| RESEARCH ARTICLE

Measuring Financial Strength Using the Profitability Index and its Impact on Achieving Financial Soundness: An Analytical Study of Several Iraqi Private Commercial Banks

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| ABSTRACT

The research focuses on measuring the profitability and financial soundness and evaluating their relationship and impact. The study aimed to measure and analyze financial strength using the profitability indicator and its impact on achieving financial Soundness. Ashur International Bank, National Bank of Iraq, Commercial Bank of Iraq, Gulf Commercial Bank) and the research started from a main hypothesis that (there is a significant effect of profitability on financial soundness in terms of its indicators of capital adequacy, quality of assets, liquidity), and the researchers used the statistical method to reach The results using the statistical program 10Eviews. The research concluded that profitability achieves financial soundness in the surveyed banks. The research also recommends investing in liquidity and achieving a balance between liquidity and profitability according to risk management.

| KEYWORDS

financial strength, profitability, financial soundness

1. Introduction
The financial markets are witnessing rapid development in business and finance and the high degree of competition, which requires work on continuity and sustainability, by keeping pace with the external environment and monitoring developments to achieve financial strength represented by profitability and asset quality. The research included a methodological framework in addition to the first topic dealing with the theoretical side. Then the second topic was limited to the practical side, then the research concluded with conclusions and recommendations.

2. Literature review
2.1 El-Sawy et al., (2020)
It is a comparative study of multiple regression analysis and backpropagation neural network methods for predicting the financial strength of banks: an Indian perspective. The problem of the study revolved around the main question that is possible to predict the financial strength of Indian banks by multiple regression analysis and artificial neural network? India has become the infrastructure of multilateral companies in engineering work.

A comparative analysis was published where the capital adequacy ratio (CRAR) was chosen as a variable to measure and predict the financial strength of banks. These descriptive ratios are used as inputs to develop the neural network model. The results of the multi-line regression analysis identified 7 financial ratios related to the dependent variable (CRAR). These seven dependent

variables were used to predict the banks' financial strength (CRAR). Study study study study found in the ANN model study model is a superior method for forecasting Indian banks. The typical model developed in this study can be compared.

2.2 Dombos et al. (2017)

The Bank's Public Financial Strength: Islamic vs. Conventional Banks'' The Bank's Public Financial Strength: Islamic Banks vs. Conventional Banks , The study problem centered in Western Europe? The study aimed to compare banks, conventional banks, and banks with an Islamic window, the general financial index of the bank. The study is representative of 22 wrestling countries, while it consists of 101 Egyptians from the regions, 347 traditional Egypt, and 52 Egyptians with influence. The ratio of the loan loss allowance to loan value (LLP) as an indicator of asset quality, the ratio of cost to income (cost) as an indicator of managerial quality in terms of total cost; Return on assets (ROA) ratio as an indicator of return and liquid assets to deposits, short financing ratio (LIQ) abundant, Islamic window banks are the best in terms of profitability. As for the study, they are in an index and it is expected that the next big wave in Iraq will lead to the control of corruption.

2.3 Bei & Wijewardana (2012)

The study is about the leverage, company growth and financial strength in Sri Lanka listed companies. The study aims to expand financial knowledge (FL) and corporate growth (FG). Sri Lankan companies listed. It consisted of 62 companies that were traded in the CSE market out of 13 sectors from 2000 to 2009. Its volume is 30% from 13 sectors. 62 companies were selected out of 235 traded companies, Findings of the study conducted by FL in Sri Lanka specifically on the financial system. This means there is a relationship that is not linked to the European system and other growth variables. Finally, the study recommended expanding the research and studying the variables, the university and some workers abroad, as it is impossible to rely only on the two studied.

2.4 Bwana (2018)

The study's main question revolved around whether it is possible to measure the financial strength of hospitals using indicators of financial strength? The study aimed to determine whether CDHs for the study would determine whether CDHs could generate the margin required to support the hospitals' ongoing mission. The study population consisted of Council-Designated Hospitals (CDHs) in Tanzania. The study applied cash flow theory along with the Financial Strength Index (FSI) model to measure the financial strength of Council-Designed Hospitals (CDHs) in Tanzania. The results revealed that CDHs have a Financial Strength Index score of -1.0496 which indicates fair financial strength or conditions as the financial strength of the secured debt funds was largely due to the strong liquidity and zero ratio of debt financing contained in the CDHs capital structure. Specifically, the results record that CDHs had low profit taking capacity. The result also confirms that CDHs had very low financial risk as most of them were financed using internal sources especially retained liquidity rather than debt financing. The study recommended that CDHs can maintain all existing service lines provided in the future since they have a good liquidity position and can nearly double the number of days required (in the hospital industry) for hospitals to operate without receiving additional funds.

3. Methodology

First, the research problem

The developments in the banking arena represented the extent of the banks' ability to survive and permanence, which required them to work on achieving financial Soundness, which lies in the availability of strengths represented by the profitability indicator. Can it achieve financial soundness? The following sub-questions stem from it:

a. Can profitability affect the financial Soundness indicators in the surveyed banks?

B. Is it possible to reduce risks through the availability of financial Soundness indicators in the surveyed banks?

Secondly, the importance of research

The importance of the research stems from the following:

A - Measuring financial Soundness as one of the indicators of strategic success today through its indicators

b- Analysis of profitability and its availability in the surveyed banks.

C- Providing a framework of knowledge about the relevant variables in a way that contributes to the availability of their perceptions.

Third, the research objectives

The research aims to achieve a number of goals, which are listed as follows:

A. A statement and clarification of what financial soundness is and what its indicators are.

B. Analysis and measurement of profitability as one of the financial strength indicators.

C. Measuring and analyzing the relationship and the effect between the investigated variables.

Fourth- Research Hypothesis:

The research seeks to achieve the following two main hypotheses:

The first main hypothesis, which states (there is a correlation between profitability and financial soundness in terms of its indicators, capital adequacy, asset quality, liquidity)

The second main hypothesis, which states (there is a significant effect of profitability on financial soundness in terms of its indicators, capital adequacy, asset quality, liquidity)

Fifth: Research Methodology

The research relied on the descriptive and analytical methods to achieve its objectives and testing.

Sixth: The research community and its sample:

The research community is represented by 5 private commercial banks in Iraq, namely (United Investment Bank, Ashur International Bank, National Bank of Iraq, Commercial Bank of Iraq, Khaleej Commercial Bank)

Seventh :Research limits: The research limits were for the period from 2016-2020.

The Theoretical side

First, the concept of financial strength

Financial strength has become one of the factors of success and continuity at present, which is determined by the role of the bank and its weight, as well as the size of its financial and human resources, which it puts in the service of its strategic goal of survival and permanence, in a way that enables it to face any difficulties or financial distress, and banks must not set goals that do not Its resources can achieve it (Sharma et al, 2021). Financial strength is defined as the amount of financial and human resources owned by the bank, which enables it to face any risks it may be exposed to, and what makes it able to continue with the same strength and solidity and with more progress and to serve its strategic objective (Suryaputra, & Wirawati, 2016, 1837).

Therefore, indicators of financial strength have been developed and calculated using various financial indicators, such as the financial ratios used when evaluating the financial performance of any bank (Hafez, 2017: 219). Financial strength indicators serve as an early warning when the financial and banking sectors are exposed to the risks they may face. It is also an important indicator In analyzing and evaluating the banking system, following up on its strength and resilience and its ability to continue, as well as identifying the risks to which it may be exposed, which may result in the bank's failure. Financial Soundness Indicators Report in the Arab Countries, 2017: 1).

Financial strength indicators are considered as a set of preventive or evaluative measures and measures applied, which make the indicators of banks in a precautionary position capable of predicting and correcting crises in a way that enables them to face those crises. (Buhraira and Mustafa, 2017: 108), as defined by (Mishkin, 2000: 523) It is the evaluation process for the various banking activities and various activities that are carried out through monitoring risks to determine the strength and durability of the bank's financial position to avoid the occurrence of crises.

In order for the banking system to be strong, it must be able to mobilize savings and direct them towards various activities.

Second: - The importance of analyzing the financial strength of banks

The financial position of the bank depends largely on its financial strength, which is determined by the size of the financial and human resources owned by the bank, which are used in an optimal manner in order to achieve the bank's goals of survival and permanence. And Abu Nasser, 2021: 121) Balti**-:**

1. It allows the banking sector to be evaluated with quantitative and objective measures using financial strength indicators**.**

2.The weakness of financial strength indicates the crises and shocks facing banks

3.The bank's financial strength indicators can be relied upon in detecting the risks of contagion of financial crises and working to reduce their occurrence

4. It is considered an important indicator for analyzing and evaluating the fragility of the banking system and following up on its strength and resilience**.**

5.It enables us to identify the level of profitability and compare it with other banks operating in the same sector**.**

6. It is possible to determine the efficiency of the bank in investing its assets to achieve profits

7.Determining the credit policies to be followed by the bank

Third: - Indicators of financial strength

The financial strength of banks is measured based on several indicators, including Z-score, liquidity, profitability and other indicators. Accordingly, one indicator in this research will be adopted: profitability. My agencies**:**

1. The concept of profitability: Profitability is defined as the relationship between the profits achieved by banks and the investments that contributed to achieving these profits (Lumby & Jones, 2011: 174). For banks (Zahir and Muhammad, 2017: 10), profitability is one of the most important goals that banks seek to achieve, and in order for banks to achieve profitability, the money they obtain must be invested in assets that generate appropriate returns such as loans and investments, the more banks

seek to reduce expenses Increasing revenues, this leads to increased profitability, and it must exert all its energy and harness all its capabilities and available means in order to reach the desired goals that embody its goal and in order to ensure its continuity.
2. Profitability indicators: Profitability is one of the important financial indicators used in evaluating banking performance, as it reflects the bank's overall performance. We will adopt the return on assets index to measure profitability.

The rate of return on assets: This indicator reflects the relationship between profits and the amount of funds available to management, as it measures the management's ability to achieve profits as a result of using its assets in its basic activities, i.e., the efficiency of the management in optimally using the bank's assets to gain profits by investing in these various assets. The higher this rate, the more it indicates the management's efficiency in using the bank's assets and controlling costs. It refers to the ratio of operations profit to the bank's assets (Belhaj, 2017: 8), and it can be measured by the following relationship (Reilly & Brown.2012: 277**)**
The rate of return on assets =(net profit)/(total assets) *100

3- The importance of profitability for commercial banks: Profitability is of great importance to sectors in general and to commercial banks in particular, and lies in the following: (Al-Saadi, 2015: 361), (Al-Tai and Abdel-Hadi, 2013: 191-192)
- Profitability is necessary to meet the risks that the bank may be exposed to when carrying out its operational activities, as banks are exposed to many risks such as credit and investment risks, theft and embezzlement risks and others.
-Profitability is necessary as it contributes to the formation of reserves
-It is one of the important indicators used when evaluating any bank's financial strength and continuity in achieving these levels of profits.
-It is an important tool to reveal any bank's strengths and weaknesses and determine its progress. Strong financial performance is important for the bank to continue its work, especially in competitive environments.
-Profitability is an important measure in measuring the success and strength of banks in achieving their goals.

Fourth: profitability goals:
Profitability is one of the main objectives of banks, so banks strive to achieve the highest levels of profits, and to achieve this, banks must invest money in a way that leads to an increase in returns**: (.**

1- Ensuring the continuity of the bank's work, as achieving profits is necessary for survival and continuity and facing emergency conditions and bankruptcy risks.

2- Maintaining investors and attracting new investors. High profitability gives investors confidence that they are investing in a successful company that can manage its money.

3- Achieving strategic objectives such as expansion and growth or providing new and innovative financial services in a way that meets the needs and desires of current and new investors.

4- Profits are one of the means of self-financing, as they can be reinvested directly, which is called retained earnings.

Financial Soundness
First: The concept: The challenges and financial turmoil in the second half of the nineties aroused a lot of focus and attention on ways to support the global banking system. Therefore, the International Monetary Fund asked its members to assess the soundness of the banking system in their countries as it is part of the supervisory work of the Banking Support Fund, which includes planning And preparing the means for evaluating the soundness of the financial system, as financial Soundness and the stability of the financial system has become a primary goal, which called for highlighting the importance of regulatory and legislative systems on banking operations, as they are the basis on which the financial soundness of banks is based, especially after the global financial crisis that banks were exposed to in the year 2007 (Al-Obaid, 2018: 89-90), where the soundness of the banking system is a main channel in the implementation of monetary and financing policies in order to achieve sustainable economic development.

Financial Soundness is one of the best indicators that measure the ability of banks to grow in the long term and operate successfully in competitive environments (Kliestik et al, 2020: 74), and financial Soundness is defined as a set of precautionary control measures that the bank uses to determine the extent of the Soundness of the center It helps him to avoid banking crises (Yousef, 2019: 289), while (Nosheen & Rashid, 2020: 2) defines it as the bank's ability to constantly meet its financial obligations under emergency economic conditions such as natural disasters, internal shocks and political changes, using its capital and reserves.

Faris and Kazem (2021, 236 define it as the financial empowerment of the banking sectors in meeting expenditures and the ability to meet obligations, as well as the efficiency of the internal system and its ability to survive in the face of changes and to evaluate financial performance through the use of preventive (precautionary) or corrective measures, making indicators Finance is in a precautionary position for early prediction of crises and a corrective position that makes it capable of facing these crises. Al-Shammari **(**2021:22) believes that financial soundness is only a reflection of the efficiency of banks in engineering their financial system according to precautionary standards, enabling them to respond to financial and economic crises and absorb unexpected losses to reach their goal towards financial stability. Financial stability and soundness are based on several pillars, including the availability of stable economic conditions, sound regulation and control of financial institutions, the availability of sound financial markets and institutions, as well as the presence of strong infrastructure and effective financial Soundness networks.

Second - the importance of financial Soundness: for the banking system to enjoy financial soundness, it must be able to mobilize savings and direct them towards various banking activities. (Al-Shammari, 2021: 23-24):
1.They act as early warning indicators of shocks and financial crises.
2.It allows detecting the risks of contagion of financial crises and working to reduce their severity as much as possible.
3. The possibility of evaluating the banking system according to quantitative and objective criteria.
4. It allows comparing the financial conditions of banks by relying on the accounting and statistical systems, ie the banking systems of different countries.
5. It helps in evaluating the operational flexibility of banks and their likelihood of survival during and after crises
6. It helps apply the principle of transparency and disclosure of information and make it available to all investors, from the market customers and the public.
7. Improving financial control and giving an indication of the bank's financial position enables decision makers to deal with the bank's weaknesses and overcome them in a timely manner.

Third. Financial Soundness Indicators: Given the importance of the financial Soundness of banks, the International Monetary Fund has derived financial Soundness indicators at the macroeconomic level to serve as an early warning bell about the sensitivity of the financial sectors to the crises they are exposed to, as these indicators represent a diagnostic tool that provides an opportunity for banks to compare the results of their work With reference standards efficiently and effectively (Sugiyarto, 2015:6), these indicators include the following:

-Asset quality: Assets are of particular importance in evaluating the bank's financial system and an important aspect in evaluating the degree of the financial strength of the bank as it constitutes a large part of the bank's activities, which leads its operations towards achieving revenues. The credibility of the capital index depends on the reliability of the asset quality and quality index, as most of the risks of financial insolvency lie in the quality of assets and the difficulty of monetizing them (Buhurira and Mustafa, 2017: 111). The following relationship measures the quality of assets**:**
Asset quality index (Non-performing loans / Total loans * 100)

 -Capital adequacy: - The Central Bank of Iraq requires banks operating in the Iraqi banking sector to maintain a capital adequacy ratio of no less than 10% so that the bank does not reach a state of insolvency and to preserve the money of depositors and investors**.**
(Nimalathasan, 2008) believes that the capital adequacy index is an important measure in measuring the financial strength of the bank

Capital adequacy defines the amount of capital sufficient to meet the losses from credit, investment, or other business carried out by banks. In other words, absorbing the risks resulting from the employment of the business, in addition to its importance in the bank's continuation of its work, since sufficient capital provides reassurance and Soundness for depositors. On the one hand, and the supervisory authorities, on the other hand, depositors care about the financial strength of the bank and its solvency to protect their deposits given the bank's capital and reserves compared to the volume of deposits (Al-Maliki and Saeed, 2013: 224)**.**

 -**Liquidity**: Liquidity expresses the bank's ability to meet its financial obligations, such as depositors' withdrawals, on the one hand, and meet the needs of borrowers on the other, promptly without having to sell securities at large losses or borrow at a high interest rate (Al-Khouli and Al-Jundi, 2021: 165). Liquidity also reflects the bank's ability to quickly transfer its cash assets to meet the crises it may face without incurring any losses. The importance of this indicator is clear in the effective role in following up the liquidity of banks and other financial institutions, specifically in cases of financial hardship that may occur. It indicates a weakness in liquidity management, which can be measured by the following relationship (Bagheh, 2021: 442) Liquidity Index (Deposits / Total Loans * 100).

4. Finding

To present the results of estimating the impact of profitability on achieving financial soundness represented in the financial statements. the following paragraphs must be addressed

First: descriptive statistics of the study variables.

We note through Table (1) the descriptive statistics of the dependent variables and the independent variable used in this study, which were taken from 5 banks during the period 2016-2020, so the number of observations is 25 for each of the mentioned variables.

	X	Y1	Y2	Y4
Mean	1.150006	189.7038	86.45062	458.4937
Median	1.012939	106.6500	28.52296	139.3894
Maximum	5.747078	728.8000	500.0605	3153.508
Minimum	-3.290392	30.91000	0.010362	9.771135
Std. Dev.	1.957567	208.4296	132.4518	703.9885
Observations	25	25	25	25

Source: Table prepared by researchers using (10Eviews)

Secondly, the study variables were quiescent to be tested.

We can infer through the unit root tests (Levin, Lin and Chu-LLC) and (I'm, Pesaram and Shin (IPS) test whether the listed variables are not stable and suffer from a unit root. Then here, we accept the null hypothesis and reject the alternative hypothesis. Still, if the variables do not suffer from the root of unity and enjoy the status of stability, and here we will accept the alternative hypothesis and reject the null hypothesis. The results of the tests in table 2 revealed that some of the variables settled at the level and some settled at the first difference (1) and as follows:

Table (2): Panel unit root test

Panel unit toot test					
Variables		Levin, Lin & Chu t		I'm , Pesaram and Shin (IPS(	
		Individual Intercept		Individual Intercept	
		t-Statistic	Prob.	t-Statistic	Prob.
X	Level	-1.99256	0.0232	-0.43958	0.3301
	1st Difference	-2.59837	0.0047	-1.94006	0.0262
Y1	Level	-1.40672	0.0798	1.14928	0.8748
	1st Difference	-3.16840	0.0000	-4.32410	0.0000
Y2	Level	-5.86824	0.0000	-2.72661	0.0032
	1st Difference	-2.10907	0.0000	-3.99681	0.0000
Y3	Level	2.43026	0.9587	1.99745	0.7651
	1st Difference	-2.74695	0.0000	-2.44508	0.0072

Source: Table prepared by researchers using (10Eviews)

Third: The correlation matrix between the study variables.

Table (3) Correlation matrix between model variables

Covariance Analysis: Ordinary /Correlation			
Probability	Y1	Y2	Y3
X	0.169841	0.408574	0.332798
	0.0417	0.0426	0 0431

Source: Table prepared by researchers using (10Eviews)

We note from the above table that there is a positive correlation between the profitability index as an independent variable and the financial Soundness indicators as approved variables and at a level of significance less than (0.05) for all variables, meaning that the correlation is strong between the variables.

Fourth: Estimating the impact of profitability on financial Soundness indicators.

1. Estimation of the impact of profitability on capital adequacy.

We estimated the impact of profitability on the capital adequacy index according to the cumulative regression model and compared it with the fixed model results and adopted the Chow test to ensure the preference of the two tests.

Table (4) Chow test results

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	18.434303	(4,19)	0.0000
Cross-section Chi-square	39.633271	4	0.0000

Source: Table prepared by researchers using (10Eviews)

In order to compare the fixed effect model and the random effect model and choose the best of them by adopting the Hausman Test, the results showed that the value of Prob is less than (0.05), which reflected the acceptance of the null hypothesis, meaning that the fixed effect model is the best and most appropriate in the analysis of double data.

Table (5) Results of the Hausman Test

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.942543	1	0.0148

Source: Table prepared by researchers using (10Eviews)

Table (6): Regression results using a fixed effects model for a sample of commercial banks for the period 2016-2020

Dependent Variable: Y1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X	-46.94594	15.08289	-3.112529	0.0057
C	243.6919	27.15888	8.972827	0.0000
		Effects Specification		
		Cross-section fixed (dummy variables)		
R-squared	0.801030	Mean dependent var		189.7038
Adjusted R-squared	0.748669	S.D. dependent var		208.4296
S.E. of regression	104.4918	Akaike info criterion		12.34166
Sum squared resid	207452.0	Schwarz criterion		12.63419
Log likelihood	-148.2707	Hannan-Quinn criter.		12.42279
F-statistic	15.29835	Durbin-Watson stat		1.365382
Prob(F-statistic)	0.000004			

Source: Table prepared by researchers using (10Eviews)

By presenting the regression results using the constant model, we notice an inverse relationship between the profitability index (X) and the capital adequacy index (Y1). The results of the (Adjusted R-squared) news showed that profitability as an independent indicator explained (74%) of the changes in the dependent variable adequacy The capital and that (26%) is due to external factors. As for the F-statistic test at a probabilistic level of Prob (0.000004) less than (5%), it indicates the overall significance of the model from a statistical point of view, and the D.W statistics indicate that it reached its peak (1.365382), and this explains that the model is devoid of the autocorrelation problem.

1. Estimating the impact of profitability on the asset quality index.

We estimated the impact of profitability on the quality index of assets according to the cumulative regression model. We compared it with the fixed model results by adopting the Chow test to ensure the preference of the two tests.

Table (7) Chow test results

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	12.002043	(4,19)	0.0000
Cross-section Chi-square	31.509390	4	0.0000

Source: Table prepared by researchers using (10Eviews)

To compare the fixed effect model and the random effect model and choose the best of them by adopting the Hausman Test, the results showed that the value of Prob is greater than (0.05), which reflected the acceptance of the alternative hypothesis, meaning that the random effect model is the best and most appropriate in the analysis of double data.

Table (8) Hausman Test results

	Correlated Random Effects - Hausman Test		
	Equation: Untitled		
	Test cross-section random effects		
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.155888	1	0.2823

Source: Table prepared by researchers using (10Eviews)

Table (9): Regression results using a random effects model for a sample of commercial banks for the period 2016-2020

Dependent Variable: Y2				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X	9.457955	10.09806	0.936611	0.3587
C	75.57391	53.78187	1.405193	0.1733
	Effects Specification			
			S.D.	Rho
		Cross-section random	112.8771	0.7088
		Idiosyncratic random	72.35016	0.2912
	Weighted Statistics			
R-squared	0.036501		Mean dependent var	23.82152

Adjusted R-squared	0.055390		S.D. dependent var	72.40008
S.E. of regression	72.59493		Sum squared resid	121210.6
F-statistic	0.871335		Durbin-Watson stat	1.307744
Prob(F-statistic)	0.000283			
	Unweighted Statistics			
R-squared	0.094684		Mean dependent var	86.45062
Sum squared resid	381177.0		Durbin-Watson stat	0.415850

Source: Table prepared by researchers using (10Eviews)

By presenting the regression results using the stochastic model, we notice a direct relationship between the profitability index (X) and the asset quality index (Y2). The results of the (Adjusted R-squared) news showed that profitability as an independent indicator explained (5%) of the changes that occurred in the dependent variable, the quality of assets. And that (95%) is due to external factors. As for the F-statistic test at a probabilistic level of Prob (0.000283) less than (5%), it indicates the overall significance of the model from a statistical point of view, and the D.W statistics indicate that it reached its peak (1.307744), and this explains that the model is devoid of the autocorrelation problem.

1. Estimating the impact of profitability on the liquidity index.

We estimated the impact of profitability on the liquidity index according to the cumulative regression model. We compared it with the fixed model results and by adopting the Chow test to ensure the preference of the two tests.

Table (10) Chow test results

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.396110	(4,19)	0.0064
Cross-section Chi-square	10.210589	4	0.0070

Source: Table prepared by researchers using (10Eviews)

To compare the fixed effect model and the random effect model and choose the best of them by adopting the Hausman Test, the results showed that the value of Prob is more significant than (0.05), which reflected the acceptance of the alternative hypothesis, meaning that the random effect model is the best and most appropriate in the analysis of double data.

Table (11) Results of the Hausman Test

	Correlated Random Effects - Hausman Test		
	Equation: Untitled		
	Test cross-section random effects		
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.942543	1	0.0748

Source: Table prepared by researchers using (10Eviews)

Table (12): Regression results using a random effects model for a sample of commercial banks for the period 2016-2020

	Dependent Variable: Y3			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X	109.5843	65.34639	1.676976	0.1071
C	332.4710	149.9446	2.217293	0.0368
	Effects Specification			
			S.D.	Rho
	Cross-section random		100.8694	0.0268
	Idiosyncratic random		608.2992	0.9732
	Weighted Statistics			
R-squared	0.091991	Mean dependent var		429.8932
Adjusted R-squared	0.052512	S.D. dependent var		686.5416
S.E. of regression	668.2727	Sum squared resid		10271534
F-statistic	2.330134	Durbin-Watson stat		1.672784
Prob(F-statistic)	0.000526			
	Unweighted Statistics			
R-squared	0.109966	Mean dependent var	458.4937	
Sum squared resid	10586418	Durbin-Watson stat	1.623028	

Source: Table prepared by researchers using (10Eviews)

By presenting the regression results using the static model, we notice an inverse relationship between the profitability index (X) and the liquidity index (Y3). The results of the (Adjusted R-squared) news showed that profitability as an independent indicator explained (5%) of the changes in the liquidity-dependent variable and that (95%) is due to external factors. As for the F-statistic test at a probabilistic level of Prob (0.000526) less than (5%), it indicates the overall significance of the model from a statistical

point of view, and the D.W statistics indicate that it reached its peak (1.672784). This explains that the model is devoid of the autocorrelation problem.

5. Conclusions

The research focuses on measuring the profitability and financial soundness and evaluating their relationship and impact. The study aimed to measure and analyze financial strength using the profitability indicator and its impact on achieving financial Soundness. The following conclusions have been drawn:

1.The research results showed a positive correlation between the profitability index as an independent variable and the financial Soundness indicators as approved variables, and at a level of significance less than (0.05) for all variables, meaning that the correlation is strong between the variables.

2. The research results showed an inverse relationship between the profitability index (X) and the capital adequacy index (Y1).

3. By presenting the regression results using the stochastic model, we notice a direct relationship between the profitability index (X) and the asset quality index (Y2).

4. By presenting the regression results using the static model, we notice an inverse relationship between the profitability index (X) and the liquidity index (Y3).

Conflicts of Interest: The authors declare no conflict of interest.

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