"Internal and external determinants of Iraqi bank profitability"

| AUTHORS | Hamid Mohsin Jadah http://orcid.org/0000-0002-8170-5453
 Manar Hayder Ali Alghanimi
 Noor Sabah Hameed Al-Dahaan
 Noor Hashim Mohammed Al-Husainy http://orcid.org/0000-0001-9206-6530 |

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Hamid Mohsin Jadah (Iraq), **Manar Hayder Ali Alghanimi** (Iraq),
Noor Sabah Hameed Al-Dahaan (Iraq), **Noor Hashim Mohammed Al-Husainy** (Iraq)

INTERNAL AND EXTERNAL DETERMINANTS OF IRAQI BANK PROFITABILITY

Abstract

The determinants of bank profitability are very important, as bank profitability significantly affects the economies of countries. This study aims to examine the internal determinants (bank-specific characteristics) and external determinants (macroeconomic factors and government variables) of bank profitability in Iraq. The study uses unbalanced panel data from 18 banks in Iraq for thirteen years, from 2005 to 2017. The relationship is estimated using a fixed effects approach. The study selected 18 conventional banks considering their data availability in the period from 2005 to 2017. Based on the panel data method, the results show that bank size, the equity to total assets and total loans to total assets ratios, GDP growth, and government effectiveness have a significant and positive impact on the profitability of Iraqi banks. Meanwhile, credit risk, inflation, interest rate, unemployment, and political instability have a significant negative influence on bank profitability. To the authors' knowledge, this study is considered one of the earliest studies of its kind, in which the main factors affecting Iraqi bank profitability are determined. That said, this paper makes a significant contribution to the theoretical literature, the industry, and policymakers, so that the performance of Iraqi conventional banks can be improved.

Keywords	bank specific, macroeconomic variables, government variables, panel data model, Iraq
JEL Classification	A10, E60, G21

Hamid Mohsin Jadah, Ph.D. (Finance and Banking), Senior Lecturer, Department of Finance and Banking, College of Administration and Economics, University of Kerbala, Iraq. (Correspondent author)

Manar Hayder Ali Alghanimi, Master of Finance and Banking, Lecturer, Babylon Technical Institution, AL-Furat AL-Awsat Technical University, Iraq.

Noor Sabah Hameed Al-Dahaan, Ph.D. (Finance and Banking), Senior Lecturer, Department of Finance and Banking, College of Administration and Economics, University of Kerbala, Iraq.

Noor Hashim Mohammed Al-Husainy, Master of Banking Science, Lecturer, Department of Finance and Banking, Imam AL-Kadhum College for Islamic Studies (Babylon Departments), Iraq.

INTRODUCTION

In the context of most developed and less developed countries, traditional, or conventional, banks have become the basis of financial sectors. In developing and emerging market countries, banks stand out as dominant financial institutions. Many countries have characteristics such as low per capita income and asset levels, lax accounting standards, and a corporate sector primarily driven by small, family-owned businesses. Since developing countries lack the necessary infrastructure, it is not surprising that banks and other financial intermediaries have become superior in the financial arena, and capital markets have not developed fast enough (Sharma, Chami, & Khan, 2003).

In most MENA countries, including Iraq, money and stock markets are currently underdeveloped. Consequently, commercial banks play a significant and essential role in regional economies. Therefore, a fragile banking system, which can be exacerbated by low profitability, can damage the entire financial system of the affected country or even spill over to other countries, especially in the case of international banking operations. Banks hold a substantial amount of deposits from households, private companies, government sectors, and other institutions. Performing the function of financial intermediation, banks redirect funds from savers to borrowers, contributing to macroeconomic activity, which usually stimulates economic growth. Banks are also a channel through which monetary policy can be pursued and

its goals achieved, since banks can be used to regulate the money supply in performing their primary function of mobilizing financial resources in the economy.

Banks are key players in providing funds to fiscal deficit institutions in the economy. Companies can provide funds from elementary stock offerings and long-run and short-run debt securities issuances. Despite this, in developing countries, such as Iraq, the critical role of banks is to allocate financial resources. Thus, the banking system must be fully operational, and the banks must function correctly.

The Iraqi banking sector was chosen for several reasons. Firstly, little discussions and insights take place in the Iraqi banking sector. Secondly, Iraq has undergone significant financial reforms and deregulation over previous years. Thirdly, the private sector deemed vulnerable because of several reasons that cause bank credit restrictions with the later-effect of financial fluctuations in the region (Pontines, 2008). Henceforth, the analysis of bank performance determinants can serve as guidance for policymakers and regulators so that measures can be taken to stabilize the financial situation.

1. LITERATURE REVIEW

The bank performance literature was written more than three decades ago using the market power theory and efficiency structure theory (Athanasoglou, Brissimis, & Delis, 2008). The market power theory argues that profit will come when market forces are stronger. In contrast, the efficiency structure theory assumes that with effective management, profit will be made, and, therefore, there will be a higher concentration.

In past decades, various studies were conducted on factors impacting bank profitability in developed and developing economies. Nonetheless, no study has been done to explore the determinants of bank performance in Iraq. Factors influencing bank profitability can be divided into several aspects, namely, bank-specific variables, economic indicators, and government variables, therefore, these areas will be considered in the literature. Bank-specific characteristics related to bank performance are bank size, equity to total assets, liquidity, credit risk, and total loan to total assets. The same scholars argue that the critical external factors influencing bank profitability are economic indicators (for instance, GDP growth, interest rate, inflation rate, and the unemployment rate), not to mention government variables (e.g., regulatory quality, political instability, and government effectiveness).

Having studied the literature, it became possible to identify gaps of this study, not to mention the shortcomings of the existing empirical studies.

1.1. Bank-specific characteristics

Many studies were conducted using data from different nations. Bank size, the equity-to-total assets ratio, liquidity, credit risk, and the total loan-to-total assets ratio are the characteristics that relate to bank profitability. In previous studies, all the influence, positive or negative, of bank size on the bank's performance was recorded. Bukhari and Qudous (2012), Naceur and Omran (2011), Athanasoglou et al. (2008) report, however, that the size of banks does not have any influence on performance. In particular, De Andres and Vallelado (2008) say that huge banks offer low costs and therefore high market power. Thus, the bank size hypothesis is as follows:

H1:   Bank size has a positive and significant impact on Iraqi banks' profitability.

It is predicted that well capitalized banks will be safe enough, and, therefore, profits will be lower (Athanasoglou et al., 2008). This shows a positive association between capital ratio and bank profitability. Buser, Chen, and Kane (1981) report that, theoretically, when the high franchise value is high, banks are highly capitalized and need to be well-capitalized. The previous empirical studies establish that the equity to total assets ratio is positively and significantly associated with bank profitability. Consequently, the next hypothesis is as follows:

H2:   High proportion of equity to total assets leads to high bank performance.

The influence of credit risk on bank performance appears to be adverse in past studies (Noman, Chowdhury, Chowdhury, Kabir, & Pervin, 2015; Petria, Capraru, & Ihnatov, 2015; Jara-Bertin, Arias Moya, & Perales, 2014). Miller and Noulas (1997) pointed to an inverse association between credit risk and bank performance, that is, a higher proportion of loans to total assets tends to make a bank more susceptible to doubtful debts, and this brings down the profit margins. Nevertheless, Valverde and Fernandez (2007) prove that credit risk has a significant positive influence on bank profitability. Bukhari and Qudous (2012) explore a significant association between credit risk and the Pakistani banks' profitability. The theory proposes that usually a high percentage of credit risk is associated with lower bank performance and, therefore, the authors suggest that:

H3: *Credit risk negatively impacts bank performance.*

Low liquidity can encourage banks to borrow at penal rates, and at that point their reputation is critical. The findings of previous studies are also recognized as inconsistent. While some researchers pointed to a significant adverse association between the liquidity ratio and bank profitability, several scholars explored a definite link between liquidity and bank performance. Meanwhile, Bukhari and Qudous (2012) found that liquidity does not affect performance.

H4: *The liquidity ratio is significantly related to bank performance.*

As a proxy of bank assets quality, the proportion of total loans to total assets (TL/TA) is considered. A higher ratio leads to deterioration in the quality of bank assets, as banks hold provisions because they expect losses after defaults on the credit portfolio (Poghosyan & Cihak, 2009). Previous empirical studies reveal a significant positive association between the total loans-to-total assets ratio and bank profitability (Sanlsoy, Aydn, & Yalçnkaya, 2017). However, the data obtained contradict the results of Vong and Chan (2009). Meanwhile, Liang, Xu, and Jiraporn (2013) found an insignificant association between the ratio of total loans to total assets and profitability of banks. Thus, the hypothesis is:

H5: *The total loans to total assets ratio is significantly and positively associated with bank profitability.*

1.2. Economic factors

External factors are economic indicators that are beyond the authority of a bank and affect the profitability of banks. Bank performance may be affected by one of the leading macroeconomic indicators, which is economic growth or GDP growth. Petria et al. (2015) realize that there is a positive association between GDP growth and bank profitability. Jara-Bertin et al. (2014) found a similar link between GDP growth and Latin America banks' performance. From the findings on 14 Islamic banks in eight countries, Bashir (2003) found a significant positive relationship as well. Nevertheless, Noman et al. (2015) are among the scholars who find a significant negative association between GDP growth and firm profitability. In theory, GDP growth during times of low risk of default on bank loans makes people more demanding of banking services. Therefore, this improves bank profitability. Therefore, another hypothesis is as follows:

H6: *GDP growth is positively and significantly related to Iraqi banks' profitability.*

The inflation rate reflects the change in the proportion of the price level over the last period. Colander (2001) argued that the price level is an index of all prices in the economy, making it a common tool as an inflation index. Besides, CPI measures fixed basket prices for consumer goods, weighted by the proportion of each component in average consumer spending. Thus, the influence of inflation on bank performance depends on whether the inflation rate is unanticipated or expected (Perry, 1992). Firstly, in the case of expected inflation, banks can adjust interest rates on time, and, therefore, revenues can increase faster than costs, having a positive influence on profitability. Secondly, in the event of unanticipated inflation, banks may not quickly change interest rates. Thus, bank spending will grow steadily faster than bank returns. In effect, this will have an inverse impact on the profitability of a bank.

Many practical studies revealed a positive and significant association between inflation and bank profitability (Gyamerah & Amoah, 2015; Noman et al., 2015). Nevertheless, some other studies found out that inflation had a negative impact on bank performance (Bilal, Saeed, Gull, & Akram, 2013). That said, in theory, a positive influence of inflation on bank profitability is predictable because high inflation proportion relates to high bank performance; hence, it is hypothesized that:

H7: Inflation is positively and significantly related to bank performance.

Regarding the interest rate, a lot of empirical research has been done. Bilal et al. (2013) pointed to the positive effects of interest rate on bank profitability, while Noman et al. (2015) revealed a significant adverse impact of interest rates on bank performance. Thus, the following hypothesis is put forward:

H8: Interest rates are positively and significantly related to bank performance.

Unemployment can also be another macroeconomic indicator of the profitability of banks. Unemployment means the proportion of unemployed labor. Normally, the unemployment rate stands prominent as a key factor in estimating the economic condition. The higher proportion of unemployment will affect the cash flow streams of households, and it is also an indicator of the relationship between production and demand (the lower the production, the lower the effective demand); so this situation will lead to a decrease in firm revenue. Furthermore, an increase in the unemployment rate leads to lowered total demand and increased loan default rate; in effect, the firm's profit will be at stake (Heffernan & Fu, 2008). Furthermore, Bordeleau (2010) argued that unemployment adversely influenced bank performance, while Ferrouhi (2017), Owusu-Antwi, Mensah, Crabbe, and Antwi (2015) revealed that inflation did not have any effect on bank profitability. Thus, for all this inconsistency, the hypothesis is established as follows:

H9: High percentage of unemployment leads to deterioration in bank performance.

1.3. Government variables

Government effectiveness, political stability, and the quality of regulation are equally vital for banking activities. However, there are not many studies that have explored these areas and analyzed their impact on bank performance. Moreover, Berger, Clarke, Cull, Klapper, and Udell (2005) argue that with the same approach to banks performance, the static, selection, and dynamic effects of all forms of governance are important for bank performance. Three indicators used in the literature, namely, regulatory quality (REGQU), political instability (POLINS), and government effectiveness (GOVEF), will be the focal point, where they indicate the degree of harmony within the institution.

As for the influence of regulation on bank profitability, the literature review has led to some inconclusive results, where some authors have managed to highlight the positive influence of regulation on bank performance, and some others have shown a negative effect. Regulation mitigates the impact of managerial decisions on shareholder wealth, leading to a regulation replacement by internal control mechanisms that are not able to soften the blows of agency conflicts. The presence of regulatory authorities interfering with the discipline of a leader limits the discretion of the latter. Demirguc-Kunt, Laeven, and Levine (2004) found low financial intermediation cost in countries that have better property rights, strict judicial power, and great commitment to the implementation of contracts.

However, Barth, Caprio, and Levine (2001) noted that bank nationalization had an adverse correlation with the banking sector development and positive association with bank inefficiency measures. As such, Arun and Turner (2002) argued that the inefficiencies associated with bank management forced governments in developing countries to retreat slowly from the banking sector. In this work, based on the arguments of these authors, it is established that:

H10: Regulation is significantly and positively related to bank performance.

Political instability is another type of country-specific risk that can change economies, bank outputs, and performance. Yahya, Akhtar, and Tabash (2017) examine the influence of political instability on the

profitability of banks in Yemen, and found a positive association. Nevertheless, Şanlsoy et al. (2017) analyzed the influence of political instability in Turkey, and found a significant negative relationship. Based on banks from MENA countries, Ghosh (2016) studied the association between political instability and the performance of a bank and found an inverse association. Likewise, Jebnoun (2015) explored the impact of political instability in Tunisia and confirmed a significant negative relationship. Hence, the next hypothesis is as follows:

H11: *Political instability negatively and significantly influences bank performance.*

Regarding legal implementation and regulatory power, Levine, Loayza, and Beck (2000) in their cross-checking the South East Asian banks, indicated that government restraints allowed banks to increase their credit facilities and retain large market shares, and that brought higher returns. La Porta, Lopez-de-Silanes, Shleifer, and Vishney (1998) studied the performance bank determinants and found out that a poor legal system can protect creditors, which leads to decrease in bank performance in the economy. In the same vein, Demirguc-Kunt et al. (2004) found that a better legal system and effective regulatory systems are associated with less corruption, reducing the frictions or shortcomings that are common in the financial system. As for Asian banks, anyone can assume that fragile law enforcement and high corruption will be improved when effective regulatory and legal systems appear, eventually and possibly asserting a positive association with bank performances. Likewise, Chan and Abd Karim (2016) revealed that government effectiveness and the efficiency of a bank are positively associated. In the same vein, Lensink and Meesters (2007) discovered that government effectiveness reduces banks' costs on dealing with bureaucracy. Thus, it is hypothesized that:

H12: *Government effectiveness has a positive influence on bank profitability.*

2. RESEARCH METHODOLOGY

2.1. Data and sample

Appropriate variables expected to affect the performance of banks have been nominated after

considering the Iraqi economy and as recommended by the literature. The data for the study were collected from annual reports, World Development Indicators (WDI), and Worldwide Governance Indicators (WGI). Bank-specific variables are bank size, the ratio of equity to total assets, liquid ratio, credit risk, and the total loans to total assets ratio. The data on these variables were obtained from the annual reports published on the ISX and on banks' websites. The data on economic indicators include GDP growth, inflation rate, interest rate, and unemployment; all the data on these indicators were obtained from the WDI. In addition, governance data were obtained from the WGI. Banks with data for less than ten years were removed from the study sample. The study sample included Iraqi listed commercial banks with data available for the study period. 18 commercial banks were involved, but there was an unbalanced panel for the data of some banks not available for the period.

2.2. Variable measurement

In the banking sector, since it consists of various categories of banks, both external and internal factors determine bank profitability. As mentioned early on the profitability of banks in the literature, bank performance is usually tested by three measures, such as NIM, ROA, and ROE. However, as shown in this paper, appropriate independent variables predictable to affect the performance of banks have been nominated when it is referred to the current economic situation in Iraq and in accordance with previous literature. The value and measurement of the study variables are shown in Table 1.

2.3. Model specification

This paper explores the potential determinants of performance for Iraqi banks using a panel data approach. The reason for using the panel data approach is to shed light on the heterogeneity of independent variables and to obtain more precise findings by making more observations. Using the panel data approach to study the critical determinants of bank performance is what is newly introduced in this paper (Wooldridge, 1999; Baltagi, 1995).

Table 1. Measurement of variables and a predicted sign

Variable	Meaning	Measurement	Hypothesized sign
Dependent variable			
ROA	Return on assets	ROA is defined as net profit before taxes to total assets	
ROE	Return on equity	ROE is net profit before tax over total equity	
NIM	Net interest margin	NIM is a percentage of the net interest to total assets ratio	
Bank-specific variables			
BNKZ	Bank size	Bank size is the natural log of total assets	+
ETA	Equity to total assets	The equity to total assets ratio	+
CRDR	Credit risk	Credit risk is a percentage of loan loss provisions to gross loans	−
LIQU	Liquidity ratio	Liquidity ratio is the proportion of liquid assets to total assets	+/−
TL/TA	Total loans/Total assets	Proportion of total loans to total assets	+
Economic factors			
GDPG	GDP growth	GDPG is an Economic Development Index	+
INFR	Inflation	Personal Consumption Expenditures Price Index	+
INRA	Interest rate	Interest rate	+
UNEMP	Unemployment	Unemployment rate	−
Government variables*			
REGQU	Regulatory quality	Perception of the extent to which agents trust and abide by the rules of society, and in particular, the quality of contract enforcement	+
POLINS	Political instability	The likelihood of political instability and/or politically-motivated violence, including terrorism	−
GOVEF	Government effectiveness	Perception of the quality of public services, the quality of the civil service and the degree of its independence from political pressures	+

Note: * means the score of total indicators for countries ranged from about −2.5 to 2.5.

The panel data approach specification can be written as follows:

$$Y_{it} = \beta_0 + \beta_1 BNKZ_{it} + \beta_2 ETA_{it} +$$
$$+\beta_3 LIQU_{it} + \beta_4 CRDR_{it+} \beta_5 TL/TA_{it} +$$
$$+\beta_6 GDPG_t + \beta_7 INFLR_t + \beta_8 INTR_t +$$
$$+\beta_9 UNEMP_t + \beta_{10} REQU_t +$$
$$+\beta_{11} POLINS_t + \beta_{12} GOVEF_t + \varepsilon_{it}, \quad (1)$$

where Y_{it} is bank profitability measured by NIM, ROA, and ROE; $\beta_1 - \beta_{12}$ are coefficients of explanatory variables; *BNKZ* denotes bank size (total assets natural log), *ETA* is the proportion of the equity to total assets ratio, *LIQU* is liquidity (refers to the liquid assets to total assets ratio, *CRDR* is credit risk, *TL/TA* is the total loans to total assets ratio, *GDPG* – GDP growth rate, *INFLR* – inflation rate, *INTR* – interest rate, *UNEMP* – unemployment, *REQU* – regulatory quality, *POLINS* – political instability, *GOVEF* – government effectiveness, and ε_{it} is an error term.

Performance Model in ROA terms:

$$ROA_{it} = \beta_0 + \beta_1 BNKZ_{it} + \beta_2 ETA_{it} +$$
$$+\beta_3 LIQU_{it} + \beta_4 CRDR_{it} + \beta_5 TL/TA_{it} +$$
$$+\beta_6 GDPG_t + \beta_7 INFLR_t + \beta_8 INTR_t +$$
$$+\beta_9 UNEMP_t + \beta_{10} REQU_t +$$
$$+\beta_{11} POLINS_t + \beta_{12} GOVEF_t + \varepsilon_{it}. \quad (2)$$

Performance Model in ROE terms:

$$ROE_{it} = \beta_0 + \beta_1 BNKZ_{it} + \beta_2 ETA_{it} +$$
$$+\beta_3 LIQU_{it} + \beta_4 CRDR_{it+} \beta_5 TL/TA_{it} +$$
$$+\beta_6 GDPG_t + \beta_7 INFLR_t + \beta_8 INTR_t +$$
$$+\beta_9 UNEMP_t + \beta_{10} REQU_t +$$
$$+\beta_{11} POLINS_t + \beta_{12} GOVEF_t + \varepsilon_{it}. \quad (3)$$

Performance Model in NIM terms:

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$$NIM_{it} = \beta_0 + \beta_1 BNKZ_{it} + \beta_2 ETA_{it} +$$
$$+ \beta_3 LIQU_{it} + \beta_4 CRDR_{it+} \beta_5 TL / TA_{it} +$$
$$+ \beta_6 GDPG_t + \beta_7 INFLR_t + \beta_8 INTR_t +$$ (4)
$$+ \beta_9 UNEMP_t + \beta_{10} REQU_t +$$
$$+ \beta_{11} POLINS_t + \beta_{12} GOVEF_t + \varepsilon_{it}.$$

3. FINDINGS

3.1. Descriptive statistics

A descriptive study is a measurement of central dispersion and tendencies. It is often useful to define a chain of data set parsimoniously in a natural order, which would allow an individual to get an idea of the elementary features of the data. Dispersion measurements are the variance, range, and standard deviation. This study includes standard deviation as a measure of dispersion and a mean as a measure of central tendency. The mean refers to the measurement of central tendency and gives a general idea of unnecessary data in adopting one with each of the data observations. In this study, maximum value, minimum value, standard deviation, and mean value are used as a descriptive analysis to explain each variable. Table 2 shows the descriptive statistics.

3.2. Correlation analysis

The interrelationship between variables was examined using the Pearson correlation. Correlation analysis is carried out to detect any autocorrelation among the study variables (see Table 3).

3.3. Multiple regression analysis

Before the regression development, some tests related to the quality of the adjustment would be important. Key tests were conducted by Newey (1985): normality test, multicollinearity test, serial correlation test, and heteroscedasticity test for all three models (ROA, ROE, and NIM). The results of the diagnostic test show no data issues. In adddition, Hausman specification test was used to select a suitable method (fixed or random effects approach) for both models, ROA and ROE. The null hypothesis of the Hausman specification test means that the Random Effects approach is more appropriate to use.

Table 2. Descriptive statistics

Variables	Unit.	Mean	St. dev.	Minimum	Maximum
Dependent variables: Bank performance					
Return on equity	Ratio	0.187	0.073	−0.023	0.280
Return on assets	Ratio	0.055	0.038	−0.124	0.087
Net interest margin	Ratio	0.028	0.089	−0.139	0.857
Independent variables: Bank-specific characteristics					
Bank size	Log of total assets	0.285	0.283	0.002	1.83
Equity to total assets	Ratio	0.641	2.881	0.054	40.275
Liquidity	Ratio	0.947	0.095	0.626	1.210
Credit risk	Ratio	1.508	19.117	3.10E−05	269.14
Total loans to total assets	Ratio	0.591	1.113	0.0004	7.028
Z Macroeconomic indicators					
GDP growth	Ratio	6.136	3.850	0.7	13.93
Inflation	Ratio	10.903	18.139	−10.067	53.23
Interest rate	Ratio	9.250	21.713	−14.277	53.54
Unemployment	Ratio	15.842	1.071	14.983	17.97
Government variables					
Regulatory quality	Percentile rank	−1.227	0.143	−1.507	−1.006
Political instability	Percentile rank	−2.347	0.327	−2.825	−1.842
Government effectiveness	Percentile rank	−1.317	0.226	−1.770	−1.115

Table 3. Correlation matrices of variables

	Probability	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	ROA	1														
2	ROE	0.56**	1													
3	NIM	0.59**	0.86***	1												
4	BNS	0.23**	0.18***	0.19***	1											
5	EQ/TA	−0.12*	−0.01	−0.07	−0.38***	1										
6	LIQUI	−0.08	0.11	0.11	−0.04	0.04	1									
7	CRED RISK	−0.05	0.01	0.07	0.02	−0.01	0.02	1								
8	TL/TA	−0.14**	−0.15**	−0.17**	−0.46**	0.01	−0.08	−0.03	1							
9	GDPG	0.01	0.01	0.02	0.06	−0.05	0.10	−0.09	−0.05	1						
10	INFL	−0.06	−0.02	−0.03	−0.01	0.09	0.03	−0.08	−0.15	0.35	1					
11	INTRA	−0.05	−0.10	−0.09	−0.02	−0.05	0.04	−0.02	0.13***	−0.25***	−0.37***	1				
12	UNEMP	−0.02	0.06	0.03	−0.02	0.13*	0.15	0.07	−0.21***	−0.05	0.68***	−0.40***	1			
13	REGQU	0.04	−0.04	−0.09	0.07	−0.13*	−0.04	−0.04	−0.05	−0.04	−0.55***	0.33***	−0.82****	1		
14	POLINS	−0.02	−0.04	−0.02	0.03	−0.08	−0.10	−0.09	0.16***	0.36***	−0.47***	0.26***	−0.77***	0.644****	1	
15	GOVEF	−0.04	−0.05	−0.02	0.00	−0.09	−0.16	−0.08	0.24***	0.07	−0.67***	0.35***	−0.96***	0.732***	0.853***	1

Note: ***, **, and * mean that correlation is significant at 1%, 5%, and 10%, respectively. See Table 1 for definition and measurement of variables.

Table 4. Estimation results

Variable	Model (1), ROA	Model (2), ROE	Model (3), NIM
BNKZ	0.015***(0.005)	0.071***(0.000)	0.168***(0.002)
EQ/TA	0.002*(0.084)	0.024***(0.002)	0.034*(0.095)
CRDTR	−0.002**(0.016)	−0.001***(0.000)	−0.001(0.413)
LIQ	−0.006(0.776)	0.249(0.112)	0.502(0.265)
TL/TA	0.002(0.159)	0.019(0.148)	0.046***(0.004)
GDPG	0.001***(0.004)	0.005**(0.029)	0.012**(0.011)
INFLR	−0.003***(0.000)	−0.002***(0.000)	−0.004***(0.000)
INTR	−0.003(0.493)	−0.001***(0.000)	−0.002***(0.001)
UEMP	−0.016***(0.001)	−0.081**(0.014)	−0.150***(0.003)
REGQU	0.052***(0.000)	0.031(0.782)	0.093(0.471)
POLINS	−0.037***(0.000)	−0.106**(0.020)	−0.253***(0.000)
GOVEF	0.070***(0.001)	0.331***(0.004)	0.781***(0.000)
Constant	−0.305***(0.000)	−1.799***(0.000)	−3.873***(0.000)
R^2	0.675	0.689	0.751
F-statistic	2.907***(0.001)	1.886**(0.038)	2.194**(0.013)
Hausman test	52.48(0.000)	20.62(0.008)	24.20(0.011)
Time-FE test	2.17(0.024)	2.17(0.024)	2.64(0.006)

Note: ***, **, and * mean significance at 1%, 5%, and 10%, respectively. P-value (in parentheses) and the variable definitions are explained in Table 1.

The total model significance was tested using the Fisher test. The values of 2.9, 1.8, and 2.1 for model 1, model 2, and model 3, respectively, indicate that the ratio of variance in the dependent variables explained in models is less than 0.05. Also, the R^2 value for three models, which approximates 1, indicates that these models are well adjusted. Thus, the estimated results are shown in Table 4.

After the diagnostic tests, this study estimates the panel data approach for ROA, ROE, and NIM. The results are shown in Table 4. The explanatory variables are unchanged for all models. To compare the results of fixed effect and random effect approaches, the Hausman specification test is used to select the suitable model. The Hausman test in the case of ROA, ROE, and NIM models is read as 52.48, 20.62, and 24.20, respectively, with p-value less than 0.05; this suggests that the fixed-effect approach is suitable. Thus, the fixed-effect approach is more suitable for all three models, and, therefore, a fixed effect approach for all the study models (NIM, ROA, and ROE) is used.

3.4. Robustness checks

To enhance the strength of the study results, the association between bank-specific, macroeconomic and government determinants and bank performance were explored. It should be stated that the tables are not exhibited as they are too space-consuming. Firstly, it is checked if the link between bank-specific characteristics (bank size, equity to total assets, liquidity, credit risk, and total loans to total assets), economic variables (inflation, GDP growth, interest rate, and unemployment) and government variables (regulatory quality, political instability, and government effectiveness) and performance is non-linear. Here, quadratic terms of all variables are entered into Equation (1), Equation (2) and Equation (3). In the non-tabulated results, the fixed effects estimates of modified Equation (1), Equation (2) and Equation (3) with the quadratic terms, find no significant coefficients on any of the quadratic bank-specific, economic factors, and government variables. This finding suggests that the influence of bank-specific characteristics, economic factors and government factors on bank performance is linear. Secondly, alternative measures are used for bank size. Thus, bank size is dichotomized at the median of total assets. Banks can be classified as small when the total assets are below the median, whereas banks can be considered substantial when their total assets exceed the median. Finally, the regressions of the primary model are re-tested using the alternative bank size measurement, which is a dummy variable, not a log of total assets, hypothesizing if total assets exceed the median, and 0 otherwise. In all these cases, the main findings remained similar to those shown in Table 4.

4. DISCUSSION

Table 4 shows that bank profitability is positively and significantly affected by the size of banks for all models (ROA, ROE, and NIM) at the 1% level. This result is similar to the findings of Jadah and Mohammed (2016), Jadah, Murugiah, and Adzis (2016). The positive association between bank size and bank performance indicates that big banks benefit from the scale of economies and, therefore, have high performance.

In addition, the regression results of the current study show that the capitalization of banks, characterized by the ratio of total equity to total assets (EQ/TA), is significantly associated with banks' profitability (measured by ROA, ROE, and NIM). The positive association is because banks with high equity capital are safer and are unlikely to face a bankruptcy crisis. This helps banks to reduce capital costs and boost their performance. This finding is in tandem with the results of many scholars who revealed a positive link between the ratio of equity to total assets and bank performance. This means that well-capitalized banks can:

1) use investment opportunities;

2) avoid the expected bankruptcy costs for their customers and for themselves; this will lower the cost of capital; and

3) overcome the problems resulting from unforeseen losses, compared with other banks; this will positively affect the cost of capital and increase their profitability.

In addition, the findings illustrate an adverse association between credit risk and bank performance in model 1 (ROA) and model 2 (ROE), while there is an insignificant association in model 3 (NIM). These findings are consistent with earlier literature, such as Petria et al. (2015), Jara-Bertin et al. (2014). Thus, this result can be interpreted by the circumstances in which financial institutions are exposed to high-risk loans, and more unpaid loans give an idea that these loans have become losses, which reduces the income of commercial banks. Findings on bank responsibility encourage focus on credit risk management following the negative influence on bank performance. These results also show

that Iraqi banks will improve their performance through effective credit risk management, which improves forecasting of future risks.

The study findings also show that the liquidity ratio is slightly related to the performance of banks, as evidenced by all models. Therefore, the fourth hypothesis on the liquidity ratio, which is largely related to bank performance, is rejected, which indicates that the liquidity ratio does not determine the Iraqi bank's performance. This finding agrees with the previous study by Bukhari and Qudous (2012). Nevertheless, these findings are not consistent with the results found by Gyamerah and Amoah (2015) and some other scholars, who concluded a significant influence of liquidity on bank performance. However, the study findings show that the total loans to total assets ratio (TL/TA) significantly and positively influence NIM only, implying that Iraqi banks can maximize their net interest margin significantly through the increased lending activities. This finding is consistent with expectations, and it is in line with previous research results of Şanlsoy et al. (2017). However, the results contradict the conclusions of Vong and Chan (2009).

The regression result in Table 4 shows that GDP growth significantly and positively affects the performance of banks in all models (NIM, ROA, and ROE). This indicates that the results of Table 4 support the sixth hypothesis. This means that GDP growth determines Iraqi commercial bank performance. There is also the indication that a good economic environment helps banks to get high profits. This finding is similar to previous studies of Petria et al. (2015), Athanasoglou et al. (2008), who provide support to the argument that there is a positive link between GDP growth and bank profitability. Nonetheless, it contradicts Ferrouhi (2017), and Vong and Chang (2009), who found that economic growth is insignificant when it comes to justifying the variations in bank's profitability. However, the study findings show a significant inverse association between inflation rates and Iraqi banks' performance. This means that the seventh hypothesis is not accepted, implying that the inflation rate determines the Iraqi banks' performance. This finding is in line with the conclusions of Bilal et al. (2013), who explored an adverse association between inflation rate and

bank profitability. It is far from the results of past empirical studies by Gyamerah and Amoah (2015), Jara-Bertin et al. (2014), who exposed that inflation rate is positively and significantly associated with bank profitability.

Regarding the other explanatory variables, interest rate (INTRR) does not have any association with the profitability of Iraqi banks in terms of ROA. It has a negative association with ROE and NIM. The adverse influence of interest rate on bank profitability is consistent with the past literature that reveals an negative association (Bordeleau, 2010). Therefore, the eighth hypothesis is rejected. However, this is not consistent with the findings of Bilal et al. (2013), who explore positive links between interest rates and bank performance. Similarly, the results of this study indicate that the high unemployment rate worsens the performance of Iraqi banks. Hence, the ninth hypothesis is accepted. This result confirms those obtained in other similar studies (for instance, Bordeleau, 2010). However, the findings are inconsistent with Owusu-Antwi et al. (2015), who found an insignificant association between unemployment and bank performance.

As for the quality of regulation, the study findings demonstrate that it has an insignificant influence on Iraqi banks' profitability, as measured by ROE, NIM, except for model 1 (ROA). Regulatory policies, thus, can lead to increased bank performance in the ROA model. The finding on the regulation quality is dissimilar to the finding of Demirguc-Kunt et al. (2004). Nevertheless, the study results reveal that political instability had a significant and negative impact on the performance of Iraqi banks. Thus, the eleventh hypothesis about the negative impact of political instability on the performance of banks is accepted. The findings do agree with some other studies and, at the same time, disagree with other similar works. That said, political instability weakens economic growth, which leads to an increase in NPLs. Consequently, Iraqi bank performance has an adverse impact.

Finally, the study reveals that, in all the study models, the influence of government effectiveness is positive. This is consistent with the expected results in the twelfth hypothesis. In fact, it is estimated that the effectiveness of government intervention has a positive influence when it comes to improving financial performance. This result deserves mention, as this condition is not fulfilled in Arab countries. This is supported by Levine et al. (2000), who state that a better institutional environment helps to develop markets and stimulate financial development, leading to high efficiency of the banking industry. In the same vein, Lensink and Meesters (2007) studied the link between institutions and bank performance and revealed that government effectiveness reduced banks' costs on dealing with bureaucracy. The finding is in good agreement with the study by Chen (2009), who states that government effectiveness leads to higher banks'cost-efficiency. In addition, Barth et al. (2001) found that the effective government led to high institutional quality, gradually leading to higher bank efficiency.

CONCLUSION

The research subject defines the purpose of this study, and, in this range, the determinants of bank performance were analyzed using a data approach and a panel of eighteen Iraqi banks for 13 years (from 2005 to 2017). An unbalanced panel of 220 observations was used for econometric analysis. The results show that most bank-specific characteristics, economic factors, and government variables have a statistically significant impact on the performance of Iraqi commercial banks. The regression results of this study show that the size of Iraqi banks and the total equity to total assets ratio are among key determinants of Iraqi bank's profitability. There is support for the that that large banks have exploited the economies of scale and that well-capitalized banks faced low costs of obtaining external finance, and such a feature can lead to increased performance. However, the total loans to total assets ratio (TL/TA) is significantly related to bank performance in terms of NIM only. Otherwise, it will not be significant. Consequently, the loan ratio cannot justify the variability of Iraqi banks' performance. Moreover, regarding the influence of external factors on bank profitability, the findings indicate that the influence

of GDP growth and government effectiveness has a positive association with the performance of Iraqi banks. Nonetheless, inflation, interest rates, unemployment, and political instability have a negative impact on the performance of Iraqi banks.

In order for Iraqi banks to achieve their goals, it is useful to be able to recognize factors that determine the performance of successful banks in developing policies to strengthen and maintain the stability and strength of the banking sector in Iraq. While all this shows a close relationship between the welfare of the banking sector and economic growth, factors affecting the profitability of the financial sector, both for administrators and stakeholders in banks, cannot be excluded. Raising awareness of these factors is key to helping regulators and bank administrators develop good future strategies to make Iraq's banking sector more profitable.

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AUTHOR CONTRIBUTIONS

Conceptualization: Hamid Mohsin Jadah, Noor Hashim Mohammed Al-Husainy.
Data curation: Hamid Mohsin Jadah, Manar Hayder Ali Alghanimi, Noor Sabah Hameed Al-Dahaan.
Formal analysis: Hamid Mohsin Jadah.
Funding acquisition: Hamid Mohsin Jadah, Manar Hayder Ali Alghanimi, Noor Sabah Hameed Al-Dahaan, Noor Hashim Mohammed Al-Husainy.
Investigation: Hamid Mohsin Jadah.
Methodology: Hamid Mohsin Jadah, Manar Hayder Ali Alghanimi, Noor Sabah Hameed Al-Dahaan, Noor Hashim Mohammed Al-Husainy.
Project administration: Hamid Mohsin Jadah.
Resources: Hamid Mohsin Jadah, Noor Sabah Hameed Al-Dahaan, Noor Hashim Mohammed Al-Husainy.
Software: Hamid Mohsin Jadah, Manar Hayder Ali Alghanimi.
Supervision: Hamid Mohsin Jadah.
Validation: Hamid Mohsin Jadah.
Visualization: Hamid Mohsin Jadah.
Writing – original draft: Hamid Mohsin Jadah.
Writing – reviewing & editing: Hamid Mohsin Jadah, Manar Hayder Ali Alghanimi, Noor Sabah Hameed Al-Dahaan, Noor Hashim Mohammed Al-Husainy.

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