

The Impact of Some Financial Analysis Tools on Loan Volume for a Sample of Iraqi Commercial Banks

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Abstract

Financial analysis tools are important financial indicators used to evaluate bank performance and measure bank activity and efficiency. Loans are also important indicators that contribute to increased projects and investment, which play a significant role in improving the economic situation of countries. Therefore, the research problem is summarized in answering the following question: What is the impact of financial analysis tools on the loan volume of Iraqi commercial banks? Accordingly, the main objective of the research is to analyze the impact of financial analysis tools on the loan volume of a sample of commercial banks listed on the Iraq Stock Exchange. The Panel ARDL model was applied to measure the relationship between financial analysis tools (cash ratio, asset turnover ratio, return on equity, debt-to-equity ratio, dividends per share) and loan volume. The results showed that the financial analysis tools (cash ratio, asset turnover ratio, and dividends per share) have a significant impact on loan volume, highlighting their importance in credit decision-making. However, return on equity and debt-to-equity ratio did not have a significant impact on loan volume.

Keywords: Financial analysis tools, loan volume, Panel ARDL model

1. Introduction

Financial analysis tools are among the most important elements that play a significant role in measuring the efficiency of banking performance. This helps decision-makers formulate successful banking policies amidst rapid economic changes and the increasing challenges facing the banking sector. Financial analysis tools are fundamental elements upon which banks rely in making credit decisions. These tools play a vital role in improving the transparency of financial data, thus contributing to strengthening trust between banks and their clients. Given the economic challenges facing Iraqi banks, understanding the impact of these tools on the volume of loans granted becomes essential to ensuring sustainable growth and effectiveness in providing financial services. Commercial banks are considered fundamental pillars of any country's economic and financial system, playing a pivotal role in providing financial liquidity and supporting economic activities through loan disbursements. Financial analysis tools consist of a set of methods and techniques used to evaluate the financial performance of banks and assist them in making decisions related to risk management and determining lending strategies. These tools include the cash ratio, asset turnover ratio, return on equity, debt-to-equity ratio, and dividend per share, which are essential for understanding banks' lending capacity. Loans are also fundamental financial instruments that play a vital role in supporting the economy and providing the necessary liquidity for individuals and businesses. They represent the means by which projects can be financed, personal goals achieved, and immediate needs met. In an economic context, loans contribute to boosting economic activity by stimulating investment and increasing productivity, leading to job creation and improved living standards. With the development of financial and banking systems, loan forms have diversified, ranging from personal and auto loans to business and real estate loans. Innovations in the financial sector have led to the emergence of new types of loans, such as Islamic loans and government-backed loans, providing borrowers with multiple options. Several researchers have conducted studies on the relationship between financial analysis tools and loan volume. For example, Amhamed and Aisha (2017) conducted a study on the role of financial analysis in the loan granting decision process. The study's results showed that the bank's objective in using financial analysis tools is to minimize or completely eliminate the risk of non-payment; therefore, assessing these tools is essential. The study also demonstrated that diagnosing a customer's situation is linked to profitability, liquidity, and yield metrics, which the bank relies on to ensure future profitability while simultaneously satisfying shareholders and customers. Furthermore, the study clarified that the bank's decision to grant or reject a loan depends on in-depth studies of the customer's file (economic, financial, and technical). Profitability, liquidity, and return on investment are key factors for the bank to ensure future profitability while simultaneously satisfying shareholders and customers. The study also indicated that the bank's decision to grant or reject a loan is based on in-depth analyses of the client's file (economic, financial, and technical). Abbas Haider Abdul-Ridha (2022) presented an analytical study on diversifying bank loan portfolios according to the Shannon Entropy Index and its impact on financial performance. The results of the financial analysis showed that most of the banks in the study sample focused their lending excessively on the commercial sector. The highest percentage of average loans granted to the commercial sector was found at Babylon Bank, while the lowest percentage was at Baghdad Bank. Rania and Hanaa (2022) presented a study on the role of financial analysis tools in loan granting decisions at commercial banks. The study showed that financial analysis serves as a mirror reflecting the true situation of the loan applicant, revealing strengths and weaknesses. The financial equilibrium of an institution signifies its degree of financial stability. The study also demonstrated that financial analysis plays a significant role in loan granting decisions by relying on the results derived from financial statements and the collateral provided in the loan applicant's file.

Importance of the Research

By understanding the relationship between financial analysis tools and loan volume, banks can improve their financial efficiency. This leads to better allocation of financial resources and enhanced profitability. The results will contribute to strengthening banks' financial performance and reducing financing risks. The topic is also central to understanding how to improve loan granting decisions in commercial banks through financial analysis tools. The research will also contribute to enhancing academic and practical understanding in this field, supporting sustainability and growth in the banking sector.

Research Problem

Financial analysis tools are vital in determining the extent to which banks can make effective and well-informed lending decisions. However, the Iraqi banking system faces a number of challenges that may negatively affect the use of these tools and the realization of their intended benefits. Therefore, the research problem focuses on answering the following question: What is the impact of financial analysis tools on loans granted to a sample of commercial banks listed on the Iraq Stock Exchange?

Research Objective: The research aims to measure and analyze the impact of financial analysis tools on loans to the banks in the research sample.

Research Hypothesis: This research is based on the main hypothesis that there is a significant positive impact of financial instruments on bank loans for a sample of commercial banks listed on the Iraq Stock Exchange.

2. Financial Analysis: The concept of financial analysis involves analyzing, understanding, and interpreting published financial statements. It may utilize additional data to achieve a specific objective, such as evaluating a company's operations, assessing the company itself, identifying investment opportunities, or approving credit and loans to clients (Boumims & Farid, 2015, p. 7). Financial analysis is a systematic process of analyzing available financial data about an organization to obtain information used in decision-making and evaluating the past and present performance of commercial and industrial institutions. It also addresses potential problems and predicts future performance. This requires collecting, correcting, and presenting financial data in a manner suitable for decision-making (Al-Shanti, 2005, p. 165). Financial analysis provides banks with information on how their funds are being utilized, as well as on bank development, identifying strengths and weaknesses,

and determining the profitability of investment areas. This helps bank management plan effectively, leading to reduced costs for bank services (Annab, 2013, p. 5). Financial analysis can be defined as a precise and deliberate process that seeks to reinforce decisions that the financial statements have proven successful, and on the other hand, to modify decisions that have revealed gaps. It also aims to create a framework upon which the financial manager can rely in planning and decision-making processes (Asmaa and Khadija, 2020, p. 48). The importance of financial analysis can be summarized in the following points: (Al-Hilali, 2022, p. (41))

- 1- Financial analysis is an effective tool in auditing and comparison processes by the financial auditor.
- 2- It helps determine the extent to which the bank's management has succeeded in achieving its objectives.
- 3- It helps customers, financiers, and all those who deal with the bank to make sound decisions.
- 4- Bank employees are interested in financial analysis to ensure their job security, which is linked to the bank's continued operation and the profits it generates, as this affects employee salaries and bonuses.
- 5- It clarifies the main issues related to the efficiency of the bank's management.
- 6- The ability to obtain accurate financial data to access information that enables bank management to identify strengths and weaknesses and formulate future plans for the bank's financial and investment operations.
- 7- Assisting decision-makers and analysts in making decisions and continuing their banking work.

3. Financial Analysis Tools

- i. **Cash Ratio** : This is the liquidity ratio that measures an institution's ability to meet its current obligations with cash or its equivalent only. This ratio is more restrictive than the current ratio and the quick ratio, as no other type of current asset can be used to meet current obligations. This is why customers prefer the cash ratio, as it shows the institution's ability to meet its obligations through the size of its cash reserves. This ratio is calculated according to the equation: (Felixl, 2018, p. 210)

$$\text{Cash Ratio} = \frac{\text{Cash Ratio}}{\text{Current Liabilities}} * 100\%$$

- ii. **Fixed Assets Turnover Rate**: This ratio is an important measure of the profit a bank generates from its investment in its fixed assets. It is calculated using the following formula (Al-Hilali, 2022, p. 61):

$$\text{Fixed Assets Turnover Rate} = \frac{\text{Net Sales}}{\text{Fixed Assets Net}} * 100\%$$

- iii. **Return on Equity (ROE)**: This is the amount shareholders receive as a result of investing their money with the bank and bearing the risk. A high ROE indicates the efficiency of the financial and operational policies followed by the bank to achieve the best possible return for shareholders. Measuring this ratio is very important from the shareholders' perspective because it evaluates the bank's profitability in terms of the suitability of the return to the risks they may bear. It is calculated (Brigham & Houston, 2019, p. 119) according to the following equation:

$$\text{Return on Equity} = \frac{\text{Net Profit After Tax}}{\text{Equity}} * 100\%$$

- iv. **Debt to Equity Ratio** : This refers to the total debt the company has obtained from others. This debt consists of short-term and long-term loans. This ratio shows the relationship between debt and equity, i.e., financing provided by external sources (creditors) (and financing provided by shareholders). This relationship is calculated using the following equation (Islam, 2024, p. 39, p. 40):

$$\text{Debt to Equity Ratio} = \frac{\text{Total Debt}}{\text{Equity}} * 100\%$$

- v. **Earnings Per Share (EPS) Ratio** : This ratio measures the share of each share in the total profits achieved at the end of the financial period. This ratio expresses the efficiency of the company's financial performance and is one of the most widely used indicators for this purpose. This ratio plays an important role in investment analysis, therefore it is considered one of the most important ratios (Gary A, 2015, p. 692) in the market. It is calculated using the following equation:

$$\text{Earnings Per Share Ratio} = \frac{\text{Dividends Distributed}}{\text{Number of Shares}} * 100\%$$

4. Loans

Bank loans are a crucial aspect of investing financial resources in banks. They represent the largest portion of assets, and financial returns constitute the largest part of bank revenues. Given the importance of loans across all activities, it has become essential for stakeholders to prioritize loans by establishing an appropriate policy to ensure their soundness. In economic terms, a loan is defined as a measure of a person's or entity's ability to obtain present value in exchange for deferring payment to specific time in the future (Islam, 2024, p. 26).

5. Methodology

i. **Panel Data Stability Test** : The stability test for time series data in general, and panel data in particular, is one of the most important basic stages in building the standard model, because the presence of a unit root leads to unreal results, which is called pseudo-regression. Therefore, this problem must be addressed by taking the time series variances to obtain stability before analyzing and testing the significance of the mathematical model. Among the tests Levin, Lin, and Chu use are the common Panel Data test for the presence of a unit root for ADF data, the Fisher Chi-square test, the Im Pesaran and Shin (IPS) test, and the LLC test.

ii. **Collinearity Test** : There are several methods to test for the presence of the Multicollinearity problem, the most important of which is calculating the variance inflation factor, which depends on measuring the estimated variance inflation due to the Variance Inflation Factor (VIF). The presence of a Multicollinearity problem. If the value of the VIF coefficient for one of the independent variables is greater than 10, this indicates the presence of a Multicollinearity problem. However, if the VIF value is 10, this does not indicate the presence of a Multicollinearity problem. (Mahmoud, 2013, p. 347).

iii. **Co-integration Test**: Cointegration is defined as the correlation or participation between two or more time series, such that fluctuations in one cancel out fluctuations in the others in a way that makes their value constant over time. This means that the data of the time series are stationary, but if each is taken separately, it may not be stationary. This long-term relationship between a set of variables may be useful in predicting the values of the dependent variable in terms of a set of explanatory variables. (Greene, 2005, p. 756)

iv. **Panel ARDL Model** : The Panel ARDL model is adopted based on the stability results of the studied variables. If the variables are stable at level (0)1, at the first difference (1), or both, then the Panel ARDL model can be adopted. However, if one of the variables is stable at the second difference (2), then following the model is not recommended. There are three main Panel (ARDL) models, as follows (Abd Al-Kareem ,2024, p.342):

1. **Mean Group (MG) Model**: This model was introduced by Pesaran and Smith (1995). Its concept is based on estimating a separate regression for each cross-section and then taking the average of the coefficients for the long and short runs. This model is used when the parameters are not constant between cross-sections.
2. **Dynamic Fixed Effect (DFE) Model**: This method was proposed by Weinhold (1999). This method combines data to estimate regression coefficients for the long and short runs. This model is used when the parameters are constant between cross-sections.
3. **Pooled Mean Group (PMG) Model**: This model, proposed by Pesaran et al. (1999), is an intermediate approach combining features of the MG and DFE models. It imposes a homogeneity constraint on the long-term coefficients, preventing variations between cross-sections, unlike DFE. Heterogeneity is possible, but only in the short-term coefficients. Error correction limits, cross-parameters, and error variances are similar to the MG model.

V. Selecting the Optimal Model from the Panel ARDL Models: Several tests have been proposed to determine the optimal model from among the three, but the most common and widely used is the Hausman Test.

iv. **Hausman Test** : This test is used to test the null hypothesis, which states that there is homogeneity in the long-term coefficients. That is, the MG model is assumed to be the optimal model from among the Panel Data models (Abd AL- Karim, 2024, P.342) .

6. Results : The effect of financial analysis tools (cash ratio, asset turnover ratio, return on equity, debt-to-equity ratio, and dividend per share) on loan volume was studied for five banks: Bank of Baghdad, Middle East Bank, Investment Bank, Gulf Commercial Bank, and Mosul Development Bank, for the period (2003 - 2005). The results of the stability test for the study variables are shown in Tables (1) and (2).

Table (1)
Stability test results at level (0)

Levin, Lin and Chu (LLC)									Test Type
Without a fixed limit and general direction			With a fixed limit and general direction			With a fixed limit			variable
Result	Moral value	Statistical value	Result	Moral value	Statistical value	Result	Moral value	Statistical value	
Unstable	0.74373	0.6549	stable	0.00	-3.98046	stable	0.0043	-2.62848	CR
stable	0.00267	-2.78566	Unstable	0.36	-0.36767	Unstable	0.059	-1.56188	ATR
stable	0.00038	-3.36552	stable	0.015	-2.14786	stable	0.0057	-2.52643	ROER
stable	0.00	-6.30796	Unstable	0.999	3.73353	stable	0.038	-1.77403	EPSR
stable	0.000246	-3.484765	Unstable	0.3928	-0.272034	Unstable	0.106563	-1.24502	DER
Unstable	0.70914	0.550875	Unstable	0.34906	-0.387856	Unstable	0.292672	-0.5456	LOANS

It is observed from the stability test results for the three tests listed in Table (2) that the variable (LOANS) stabilized after taking its first difference at the significance levels of (1% and 5%), except in the presence of the fixed term, with the presence of the fixed term and the overall trend, and without the fixed term and the overall trend.

Table (2)
Stability Test Results at First Difference (1)

Levin, Lin and chu (LLC)									Test Type
Without a fixed limit and general direction			With a fixed limit and general direction			With a fixed limit			variable
Result	Moral value	Statistical value	Result	Moral value	Statistical value	Result	Moral value	Statistical value	
stable	0.00	-7.17033	stable	0.00	-4.821154	stable	0.00	-5.38781	LOANS

According to the results in Table (3), it is observed that the VIF and Tolerance values are small and less than (10) for all variables. Therefore, the model does not suffer from the Multicollinearity problem.

Table 3
Results of the Multicollinearity Problem Test
Coefficients ^a

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	Collinearity Statistics	
	B	Std. Error				Tolerance	VIF
I (Constant)	101356717100.000	22804387530.000		4.445	.000		
Cr	32495081200.000	25507206640.000	.129	1.274	.206	.936	1.068
ATR	80011367940.000	34939153850.000	.235	2.290	.024	.914	1.094
ROER	-3723269358.000	68479090760.000	-.006	-.054	.957	.921	1.086
DER	-5547534246.000	3637465151.000	-.158	-1.525	.131	.900	1.111
EPSR	-33793370170.000	15710069700.000	-.213	-2.151	.034	.986	1.014

a. Dependent Variable: loans

The results of the Pedroni Residuals Cointegration Test for Cointegrating the variables of the Panel Data model are shown. Table (4) indicates that the values of (Prob.) are greater than 0.05. Therefore, it is concluded that there is no cointegration, i.e., no long-term equilibrium relationship between the model variables.

Table (4)
Cointegration Test Results

Pedroni Residual Cointegration Test				
Series: LOANS CR ATR ROER EPSR DER				
Date: 04/26/25 Time: 13:18				
Sample: 2005-2023				
Included observations: 95				
Cross-sections included: 5				
Null Hypothesis: No integration				
Trend assumption: No deterministic trend				
Automatic lag length selection based on SIC with a max lag of 2				
Newey-West automatic bandwidth selection and Bartlett kernel				
Alternative hypothesis: common AR coefs. (within-dimension)				
	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-0.975082	0.8352	-0.989335	0.8388
Panel rho-Statistic	2.398563	0.9918	2.149310	0.9842
Panel PP-Statistic	2.386796	0.9915	1.511482	0.9347

Panel ADF-Statistic	1.193784	0.8837	0.576955	0.7180
Alternative hypothesis: individual AR coeffs. (between-dimension)				
	<u>Statistic</u>	<u>Prob.</u>		
Group rho-Statistic	2.809441	0.9975		
Group PP-Statistic	1.447054	0.9261		
Group ADF-Statistic	0.393512	0.6530		

It is observed from the stability test results that all independent variables stabilized at the level [I(0)] except for the dependent variable (loan volume), which stabilized at the first difference [I(1)]. Therefore, the Panel (ARDL) model was adopted to test the effect of the independent variables {cash ratio (CR), asset turnover ratio (ATR), return on equity (ROER), debt-to-equity ratio (DER), and dividends per share ratio (EPSR)} on the dependent variable (loan volume). It is observed from the results in Table (5) that both EPSR and ATR have a significant effect on the dependent variable (loan volume) in the long run (Long Run Equation) because the probability values are 0.05 (prob.<0.05). It is also observed that the effect of the variable (CR) is direct on the variable (loan volume) because the sign of its associated parameter is positive and its value is (1.0E+11), while both EPSR and ATR have an inverse effect on loan volume because the sign of their respective parameters is negative. Its values are (-8.84E+10 and 2.34E+11), respectively. This aligns with economic theory, as an increase in these ratios leads to a decrease in the volume of loans; that is, the relationship is inverse. The independent variables (DER and ROER) have no significant effect on the dependent variable (LOANS) because their probability value is 0.05 (prob.>0.05). In the short run (Short Run Equation), the value of the correction speed parameter (COINTEQ) reached 0.4616, meaning that approximately 46% deviations from long-run equilibrium are corrected in each period. The test indicates that this is significant because the probability value associated with its t-test was (0.0013 < 0.05). Regarding the independent variables, it is observed that both variables (LOANS and EPS) at the first time lag have a significant positive effect on the dependent variable (LOANS) because their probability values are >0.05. Their respective values were (0.40598, 1.59E+11). It is noted that Also, the ROER variable at the present time and at the first time lag also has a significant but inverse effect on the dependent variable (LOANS) because the two associated probability values are (Prob. > 0.05), and their parameter value reached (-3.51E+11, -3.83E+11). As for the remaining independent variables, the results proved that their effect on the variable (LOANS) was not significant because the values (prob.> 0.05).

Table (5) Results of estimation and testing of the Panel ARDL model

Dependent Variable: D(LOANS)					
Method: ARDL					
Date: 05/01/25 Time: 09:47					
Sample: 2007-2023					
Included observations: 85					
Number of cross-sections: 5					
Dependent lags: 2 (Automatic)					
Automatic-lag linear regressors (2 max. lags): CR ATR ROER DER EPSR					
Deterministics: Unrestricted constant and no trend (Case 3)					
Model selection method: Akaike info criterion (AIC)					
Number of models evaluated: 486					
Selected model: PMG(2,2,1,2,1,2)					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
Long-run (Pooled) Coefficients					
CR	1.00E+11	4.12E+10	2.429760	0.0173	
ATR	-8.84E+10	2.08E+10	-4.244153	0.0001	
ROER	6.01E+10	7.18E+10	0.837562	0.4048	
DER	-9.88E+09	5.54E+09	-1.784895	0.0781	
EPSR	-2.34E+11	4.75E+10	-4.921007	0.0000	
Short-run (Mean-Group) Coefficients					
COINTEQ	-0.461619	0.137961	-3.346004	0.0013	
D(LOANS(-1))	0.405982	0.170956	2.374779	0.0202	
D(CR)	-8.74E+10	8.20E+10	-1.065116	0.2903	
D(CR(-1))	-7.67E+10	5.96E+10	-1.287623	0.2019	
D(ATR)	-4.35E+10	5.59E+10	-0.777714	0.4392	
D(ROER)	-3.51E+11	7.33E+10	-4.781787	0.0000	
D(ROER(-1))	-3.83E+11	9.39E+10	-4.085379	0.0001	
D(DER)	1.45E+10	9.62E+09	1.507974	0.1358	
D(EPSR)	7.70E+10	3.98E+10	1.933485	0.0570	
D(EPSR(-1))	1.59E+11	7.73E+10	2.054083	0.0435	
C	6.74E+10	1.73E+10	3.888243	0.0002	
Log-Likelihood:	-2125.579				

Figure (1) shows the actual and estimated values of the dependent variable (LOANS) and the estimated residual values calculated for the Panel ARDL model. Observing the figure, we find that the actual values are close to the estimated values, indicating the efficiency of the chosen model and the method used to estimate its parameters.

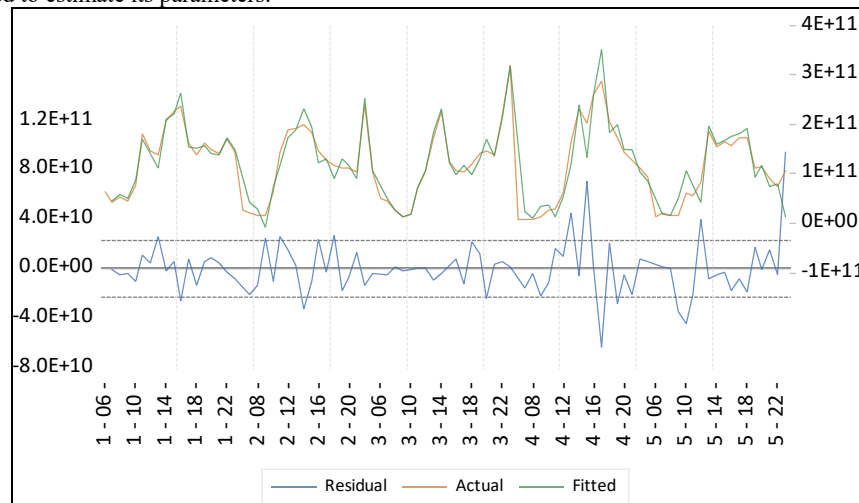


Figure (1) Actual and estimated values of the LOANS variable and residual values

7. Conclusions

The Mean-Group test results showed a significant positive effect of the cash ratio (CR) variable on the volume of loans in the long term. This indicates that high cash liquidity in banks enhances their ability to grant loans. Conversely, the asset turnover ratio (ATR) and the dividend yield per share (EPSR) had a significant negative effect on the volume of loans, indicating that efficient asset utilization reduces the need for additional loans, and dividend distributions reduce the need for additional loans, and that dividend payouts reduce the Funds available for lending. However, neither the return on equity (ROE) nor the debt-to-equity ratio showed a significant effect on loan volume. The error correction rate was -0.4616, meaning that 46% of long-term imbalances are corrected annually. In the short term, changes in dividends per share (ESPR) and the size of prior loans had a significant positive effect on current loan volume, while the return on equity (ROE) had a negative effect, suggesting that a higher ROE may reduce the incentive to lend in the short term.

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