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# Measuring the Impact of Financial Liberalization Indicators on the Performance of the Banking Sector in Iraq for the period (2005 – 2022)

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**ABSTRACT**
The research aims to demonstrate the measurement of the impact of financial liberalization on some banking performance indicators in Iraq through a quantitative and analytical reading of all variables and determining the type and extent of the relationship. The research relied on annual and quarterly data for the period from 2005 to 2022. Using advanced standard methods and approaches from unit root tests and multinomial joint integration of the ARDL model, in addition to identifying the characteristics of the time series of these variables, the stationarity tests, the joint integration test, the vector error correction model (VECM), as well as the Granger Causality test and variance decomposition analysis were applied. The results of the vector error correction model for the relationship between financial liberalization and banking performance indicators showed a long-term relationship with a direct effect of the interest margin (IM) on bank deposits / M2 and on return / assets and return / equity and inverse with the rest of the relationships described in the model. The results of the joint integration boundary test showed the existence of a long-term relationship between financial liberalization indicators and some banking performance indicators. The results also indicated that the relationship between the variables is a real relationship.
**Keywords**: *Liberalization, ARDL Model, Profitability.*

## Introduction

The role of financial liberalization is summarized in assigning more authority to central banks in implementing monetary policy, privatizing and restructuring the financial system, liberalizing interest rates, abolishing credit control, removing barriers to capital flows, removing obstacles to competition between financial institutions, and introducing stock markets. The most important goal of financial reforms was to facilitate the improvement of banking performance in emerging countries and obtain higher economic growth. By reducing the cost of capital and allowing risk sharing between local and foreign banks and increasing the level of investment. Since the banking sector has an important contribution to supporting economic growth, financial liberalization largely refers to building a more efficient, stronger and deeper financial system in the Iraqi banking sector.

**Second: Research Problem.**

The research problem that we want to address revolves around measuring the impact of financial liberalization indicators on the performance of the banking sector in light of the economic and financial developments in Iraq after 2003.

**Third: Research Hypothesis.**

The research is based on the hypothesis that financial liberalization has an impact on banking performance in Iraq and has a direct and inverse impact on banking performance in Iraq for the period (2005 – 2022).

**Fourth: Research Objective.**

The research aims to:

1- Demonstrate the importance and impact of financial liberalization indicators on the performance of the banking sector in Iraq.

2- Measure and analyze the impact of financial liberalization on the performance of the banking sector in Iraq and how to enhance the efficiency of banks, improve credit allocation, stimulate savings, and thus achieve higher economic growth.

**Theoretical aspect**

**First: The concept of financial liberalization**

Financial liberalization in giving complete independence to financial institutions and banks by abolishing all restrictions and controls and adopting market mechanisms in determining interest rates on deposits and loans, while abandoning the credit framing policy and reducing the mandatory reserve, and improving the performance of control over the allocation of credit to specific sectors (the government sector) or providing loans to some sectors at differential interest rates, which leads to the inefficient allocation of financial resources and negatively impacts the growth of investment and savings, and opening the banking sector to the local and foreign private sector. This represents internal liberalization procedures, establishing a strong supervisory system, and privatizing public sector banks. It can be said that the most prominent components of the "recipe" for financial liberalization are the creation of financial and banking institutions with financial solvency and competitive ability that qualifies them to survive without any form of support and protection. (1)

(Stulz) and (Mishkin) confirm that financial liberalization enhances transparency and accountability, reduces negative selection and moral hazards while alleviating liquidity problems in financial markets. These authors believe that international capital markets help discipline policy makers, who may be tempted to exploit the limited domestic capital market. (2)

Krueger defined it as any measure that reduces or completely removes controls and restrictions that limit activity in the banking sector. (3)

**Second: Financial Liberalization Indicators**

There are several indicators that measure the degree of financial liberalization in its various aspects. These indicators measure the degree of intensity of restrictions imposed on the financial sectors. These indicators include the following: (4)

1- liberalization of interest rates (degree of spread.

2- liberalization of credit controls.

3- liberalization of mandatory reserve requirements.

4- freedom of entry of banks.

**Third: The concept of banking performance.**

The performance of the banking sector is a measure or indicator of whether it can be said that the bank is able to work well or not. According to (Rose), the performance of banks has two indicators, which are quality and quantity, while the dimensions of bank performance are the dimensions of profitability and risk. He explains that the measures used as an alternative to profitability are RoA (return on assets) and RoE (return on equity), while in the risk dimension, the measures used as an alternative are LDR (loan-to-deposit ratio) and CAR capital (adequacy ratio) adequacy ratio). (5)

Kotler defined banking performance as comparing the bank's performance with the performance of its competitors to identify strengths to enhance and activate them and weaknesses to reduce and address them and find ways to succeed. (6)

**Fourth: Banking performance indicators**

The main banking performance indicators are the numbers that banks use to measure performance in achieving their strategic goals and objectives. Clearly defining the main banking performance indicators allows financial institutions to evaluate performance, enhance profits, remain compliant with laws and regulations, increase customer satisfaction, and manage risks. The heart of the financial industry, the banking sector, stands as a fundamental axis in the economy. Banking decisions can affect everything from the lives of individuals to the entire economy, and these decisions are always shaped by the financial metrics they follow. Therefore, a comprehensive understanding of the main financial metrics in banking is critical to effective leadership. Among the metrics or key performance indicators (KPIs) that banks and credit unions can track. To evaluate banking

profits and operations more accurately and effectively, this is done through the following financial metrics and key performance indicators. (7)

**1- Net Interest Margin.**

Net interest margin, , is a measure of profitability that determines how well a bank manages its lending and investment operations against its borrowing costs and is calculated as the difference between the interest income earned and the interest paid by the bank, divided by the total earning assets. A higher net interest margin indicates better profitability, indicating the bank's ability to lend at higher interest rates while borrowing at lower interest rates. Conversely, a lower net interest margin may indicate pressure on the bank's profitability. This crucial indicator helps measure the efficiency of financial institutions and make strategic decisions regarding lending and borrowing.

**2- Return on Assets (ROA).**

Return on Assets (ROA) measures a bank's ability to generate profit from its assets and is calculated by dividing net income by total assets. Return on Assets is an important metric that confirms the effectiveness of asset management and profitability. A higher ROA indicates superior management performance because it indicates a more efficient use of assets to generate profits. It can serve as a critical differentiator in the competitive banking landscape, helping you compare your institution with its industry peers.

**3- Return on Equity (ROE)**

Return on equity (ROE) is another key measure of profitability, focusing on the returns generated from shareholders' equity. It is calculated by dividing net income by shareholders' equity. A higher ROE is usually attractive to investors because it shows the bank's effectiveness in generating earnings from invested equity. Conversely, a lower ROE may indicate problems with financial performance or capital appreciation. ROE can serve as an essential guide when developing equity management and capital allocation strategies.

**The applied aspect**

**First requirement: Model description and formulation**

**First: Model description**

Table (1)

Description of the variables used in the standard model, their symbols and their type

| Variable type | Variable symbol | Variables | |
|---|---|---|---|
| independent | PC/GDP | Private Credit/GDP Ratio | 1 |
| independent | IM | interest margin | 2 |
| independent | MR/DS | Required reserve ratio/deposits subject to reserve | 3 |
| Dependent | D/M2 | Deposits/m2 | 4 |
| Dependent | ROA | Return/Assets | 5 |
| Dependent | ROE | Return/Equity | 6 |

Source: Prepared by the researcher

**The second requirement: Tests of stationarity of time series.**

The analysis begins first with unit root tests, as unit root tests are conducted to understand whether the variables meet the stationarity condition, as the expanded Dickey-Fuller test (ADF, 1981) is one of the tests frequently used in standard studies, and the Phillips-Perron test as a complementary test to ADF)) to increase the reliability of unit root tests, the (ADF) and (P.P) tests were used, according to the hypotheses, the null (H0) is "that the variable has a unit root". And the alternative hypothesis (H1) is that "the variables are stationary". The results obtained as a result of the tests conducted are summarized in the tables below.

1- phillips-Perron test.

The Phillips-Perron test is one of the important tests used to determine the stationarity of time series. It is the most accurate test with small samples. Table (2) shows that the original time series for all variables were not stationary at the level, so the first difference of the original series was taken, and thus all independent variables and dependent variables became stationary at all levels of significance. Accordingly, the variables are integrated to the first degree (I~(1). Due to the mismatch in the results of the two tests, the results of the (PP) test will be relied upon, and the variables are integrated to the same degree, which is I~(1).

Table (2)
Phillips-Perron test

| | With Constan | | | With Constant & Trend | | | Without Constant & Trend | | |
|---|---|---|---|---|---|---|---|---|---|
| | **t-Statistic** | **Prob.** | | **t-Statistic** | **Prob.** | | **t-Statistic** | **Prob.** | |
| **D/M2** | **1.232266-** | **0.6544** | **no** | **3.064118-** | **0.1249** | **no** | **0.561218-** | **0.4697** | **No** |
| **IM** | **1.582676-** | **0.4859** | **no** | **2.956783-** | **0.1520** | **no** | **0.281263-** | **0.5810** | **No** |
| **PC/GDP** | **1.407572-** | **0.5737** | **no** | **2.154043-** | **0.5068** | **no** | **1.020136** | **0.9177** | **No** |
| **MR/DS** | **1.510621-** | **0.5223** | **no** | **1.963517-** | **0.6103** | **no** | **1.193621-** | **0.2107** | **No** |
| **ROA** | **1.970538-** | **0.2990** | **no** | **1.998976-** | **0.5913** | **no** | **0.768409-** | **0.3797** | **No** |
| **ROE** | **1.915822-** | **0.3233** | **no** | **1.924125-** | **0.6311** | **no** | **0.983599-** | **0.2884** | **No** |
| | | | | | | | | | |
| **d (D/M2)** | **2.604628-** | **0.0983** | * | **2.539278-** | **0.3089** | **no** | **2.610478-** | **0.0099** | *** |
| **d (IM)** | **3.178727-** | **0.0257** | ** | **3.052732-** | **0.1262** | **no** | **3.196382-** | **0.0018** | *** |
| **d (PC/GDP)** | **3.681291-** | **0.0065** | *** | **3.721863-** | **0.0276** | ** | **3.483792-** | **0.0007** | *** |
| **d (MR/DS)** | **2.838180-** | **0.0584** | **no** | **2.823539-** | **0.1943** | **no** | **2.837167-** | **0.0052** | *** |
| **d (ROA)** | **3.699724-** | **0.0062** | *** | **3.669162-** | **0.0315** | ** | **3.725653-** | **0.0003** | *** |
| **d (ROE)** | **3.637471-** | **0.0074** | *** | **3.612303-** | **0.0362** | ** | **3.672310-** | **0.0004** | *** |

**Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant**

Source: Researcher's own work based on statistical program outputs (Eviews: 12)

**The third requirement: Results of the estimation of the autoregressive distributed lag (ARDL) model.**

**First: Analysis of the relationship between financial liberalization indicators and bank deposits / M2 using the autoregressive distributed lag model ARDL**

Given the short period of (18) years, the researcher used quarterly data of (72) observations for the period (2005-2022), by converting them using the statistical program (Eviews: 12) in order to measure the impact of financial liberalization on the deposits index / M2, which is one of the performance indicators of the Iraqi banking sector.

First: The basic estimation of the model of the impact of financial liberalization indicators on bank deposits / M2. By estimating the equation (bank deposits / M2), it is clear from Table (18) the results of the basic estimation of the (ARDL) model and based on the (AIC) criterion that its lowest value was (2, 1, 0, 2), as is clear from .

Table (3)
Basic estimation of the (ARDL) model

Dependent Variable: DM2
Method: ARDL
Date: 07/15/24 Time: 15:56
Sample (adjusted): 2006Q2 2021Q4
Included observations: 54 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): IM PCGDP MR
Fixed regressors: C
Number of models evaluated: 500
Selected Model: ARDL(2, 1, 0, 2)
Note: final equation sample is larger than selection sample

| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
|---|---|---|---|---|
| DM2(-1) | 1.462313 | 0.114765 | 12.74182 | 0.0000 |
| DM2(-2) | -0.565078 | 0.109280 | -5.170914 | 0.0000 |

| | | | | |
|---|---|---|---|---|
| IM | -1.600500 | 0.966829 | -1.655412 | 0.1048 |
| IM(-1) | 2.295432 | 1.057163 | 2.171313 | 0.0352 |
| PCGDP | -0.215060 | 0.076803 | -2.800157 | 0.0075 |
| MR | 0.327987 | 0.054479 | 6.020449 | 0.0000 |
| MR(-1) | -0.489912 | 0.103215 | -4.746494 | 0.0000 |
| MR(-2) | 0.169819 | 0.063901 | 2.657515 | 0.0109 |
| C | 4.405288 | 2.887040 | 1.525884 | 0.1340 |

| | | | |
|---|---|---|---|
| R-squared | 0.994406 | Mean dependent var | 81.38889 |
| Adjusted R-squared | 0.993412 | S.D. dependent var | 8.420570 |
| S.E. of regression | 0.683488 | Akaike info criterion | 2.227795 |
| Sum squared resid | 21.02198 | Schwarz criterion | 2.559292 |
| Log likelihood | -51.15047 | Hannan-Quinn criter. | 2.355641 |
| F-statistic | 999.9344 | Durbin-Watson stat | 1.882521 |
| Prob(F-statistic) | 0.000000 | | |

Source: Researcher's own work based on statistical program outputs (Eviews: 12)

Table (3) shows the results of the basic estimation of the (ARDL) model for the relationship between financial liberalization indicators and the deposits index / M2, that the estimated model has a high explanatory power, as the value of the coefficient of determination (R2) reached (0.994406), which gives explanatory power to the model, and the corrected coefficient of determination reached (0.993412), and the calculated (F) value of (999.9344) indicates that the model is significant, i.e. there is a relationship between the independent variables and the dependent variable, as we accept the alternative hypothesis which states the existence of a long-term equilibrium relationship between the independent variables and the dependent variable in the standard model and reject the null hypothesis, and according to the Akaike criterion, the time lag period or what is called the time lag period is determined, so the lag period was (2,1,0,2) and thus the criterion chose it from among the best 20 attempts to describe the model as it gives the lowest value for this criterion, and it was automatically determined in the (12 - Eviews) program

Second: Bounds Test

Through the results of the unit root tests, it became clear that the variables are stationary after the first difference, and the ARDL distributed lag autoregressive model was used to demonstrate the existence of a long-term equilibrium relationship between the model variables, and that the economic meaning of the model is to verify the existence or absence of a joint integration relationship and a long-term equilibrium relationship between the model variables, and this is confirmed by the joint integration bounds test.

Table (4)

Bounds test for the joint integration of the bank deposits/M2 equation

| F-Bounds Test | | Null Hypothesis: No levels relationship | | |
|---|---|---|---|---|
| Test Statistic | Value | Signif. | I(0) | I(1) |
| | | Asymptotic: n=1000 | | |
| F-statistic | 3.837109 | 10% | 2.37 | 3.2 |
| K | 3 | 5% | 2.79 | 3.67 |
| | | 2.5% | 3.15 | 4.08 |
| | | 1% | 3.65 | 4.66 |
| Actual Sample Size 54 | | Finite Sample: n=55 | | |
| | | 10% | 2.508 | 3.356 |

| | | | |
|---|---|---|---|
| | 5% | 2.982 | 3.942 |
| | 1% | 4.118 | 5.2 |
| | Finite Sample: n=50 | | |
| | 10% | 2.538 | 3.398 |
| | 5% | 3.048 | 4.002 |
| | 1% | 4.188 | 5.328 |

Source: Researcher's own work based on statistical program outputs (Eviews: 12)

Table (4) shows that the calculated (F) statistic value was (3.837109) which is greater than the critical values at its upper and lower limits, and therefore the null hypothesis is rejected and the alternative hypothesis is accepted, which states that the variables are integrated together, and that there is a long-term equilibrium relationship at a significance level of (1%, 5%, 10%). Through the results of the boundary test, the researcher is allowed to use the (ARDL) model. Fifth: The long-term relationship of financial liberalization indicators and the bank deposits index / M2. The long-term results shown in Table (23) show that there is a direct effect of the interest margin (IM) on bank deposits / broad money supply, as increasing the interest margin by (1%) leads to an increase in the ratio of deposits to money supply by (6.76%), and this is consistent with the logic of economic theory, as when the interest margin is high, it may encourage individuals and companies to increase their deposits in banks to obtain higher returns. Banks, in turn, benefit from these deposits to finance loans and other investment activities. While the long-term results of the ratio of private credit to GDP showed an inverse effect on deposits/M2, as increasing the ratio of private credit/GDP by (1%) leads to a decrease in the ratio of deposits to money supply by (2.09%), which is contrary to the logic of the theory, as a result of the weakness of the central bank's policies in supporting savings incentive policies that can increase the ratio of deposits, in addition to the weakness of borrowing incentive policies that can increase the ratio of private credit to GDP, in addition to the weakness of confidence in the banking system: confidence in banks affects the ratio of deposits, as the confidence of individuals and companies in the stability and security of the banking system increases the likelihood of depositing money in banks. While the relationship between the ratio of legal reserves to deposits/M2 according to the results was a direct relationship, meaning that increasing it by (1%) leads to an increase in deposits/M2 by (%0.07).

Table (5)

Long-term relationship estimators for financial liberalization indicators and the deposits/M2 indicator

| Levels Equation<br>Case 2: Restricted Constant and No Trend | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| IM | 6.762370 | 3.630521 | 1.862645 | 0.0690 |
| PCGDP | -2.092743 | 0.770605 | -2.715713 | 0.0093 |
| MR | 0.076815 | 0.107679 | 0.713373 | 0.4793 |
| C | 42.86776 | 26.53098 | 1.615763 | 0.1131 |
| EC = DM2 - (6.7624*IM -2.0927*PCGDP + 0.0768*MR + 42.8678) | | | | |

Source: Researcher's own work based on statistical program outputs (Eviews: 12)

The second requirement: Analyzing the relationship between financial liberalization indicators and return on assets using the autoregressive distributed lag model ARDL

First: Estimating the impact of financial liberalization indicators on return on assets

By estimating the equation (return on assets), it is clear from Table (6) the results of the basic estimation of the (ARDL) model and based on the (AIC) criterion that its lowest value was (2, 0, 2, 0).

**Table (6)**

Basic estimation of the relationship between financial liberalization and the return/assets indicator

Dependent Variable: ROA
Method: ARDL
Date: 07/15/24 Time: 16:40
Sample (adjusted): 2006Q2 2022Q4
Included observations: 67 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): IM PCGDP MR
Fixed regressors: C
Number of models evalulated: 500
Selected Model: ARDL(2, 0, 2, 0)
Note: final equation sample is larger than selection sample

| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
|---|---|---|---|---|
| ROA(-1) | 1.562022 | 0.085282 | 18.31593 | 0.0000 |
| ROA(-2) | -0.702218 | 0.078848 | -8.906029 | 0.0000 |
| IM | 0.069038 | 0.053257 | 1.296317 | 0.1999 |
| PCGDP | -0.219804 | 0.055630 | -3.951197 | 0.0002 |
| PCGDP(-1) | 0.325295 | 0.102278 | 3.180503 | 0.0023 |
| PCGDP(-2) | -0.121415 | 0.059644 | -2.035655 | 0.0463 |
| MR | -0.006465 | 0.001975 | -3.273991 | 0.0018 |
| C | -0.002573 | 0.380092 | -0.006770 | 0.9946 |

| | | | |
|---|---|---|---|
| R-squared | 0.973118 | Mean dependent var | 1.430709 |
| Adjusted R-squared | 0.969928 | S.D. dependent var | 0.613695 |
| S.E. of regression | 0.106422 | Akaike info criterion | -1.531153 |
| Sum squared resid | 0.668216 | Schwarz criterion | -1.267906 |
| Log likelihood | 59.29362 | Hannan-Quinn criter. | -1.426985 |
| F-statistic | 305.1068 | Durbin-Watson stat | 2.077670 |
| Prob(F-statistic) | 0.000000 | | |

Source: Researcher's own work based on statistical program outputs (Eviews: 12)

The stability results showed that the variables are integrated of degree (1)I according to the unit root tests, and there is no integration of degree I(2), which allows for conducting the joint integration test according to the (ARDL) methodology, as the optimal lag periods for the variables were chosen based on the AIC criterion. The results of the statistical tests for the basic estimation of the model in Table (24) indicate the relative quality of the estimated model through the coefficient of determination R2, which reached (0.97). It was found that the model explains 97% of the changes in the return on assets, which is a very strong percentage. The results also indicated that the relationship between the variables is a real relationship, as the value of the test (F-statistic = 305.1068), which means that the model is statistically significant. We note that the value of (DurbinWatson stat), which is equal to (2.077670), indicates the absence of the problem of serial autocorrelation of the residual. The results of the statistical tests of the regression equation indicate, according to this Akaike criterion, the time lag period or what is called the time lag period is determined, the lag period was (2,0,2,0) and therefore the criterion chose it from among the best 20 attempts to describe the model as giving the lowest value for this criterion, and it was automatically determined in the (12 - Eviews) program,

**Second: Bounds Test**

Through the results of the unit root tests, it became clear that the variables are stationary after the first difference.

The ARDL distributed lag autoregressive model was used to show the existence of a long-term equilibrium relationship between the model variables, and the economic meaning of the model is to verify the existence or absence of a joint integration relationship and a long-term equilibrium relationship between the model variables, and this is confirmed by the joint integration bounds test.

Table (7)
Bounds Test for Joint Integration of the Return on Assets Equation

| F-Bounds Test | | Null Hypothesis: No levels relationship | | |
|---|---|---|---|---|
| Test Statistic | Value | Signif. | I(0) | I(1) |
| | | Asymptn=1000 | | |
| F-statistic | 4.294094 | 10% | 2.37 | 3.2 |
| K | 3 | 5% | 2.79 | 3.67 |
| | | 2.5% | 3.15 | 4.08 |
| | | 1% | 3.65 | 4.66 |
| Actual Sample Size | 67 | Finite Sample: n=70 | | |
| | | 10% | 2.482 | 3.31 |
| | | 5% | 2.924 | 3.86 |
| | | 1% | 3.916 | 5.088 |
| | | Finite Sample: n=65 | | |
| | | 10% | 2.492 | 3.35 |
| | | 5% | 2.976 | 3.896 |
| | | 1% | 4.056 | 5.158 |

) Source: Researcher's own work based on statistical program outputs (Eviews: 12

Table (7) shows that the calculated (F) statistic value was (4.294094) which is greater than the critical values at its upper and lower limits, and therefore the null hypothesis is rejected and the alternative hypothesis is accepted, which states that the variables are integrated together, and that there is a long-term equilibrium relationship at a significance level of (1%, 5%, 10%) and through the results of the boundary test, the researcher is allowed to use the (ARDL) model. Fifth: The long-term relationship of financial liberalization indicators and the return on equity indicator It appears from the long-term results shown in Table (8) that there is a direct effect of the interest margin (IM) on the return/assets, as increasing the interest margin by (1%) leads to an increase in the return on assets by (0.49%), and this is consistent with what the economic theory has stated, as there is a direct relationship between the interest margin and the return on assets. The higher the interest margin, the more revenues banks are able to generate from the difference between interest earned and paid, which leads to increased net profits and enhanced return on assets. While the long-term results of the ratio of private credit to GDP showed a negative impact on return on assets, as an increase in the ratio of private credit/GDP by (1%) leads to a decrease in the ratio of return on assets by (0.04%), and this is a result of the complex relationship between the ratio of private credit to GDP and return on assets, which depends on a balance between increasing revenues from lending and managing the risks associated with it. An increase in the ratio of private credit can increase return on assets if risks are managed effectively and operational efficiency is improved. This inverse relationship is a result of economic instability and weak monetary and fiscal policies, as well as the weak regulatory framework in the Iraqi banking sector. While the relationship between the legal reserve ratio and the return on assets according to the results was an inverse

relationship, i.e. increasing it by (1%) leads to a decrease in the return on assets by (%0.04), and this is consistent with the logic of economic theory, i.e. when the central bank increases the legal reserve ratio, banks must keep a larger portion of their deposits as a reserve, and this reduces the amount of funds available for lending and investment, which may lead to a decrease in revenues from interest on loans, and thus this may lead to a decrease in net profits, which negatively affects the return on assets.

Table (8)

Long-term relationship capabilities for financial liberalization indicators and the return on assets indicator

| Levels Equation<br>Case 2: Restricted Constant and No Trend | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| IM | 0.492442 | 0.369805 | 1.331625 | 0.1881 |
| PCGDP | -0.113581 | 0.061650 | -1.842367 | 0.0704 |
| MR | -0.046116 | 0.010447 | -4.414177 | 0.0000 |
| C | -0.018353 | 2.711265 | -0.006769 | 0.9946 |
| EC = ROA - (0.4924*IM -0.1136*PCGDP -0.0461*MR - 0.0184) | | | | |

) Source: Researcher's own work based on statistical program outputs (Eviews: 12

The third requirement: Analysis of the relationship between financial liberalization and the return on equity index using the autoregressive distributed lag model ARDL

First: Estimating the impact of financial liberalization indicators on the return on equity

By estimating the equation (return on assets), it is clear from Table (9) the results of the basic estimation of the (ARDL) model and based on the (AIC) criterion that its lowest value was (2, 0, 2, 0), and the table below shows the results of the initial estimation of the model.

**Table (9)**

**Results of the basic estimation of the relationship between financial liberalization and the return on equity index**

| Dependent Variable: ROE<br>Method: ARDL<br>Date: 07/15/24 Time: 17:01<br>Sample (adjusted): 2006Q2 2022Q4<br>Included observations: 67 after adjustments<br>Maximum dependent lags: 4 (Automatic selection)<br>Model selection method: Akaike info criterion (AIC)<br>Dynamic regressors (4 lags, automatic): IM PCGDP MR<br>Fixed regressors: C<br>Number of models evalulated: 500<br>Selected Model: ARDL(2, 0, 2, 0)<br>Note: final equation sample is larger than selection sample | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
| ROE(-1) | 1.589301 | 0.084195 | 18.87654 | 0.0000 |
| ROE(-2) | -0.724612 | 0.078800 | -9.195554 | 0.0000 |
| IM | 0.592930 | 0.528271 | 1.122397 | 0.2662 |
| PCGDP | -1.697358 | 0.548072 | -3.096960 | 0.0030 |
| PCGDP(-1) | 2.459870 | 0.988933 | 2.487398 | 0.0157 |

| | | | | |
|---|---|---|---|---|
| PCGDP(-2) | -0.996982 | 0.563353 | -1.769730 | 0.0819 |
| MR | -0.062103 | 0.020047 | -3.097811 | 0.0030 |
| C | 0.923592 | 3.719336 | 0.248322 | 0.8047 |
| R-squared | 0.973643 | Mean dependent var | | 13.97731 |
| Adjusted R-squared | 0.970516 | S.D. dependent var | | 6.082261 |
| S.E. of regression | 1.044372 | Akaike info criterion | | 3.036360 |
| Sum squared resid | 64.35207 | Schwarz criterion | | 3.299606 |
| Log likelihood | -93.71804 | Hannan-Quinn criter. | | 3.140527 |
| F-statistic | 311.3619 | Durbin-Watson stat | | 2.090341 |
| Prob(F-statistic) | 0.000000 | | | |

Source: Researcher's own work based on statistical program outputs (Eviews: 12)

The initial results of the (ARDL) model in Table (9) showed the relationship between financial liberalization indicators and the return on equity indicator, as the estimated model shows high explanatory power, as the value of the coefficient of determination reached (R2 = 0.973643), which indicates the strength of the model's interpretation, and the corrected coefficient of determination reached (0.970516), and the calculated (F) value, which reached (311.3619), indicates that the model is statistically significant, which means that there is a relationship between the independent variables and the dependent variable. Accordingly, we accept the alternative hypothesis that assumes the existence of a long-term equilibrium relationship between the independent variables and the dependent variable in the standard model, and according to the Akaike criterion, the time lag period or what is called the time lag period is determined, so the lag period was (2,0,2,0) and therefore the criterion chose it from among the best 20 attempts to describe the model as giving the lowest value for this criterion, and it was automatically determined in the (12 - Eviews) program.

**Second: Bounds Test**

Since the time series of financial liberalization indicators and the return on equity indicator are stationary at the first difference, the autoregressive distributed lag model (ARDL) was used to show the existence of a long-term equilibrium relationship between the model variables, as the economic meaning of the autoregressive distributed lag model is to verify the existence or absence of a joint integration relationship and a long-term equilibrium relationship between the model variables.

Table (10)

Bounds Test between Financial Liberalization Indicators and Return on Equity Indicator

| F-Bounds Test | | Null Hypothesis: No levels relationship | | |
|---|---|---|---|---|
| Test Statistic | Value | Signif. | I(0) | I(1) |
| | | Asymptotic: n=1000 | | |
| F-statistic | 3.962360 | 10% | 2.37 | 3.2 |
| K | 3 | 5% | 2.79 | 3.67 |
| | | 2.5% | 3.15 | 4.08 |
| | | 1% | 3.65 | 4.66 |

| | | | | |
|---|---|---|---|---|
| Actual Sample Size | 67 | Finite Sample: n=70 | | |
| | | 10% | 2.482 | 3.31 |
| | | 5% | 2.924 | 3.86 |
| | | 1% | 3.916 | 5.088 |
| | | Finite Sample: n=65 | | |
| | | 10% | 2.492 | 3.35 |
| | | 5% | 2.976 | 3.896 |
| | | 1% | 4.056 | 5.158 |

Source: Researcher's own work based on statistical program outputs (Eviews: 12)

Table (10) shows the existence of a joint integration relationship between the return on equity and financial liberalization indicators during the research period, as the calculated value of (F) reached (3.962360) in the boundary test, which is statistically significant because it is greater than the critical value at the upper limit and the lower limit, which means rejecting the null hypothesis that states that there is no long-term equilibrium relationship between the dependent variable and the independent variables, and accepting the alternative hypothesis that states that there is joint integration and a long-term equilibrium relationship between the variables under study. Fifth: The long-term relationship of financial liberalization indicators and the return on equity indicator It appears from the long-term results shown in Table (11) that there is a direct effect of (IM) on the return on equity, as increasing the interest margin by (1%) leads to an increase in the return on equity by (4.38%), so when the interest margin is high, this means that banks achieve higher revenues from the difference between the interest obtained from loans and the interest paid on deposits. These additional revenues increase net profits, which leads to an improvement in the return on equity, and it increases due to the increase in profits resulting from the core activity of banks (lending and investment). While the long-term results of the ratio of private credit to GDP showed a negative impact on the return on equity, as increasing the ratio of private credit/GDP by (1%) leads to a decrease in the return on equity by (1.73%), while the relationship between the legal reserve ratio to the return on equity according to the results was an inverse relationship, i.e. increasing it by (1%) leads to a decrease in the return on assets by (%0.45), and this is consistent with what the economic theory came up with, as when the central bank raises the legal reserve ratio, banks must keep a larger portion of their deposits as a reserve, which reduces the funds available for lending and investment, which leads to a decrease in revenues from interest on loans and reduces net profits. As a result, the return on equity (ROE) decreases.

Table (11)

Long-run relationship potentials of financial liberalization indicators and return on equity indicator

| Levels Equation<br>Case 2: Restricted Constant and No Trend | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| IM | 4.382001 | 3.740592 | 1.171473 | 0.2461 |
| PCGDP | -1.732832 | 0.628777 | -2.755876 | 0.0078 |
| MR | -0.458967 | 0.105368 | -4.355846 | 0.0001 |
| C | 6.825732 | 27.52170 | 0.248013 | 0.8050 |
| EC = ROE - (4.3820*IM -1.7328*PCGDP -0.4590*MR + 6.8257) | | | | |

Source: Researcher's own work based on statistical program outputs (Eviews: 12)

**Conclusions**

1- The direct effect of the interest margin (IM) on bank deposits / broad money supply and on the return / assets and the return on equity, as increasing the interest margin by (1%) leads to an increase of (6.76%), (0.49%), (4.38%).

2- The relationship between the legal reserve ratio to deposits / M2 according to the results is a direct and inverse relationship with the return on assets and the return on equity.

3- The long-term results of the ratio of private credit to GDP showed an inverse effect on deposits / M2 and on the return on assets and the return on equity.

**Recommendations**

1- Obligating the banking system in Iraq to diversify its banking operations to achieve the ability to compete with global and regional banks.

2- Modernizing and developing the banking system by acquiring integrated and advanced electronic systems, in addition to automating all operations in accordance with quality standards to avoid and manage risk.

**References**


1. Bumann S, Hermes, N, Lensink R , Financial liberalisation and economic growth: a meta-analysis. Technical report. London: EPPI-Centre, Social Science,2012,pp.3-
2. Mishkin, F. "Financial Policies and the Prevention of Financial Crises in Emerging Market Countries." NBER working,2001,p.8
3. KRUEGER, A.O. , "Problems of Liberalization", in A. Harberger (ed.), World Economic Growth, ISC Press, San Fransisco.1984,p.10
4. H. Wang and J. Guo, "Market-oriented interest rate reform,noninterest income and bank performance," Financial Forum,vol. 19, no. 8,2014, p. 6
5. Rose, C. Firm performance and comply or explain disclosure in corporate governance. European Management Journal, 34(3),2016,p. 204
6. Kotler Philip,Groy Armstoron, Principles Of Marketing , 8th European Edition,Pearson UK, 2019,p.45
7. Ben Dahou Mohamed, Bakraoui Mohamed, Indicators and Models for Measuring Financial Performance in Private Banks in Algeria 2000-2018, Ahmed Draia University, Adrar, Algeria, 2021, p. 14
8. Abd Aliwie, A. N. (2024). A Pragmatic Analysis of Wish Strategies Used by Iraqi EFL Learners. *Salud, Ciencia Y Tecnología - Serie De Conferencias*, *3*, .1151. https://doi.org/10.56294/sctconf2024.1151
9. Kadhim, M. T. ., & Chilab, A. N. (2024). The effect of the formal organizer strategy on the achievement and visual thinking skills of first-year intermediate female students in social studies subject. Salud, Ciencia Y Tecnología - Serie De Conferencias, 3, 962. https://doi.org/10.56294/sctconf2024962
10. Rafal Lateef Jasim, Bushra Saadoon Mohammed AL-Noor. THE EFFECT OF LS APPROACH ON IRAQI EFL INTERMEDIATE SCHOOL PUPILS‟ ACHIEVEMENT. International Journal of Advancement in Social Science and Humanity. Vol, 2020.
11. Bushra Saadoon M Al-Noori, Fatima Rahim Abdul Hussein Al-Mosawi. Investigating Iraqi EFL College Students' Attitude towards Using Cooperative Learning Approach in Developing Reading Comprehension Skill. Journal of Language Teaching and Research 8 (6), 1073-1080, 2017.
12. Bushra Saadoon Al-Noori, Bushra Ni'ma Rashid. THE EFFECT OF USING COGNITIVE ACADEMIC LANGUAGE LEARNING APPROACH ON IRAQI EFL LEARNERS PERFORMANCE IN COMPOSITION WRITING. Larq Journal for Philosophy, Linguistics & Social Sciences.
13. Bushra Saadoon Mohammed Al-Noori. The Relationship between EFL College Students' Listening Strategies and Comprehension. Int. J. of Multidisciplinary and Current research 3, 2015.
14. Al Khanaifsawy, A. N. (2022). A PRAGMATIC STUDY OF PRESUPPOSITION IN IMAM ALI'S SOME SELECTED TRANSLATED SAYINGS IN 'NAHJUL BALAGHA', Eastern Journal of Languages, Linguistics and Literatures (EJLLL). Vol.3, No.4.

15. Al Khanaifsawy, A. N. (2017). A STYLISTIC STUDY OF EUPHEMISM IN JOHN DONNE'S SELECTED POEMS. The Islamic University College Journal, 35-38.
16. Abd Al Khanaifsawy, A. N. (2019). A SOCIO-PRAGMATIC STUDY OF OFFER STRATEGIES MANIPULATED BY IRAQI DIALECT SPEAKERS. The Islamic college university journal\.(51) ,
17. Al-Khanaifsawy, A. N. (2016). Investigating Iraqi EFL learners' use of the speech act of agreement. Adab Al-Kufa,1(27), 11-30.
18. Al-Khanaifsawy, A. N. (2019). DISCOURSE ANALYSIS OF PRESIDENT GEORGE W. BUSH'S SPEECH AT THE ISLAM CENTRE IN WASHINGTON. International Journal of Research in Social Sciences and Humanities. Vol. No. 9, Issue No. III, Jul-Sep.
19. Al-Khanaifsawy, A. N. (2021). A Pragma-Dialectical Study of David Hare's 'Stuff Happens. . Zien Journal of Social Sciences and Humanities. Vol.2, 136-186.
20. Al-Khanaifsawy, A. N. (2021). A Stylistic Study of Compliment Speech Act in Shakespeare's Julius Caesar. International Journal of Advancement in Social Science and Humanity. Vol.12.
21. Al-Khanaifsawy, A. N. (2020). A CRITICAL DISCOURSE ANALYSIS OF INTENTIONALITY STANDARD IN JOE BIDEN'S INAUGURAL SPEECH. International Journal of Development in Social Sciences and Humanities, 10.