and value and usefulness and applicability and requirement and effectiveness and efficiency and worth and worthiness and viability and feasibility and applicability and usefulness and relevance and relevance and relevance and importance

Analysis for financial flexibility helps attain better insights into the firm's resilience against dangers posed by environmental factors, including uncertainties, with adequate and guaranteed access always to financial resources promoting sustainable operations and investment. As a result, it is encouraged that firms achieve an optimal extent of financial flexibility and effectively manage liquidity risks (Chang & Wu, 2021). Financial flexibility helps an organization resist financial distress and maintain capabilities for successful implementation of projects with positive NPV values

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(Harris, 2015), thus offsetting detrimental influences posed by times with low economic activities and market instability (Yunica & Rokhim, 2023). Research on spatial effects on investment caused by financial flexibility shows that higher adaptability will increase regional investment, reflecting a direct and an indirect impact on regional dispersibility (Liu et al., 2020). Organizations can achieve financial flexibility via approaches like accumulating large cash balances, taking advantage of commercial papers, and extending credit arrangements with commercial banks (James, 2016).

Financial flexibility is of great importance in formulating corporate financial policies, as it reflects a company's willingness to enhance its value by obtaining financing at a lower cost. On the other hand, it protects the company from financial distress by adapting to changing circumstances and adhering to a sustainable financial policy (Hegde et al., 2023). Financial managers and planners have demonstrated an appreciation for financial flexibility with an objective of incorporating low leverage in the current period as well as maintaining and improving borrowing capabilities for possible future economies requiring financing (Lambrinoudakis et al., 2019). Growth opportunities, profitability, risk, and cash and stock holdings are some factors that significantly influence financial decisions on low leverage. Smaller corporations are less profitability and risk-averse, and macro-economic factors have low impacts on marginal decisions on capital structure.

Companies with greater financial flexibility are better positioned to pursue more investment opportunities than those with less flexibility. In challenging market conditions, companies can anticipate potential future growth by adopting low leverage ratios and maintaining high levels of cash liquidity over extended periods. Financially flexible companies are expected to capitalize on unexpected investment opportunities and are less reliant on internal funding sources, as their untapped borrowing capacity facilitates access to external financing. Conversely, companies can achieve financial flexibility by adopting a low-debt policy or maintaining substantial cash reserves. It's important to note that the volatility of capital flows in developing countries is a significant factor (Setianto & Kusumaputra, 2017).

On the other hand, a company's dividend policy is a crucial element in maintaining financial flexibility, along with the amount and timing of the dividends. Therefore, a comprehensive analysis of the dividend policy is necessary, examining how and through which companies distribute cash to their shareholders. These channels may include periodic dividends, share buybacks, and special dividends. Periodic dividends are recurring cash payments to shareholders, often quarterly in the United States, but they can also be annual, semi-annual, or monthly. Paying periodic dividends represents a relatively permanent commitment through the distribution of future cash flows. Consequently, managers are usually hesitant to increase cash dividends, as they may have to be canceled later due to cash flow shocks. On the other hand, special

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dividends or share buybacks are more flexible because they are non-recurring and do not involve an actual commitment. Therefore, choosing the channels for distributing cash to shareholders is a critical aspect of corporate dividend distribution due to its importance in maintaining financial flexibility. (Booth et al., 2019).

METHODOLOGY

Companies adopting a policy of maintaining surplus and borrowing capacity to bolster future investments maintain significant flexibility, which is key to making better investment decisions and achieving financial efficiency. In testing this research, financial flexibility and financial efficiency are measured quantitively and qualitatively using various ratios and measures obtained from financial statements. A detailed description and clarification of these variables are shown below in Table 1. There are three specific indicators for every construct. Financial efficiency is measured by income percentage to, reoccurrence on investments, and return on equity. The flexibility can be measured by percentage of interests, debt, and liquidity. The data was collected based on annual reports issued by the Securities and Exchange Commission, as well as various official sources.

Table 1: Research variable measures.

Variable name	Type	Evaluation
Financial Efficiency	Dependent Variable	1. CIR = (Operating Expenses / Operating Income) * 100
		2. ROA = Net Income / Total Assets
		3. ROE = Net Income / Shareholders' Equity
Financial Flexibility	Independent Variable	1. Debt Ratio = Total Debt / Total Assets
		2. ICR = Earnings Before Interest and Taxes (EBIT) / Interest Expenses
		3. Liquidity Ratio = Liquid Assets / Short-Term Liabilities

The equations below address the model of the study. The beginning of the analysis is represented in the measuring of the financial efficiency.

$$CIR=\alpha+\beta1\text{Debt Ratio}+\beta2ICR+\beta3\text{Liquidity Ratio}+\varepsilon \quad (1)$$

Fixed Effect Model

$$CIRit=\alpha i+\beta1\text{Debt Ratioit}+\beta2ICRit+\beta3\text{Liquidity Ratioit}+\varepsilon it \quad (2)$$

Random Effects Model

$$CIRit=\alpha+\beta1\text{Debt Ratioit}+\beta2ICRit+\beta3\text{Liquidity Ratioit}+ui+\varepsilon it \quad (3)$$

The second measure of financial efficiency keeps the analysis circle going on.

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$$ROA=\alpha+\beta1Debt\ Ratio+\beta2ICR+\beta3Liquidity\ Ratio+\varepsilon \quad (4)$$

Fixed Effect Model

$$ROAit=\alpha i+\beta1Debt\ Ratioit+\beta2ICRit+\beta3Liquidity\ Ratioit+\varepsilon it \quad (5)$$

Random Effects Model

$$ROAit=\alpha+\beta1Debt\ Ratioit+\beta2ICRit+\beta3Liquidity\ Ratioit+ui+\varepsilon it \quad (6)$$

Afterward, the employed analysis includes the third measure of financial efficiency.

$$ROE=\alpha+\beta1Debt\ Ratio+\beta2ICR+\beta3Liquidity\ Ratio+\varepsilon \quad (7)$$

Fixed Effect Model

$$ROEit=\alpha i+\beta1Debt\ Ratioit+\beta2ICRit+\beta3Liquidity\ Ratioit+\varepsilon it \quad (8)$$

Random Effects Model

$$ROEit=\alpha+\beta1Debt\ Ratioit+\beta2ICRit+\beta3Liquidity\ Ratioit+ui+\varepsilon it \quad (9)$$

The variables in the equation above are expressed in the following: the debt to equity is represented in D/E. The interest is represented in IICR percentage, the correspondence of LIR to the percentage of the liquidity, the income percentage is represented in CIR.ROA refers to the return on assets, and the return on equity is shaped by ROE.

RESULTS AND DISCUSSION

Employing more sophisticated techniques for the measurement of banking efficiency and financial flexibility, we proceed with presenting below the findings obtained with the use of panel regressions, namely OLS, fixed effects, and random effects. The summary of the estimates in Table 2 is obtained for the first dependent variable, CIR. As shown, we note that the D/E ratio has a positive impact on CIR with a 10% significance level for OLS and a 5% significance level for fixed and random effects. According to these models, with all variables held constant, an increase of 1 percent in D/E ratio leads to an increase in CIR of 0.260 for OLS, and 0.287 and 0.275 for fixed and random effects, respectively. These levels appear to be supportive of the notion that an increase in D/E ratio positively impacts on operational efficiency or CIR.

The second financial flexibility variable, the interest coverage ratio (ICR), shows a significant negative effect. In other words, a 1% increase in the ICR leads to decreases of 0.655, 0.975, and 0.935 in normal least squares, fixed effects, and random effects models, respectively, with all coefficients being statistically significant at the 1% level

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(p = 0.000). The negative sign shows that an increase in ICR, indicating an easy covering ability of interest expenses, leads to an improvement in operating efficiency, as measured by an increase in CIR. As ICR increases, it clearly shows that it will be easy for the bank to pay its interest expenses with operating profits, and thus it will improve cost control and will directly decrease CIR. The third variable, liquidity ratio (LIR), shows no significant impact on CIR. That is, it shows there exist no meaningful relationships among liquidity and efficiency in banking sector via cost-to-income ratio. The reason might be ascribed due to liquidity crises at current state of Iraqi selected banks, as they are not reflected on operating efficiency via CIR. The overall models' explainatory values are also shown on Table 2. That is, with all three variables on financial flexibility, 0.590 on CIR explained under OLS. Similarly, with 0.439 on CIR explained under fixed effects model, and 0.338 on CIR explained under random effects. Moreover, Hausman Test on CIR among fixed and random effects models were conducted. As shown on result with highly significant values at 1%, it clearly shows that on CIR measure, Fixed Effects model will be more reliable and fruitful on policy perspective and implications comparative to either on OLS and random effects. The results are shown in Figure 1.

Table 2: Panel Estimations for the CIR

Details	(1)	(2)	(3)
VARIABLES	Model 1	Model 2	Model 3
D/E	0.260*	0.287**	0.275**
Standard Error	(0.135)	(0.133)	(0.129)
ICR	-0.655***	-0.975***	-0.935***
Standard Error	(0.145)	(0.147)	(0.140)
LIR	-0.0167	-0.0428	-0.0283
Standard Error	(0.133)	(0.132)	(0.124)
Constant	0.452***	0.425**	0.339**
Standard Error	(0.134)	(0.137)	(0.142)
Observations	50	50	50
R-Squared	0.590	0.439	0.338
Number of ID	5	5	5
Hausman Test-Porb. Value	0.000***		

D/E: Debt to Equity Ratio, ICR: Interest Coverage Ratio, LIR: Liquidity Ratio, Standard Errors in Parentheses, *** p<0.01, ** p<0.05, * p<0.1.

The debt-to-equity ratio did not show statistically significant effects between the models., characterized by small coefficients and high standard errors, indicating that a statistically significant relationship cannot be inferred from these variables. In contrast, the capital efficiency ratio showed a statistically significant positive impact on return on assets in all models (B = 0.184, 0.178, 0.127), indicating that effective management improves asset management efficiency and returns by reducing unnecessary debt payments. This allows banks to allocate more resources to higher-

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yielding assets, which positively impacts net income and return on assets.

Figure 1: illustrates the effect of the three financial elasticity variables on return on assets

These results highlight the important role of capital adequacy management in enhancing Performance level of the Iraqi banking sector. On the other hand, no relationship was found between the liquidity ratio and the return on assets in any of the three models. This means that liquidity levels do not significantly affect asset efficiency in the banks included in the research sample. The coefficient of determination (R^2) values was relatively low, at 0.135, 0.125, and 0.117 for ordinary least squares, fixed effects, and random effects estimates, respectively as shown in Table 3. Based on the Hausmann test results, random effects estimates are considered the most suitable for policy and practical recommendations. Figure 2 visually summarizes the results using bar graphs.

Table 3: Panel Findings for ROA.

Details	**(1)**	**(2)**	**(3)**
VARIABLES	Model 1	Model 2	Model 3
D/E	0.0352	-0.00726	0.0352
Standard Error	(0.149)	(0.144)	(0.149)
ICR	0.184***	0.178***	0.127**
Standard Error	(0.054)	(0.020)	(0.054)
LIR	0.0378	0.0694	0.0378
Standard Error	(0.136)	(0.144)	(0.136)
Constant	0.556***	0.558***	0.651***
Standard Error	(0.144)	(0.149)	(0.134)
Number of ID	50	50	50
R-Squared	0.135	0.127	0.117
Hausman Test-Porb. Value		0.124	

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On the contrary, the LIR shows a strong negative relationship with ROE on all three models, with -0.173, -0.214, and -0.115 coefficients as illustrated in Table 4. This indicates a stable financial level in the short term, but conversely, it has a negative impact on financial efficiency and profitability..

Figure 2: Diagramic representation of the results for the three Models (1= OLS, 2= Fixed Effect, 3= Random Effect).

A higher liquidity ratio would mean Therefore, increasing short-term assets, which consist of cash and government bonds that have low returns and risks,.. Although it enhances short-term stability and decreases financial risk, it simultaneously affects profitability and financial efficiency, as it misses opportunities with potentially higher returns on alternative sources. It affects ROE negatively because more assets are tied to Short-term assets such as cash and government bonds have low returns and low risk.. It affects it more on Model 2, and on Model 3, it affects it slightly.

Table 4: Panel Findings for ROE.

Details	**(1)**	**(2)**	**(3)**
Variables	Model 1	Model 2	Model 3
D/E	-0.201	-0.160	-0.201
Standard Error	(0.147)	(0.146)	(0.147)
ICR	0.160***	0.195***	0.137***
Standard Error	(0.051)	(0.062)	(0.032)
LIR	-0.173***	-0.214***	-0.115***
Standard Error	(0.034)	(0.046)	(0.007)
Constant	0.845***	0.812***	0.751***
Standard Error	(0.144)	(0.149)	(0.127)
Observations	50	50	50
R-Squared	0.231	0.291	0.197
No. Of IDs	5	5	5
Hausman Test-Porb. Value	0.000***		

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The R sq. on all three models shows an explanation value ranging from 0.197 to 0.291. The Hausman Test shows that the result is significant and authenticates that Fixed Effects Estimator is more apt for modeling policy and recommendation. The result can be analyzed with graphs as shown below in Figure 3.

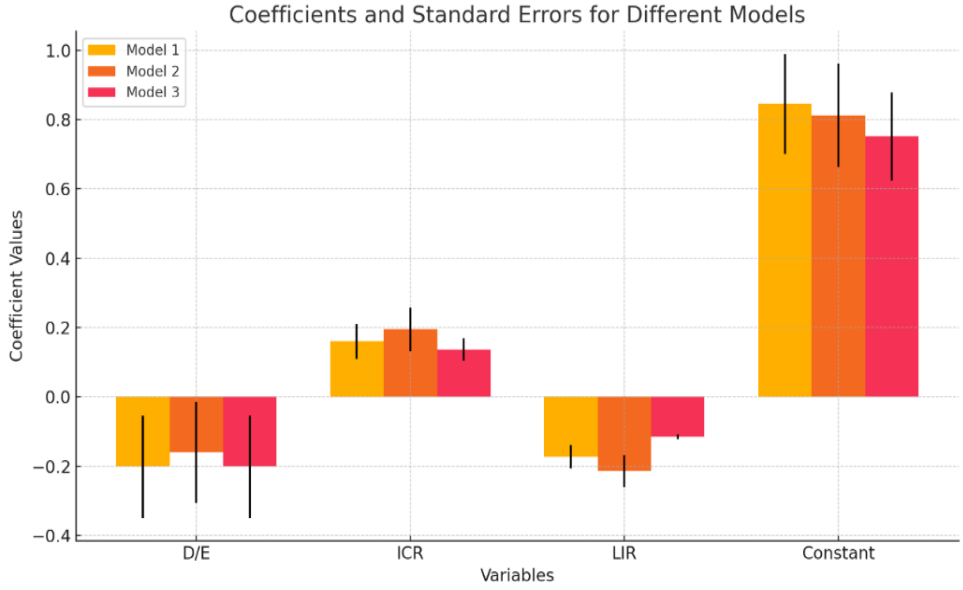

Figure 3: Diagramic representation for the finding for the three Models (1= OLS, 2= Fixed Effect, 3= Random Effect).

CONCLUSION

The panel regression analysis outcomes obtained from using panel regression estimators offer vital information on the relationship that exists within financial flexibility and banking efficiency. Variations appear within the outcomes indicating the dynamic nature associated with the banking sector. Outcomes obtained from the use of OLS, fixed effects, and random effects models on CIR, ROA, and ROE variables show various remarkable tendencies. D/E ratio shows a positive impact on CIR and ROE for all models, and it has no significant impact on ROA. It implies that a higher ratio of D/E might be useful for improving operational efficiency and profitability but might not be an efficient ratio on assets. ICR shows a strong negative relationship with CIR and a significant positive impact on ROA, emphasizing the role of efficient debt management. The higher the ICR ratio, the better it is at servicing its debts using its earnings, hence enhancing financial performance among the short-listed banks. The LIR The liquidity ratio does not significantly affect any of the financial efficiency variables. This means that the importance of liquidity as a contributing factor to financial efficiency varies depending on the surrounding and specific circumstances of each bank.. It emphasizes the importance of effectively managing liquidity and understanding its impact on efficiency.

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In general, the results emphasize the importance of sound financial analysis with special focus on capital structure, debt management, and liquidity As tools to focus on improving efficiency and raising performance levels in the banking sector. It is recommended that the efforts of banking sector managers should focus on optimizing D/E ratio, with an emphasis on finding an optimal mix between debt and equity, and thereby lowering excessive levels of liabilities. As ICR significantly and negatively affects CIR, it can be recommended that banks should improve their ability to pay fixed debt, and that will help improve the financial efficiency of operations. Moreover, an efficient mix of short-term and long-term financial activities will be an area that requires more focus. Prioritizing sustainable growth via investment opportunities and liquidity will be an area with considerable scope.

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