

The impact of the PATROL model indicators on the performance of a sample of conventional banks in Iraq For the period (2012-2021)

By

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Abstract

The existence of a banking system based on sound foundations that would create confidence in the state's policy, both locally and internationally, and make it able to face the difficulties it encounters if it resorted to evaluating its performance according to models that have the ability to reveal the strengths and weaknesses that the banking system goes through. The PATROL model is one such model. The research aims to show the effect of the variables of the PATROL model (capital adequacy, credit risk, profitability, liquidity and regulation) on the performance of the research sample banks, which consist of six commercial banks in Iraq, (random effects model). Based on statistical tests. During the period (2012-2021). The research reached a number of conclusions, the most important of which are: that the adequacy of capital and the risks of credit and liquidity had significant effects on the performance of the banks of the research sample. The study recommends that the banks sampled in the research should not maintain a high liquidity ratio, because this will be at the expense of the profitability they achieve.

Keywords: PATROL model, tablet data, fixed effects, capital adequacy, liquidity, Iraq.

Introduction

The banking system plays an active role in economic and social life, so building a banking system on sound and correct foundations creates great confidence in the state's policy in the economic and social fields. However, the banking system in Iraq suffers from internal and external changes and obstacles, which motivates it to adopt the performance evaluation process in order to know the weaknesses and try to avoid them, reduce their burdens and enhance their strengths.

First: the research problem

The research problem is crystallized through the following question:

Do the indicators of the PATROL model have a significant impact on the banking performance of the banks of the research sample?

Second: Research Hypothesis:

The research starts from the hypothesis that:

The indicators of the PATROL model have a significant impact on the banking performance in the banks of the research sample.

Third: the importance of research

The importance of the research revolves around the fact that evaluating the performance of banks is the main driver for assembling economic events and activities in all countries of the year. And that the efficiency of the performance of banks draws a clear picture for investors and depositors, as investors are drawn towards banks that are characterized by high performance efficiency and move away from inefficient banks, and that this would support efficient banks in international competition. So that it can benefit from it in drawing the features of its strategy in accordance with the policies and procedures followed by efficient banks.

Fourth: Research objective:

The main objective of this research lies in the following.

Estimating tablet data models in order to determine the impact of the PATROL model variables on the banking performance of the research sample banks.

Fifth: The analytical and statistical methods used:

The analytical methods of the financial indicators of the model were also used, as well as the use of tabular data (the aggregate regression model, the fixed effect model and the random effect model) and the selection of the appropriate model for the data of the sample banks according to the Hausman test. The statistical program EViews12 and SPSS23 were used in Calculating and estimating the mentioned indicators and models.

Fifth: Society and its sample research

The number of commercial banks in Iraq reached (25), and they represent the community of this research. The sample of the research that was chosen amounted to (6) banks, namely (Union Bank of Iraq, National Bank of Iraq, Credit Bank, Mansour Investment Bank, Bank of Baghdad, and Commercial Bank of Iraq), and these banks operate regularly during the research period (2012-2021). Achieving the standards used, and accordingly, this research focuses on (6) commercial banks in Iraq.

Theoretical framework

First: The origins and concept of the PATROL model, performance rating scores, and rating scores for the model's indicators

The PATROL model was used for the first time in the Italian Central Bank, in 1993, as an off-site supervisory control tool for evaluating banking performance in a regular representation of the financial security of banks. It is also an early warning system used by the Central Bank or the supervisory and oversight authorities to evaluate internal control methods, and it also helps to identify and know troubled banks, and this will thus reduce the effects of the crisis that may occur or be exposed to the bank, and that the work of this model in evaluating The performance is similar to the work of the (CAMELS) system used in the United States of America to a large extent, with a difference in some of the elements or indicators that make up the system, such as credit quality and organization.

(Capital Adequacy, PATrimonio, Redditivita Profitability, Credit Quality (Credit Risk), Organization Rischiosita, Organizzazione, Liquidity, Liquidita, (Al Nuaimi, 2017: 333). (Cannata & Quagliariello, 2004:13) It represents the main inputs to the model. As for the outputs of the system They are the provisions that are created by the supervisory and regulatory

authorities and are of high confidentiality, practically using all available relevant information in accordance with standard procedures in order to obtain results that represent a quantitative and qualitative mix of the performance of banks (Cannata & Quagliariello, 2004: 13). And weakness in banks without falling into financial failure.

Model rating scores

This model is based on five classifications: strong (1-1.4), satisfactory (1.6-2.4), medium (2.6-3.4), marginal, below average (3.6-4.4), and unsatisfactory (4.6-5). PATROL model.

Table (1) *Classification score for the PATROL model.*

degrees or ranks	Analysis classification	Gross proportions (weight)	bank position	control procedure
1-	strong	1.4	The integrity of the financial position in all aspects	No action is taken and the bank must maintain the current situation
2-	Patients	1.6 - 2.4	It is fairly safe, with some shortcomings	The need to work to address the shortcomings of banks
3-	Center	2.6 – 3.4	Shows areas of strength and weakness	It needs control, supervision and follow-up by the regulatory authority The bank needs the supervisory authority to develop financial and administrative reform programs and follow up on their implementation in the field
4-	border below the middle	3.6 - 4.4	It is very dangerous and warns of financial failure	The status of the bank must be monitored continuously and permanently
5-	not satisfactory	4.6 – 5	very dangerous	

Source: *Zaghoud Iman, 2015 (early warning using the CAMELS model to evaluate the performance of commercial banks), a case study of the National Bank of Algeria, a supplementary memorandum for obtaining an academic master's degree in economic sciences, majoring in finance and banking, p. 59.*

Table No. (2): *Classification scores for the PATROL model indicators.*

Indicators of the PATROL model	First class rating	Class II degree	The third classification level	Fourth grade rating	Fifth grade rating
capital adequacy	%15≤	14.99-12%	-811.99%	-77.99%	≥6.99%
credit risk	20≥%	34-21%	35-49%	75-50%	%76≤
Organization	25≥%	30-26%	38-31%	45-39%	46≤%
profitability	%1 ≤	0.8- 0.9%	0.35-0.8%	0.24-0.34%	≥0.24%
Liquidity	%55≥	56-62%	%68-63	%80-69	%81≤

Source: *Gulzeb , Haseeb Zaman, "Camels Rating System For Banking Industry In Pakistan" Umeal School Of Business, Master Thesis, 2011, P54.*

Indicators of the PATROL model

Capital adequacy

Capital is the main source of deposit protection. Banks with sufficient and large capital can absorb losses without prejudice to the rights of depositors. Regulatory authorities consider capital as the main indicator of banking safety as an objective measure that is easy to identify and applicable at the international level compared to other measures of the safety of a bank that is difficult to define and measure. Bank capital is a vital element of protection for depositors from any losses, and it is a basic requirement for any operational function. The banker through the following points: (Rose & Hudging, 2008: 479).

- a. Providing protection to the bank in terms of depositors when the money in the bank decreases.
- b. A good source that contributes to financing the investments necessary for the operation of the bank.
- c. Coverage of losses resulting from operational operations.
- d. supports confidence in terms of borrowers and creditors.

The following ratios were used in calculating capital adequacy

$$\text{Equation No. (1). capital adequacy} = \frac{\text{Owned capital}}{\text{Total risk weighted assets}}$$

(Bawaneh&Dahiyat ,2019 :3)

Liquidity index

Liquidity is defined as the bank's ability to fulfill its obligations towards others, whether they are depositors or other parties, as well as to meet emergency withdrawals and meet depositors' requests in a timely manner without delay (Hemple & Simon, 1999:166). loss and the fastest time. (Howells & Bain, 2007:9). It is also defined as: it is the bank's ability to provide borrowing sources to meet the needs of regular and emergency withdrawals, and this shows that maintaining a balanced ratio, which enhances the bank's ability to face systemic and non-systemic risks in order to achieve financial security (Kutum, 2015:47).

- Bank liquidity can be summarized as follows: (Hazouzi, 2018: 81).
- Liquidity helps clarify the availability of money when needed.
- Liquidity represents the ability to convert some assets into cash without exposure to losses over a short period of time.
- Liquidity means the ability to provide cash to meet various obligations on the specified maturity date.
- Liquidity is of great importance, especially for commercial banks, as it is a very important vital indicator for management, financial analysts, and depositors in addition to the financial market in general. To get rid of or bear any additional benefits as a result of borrowing from other banks or the central bank, which helps the bank not to suffer losses as a result of selling assets for less than their value to fulfill financial obligations, in addition to strengthening confidence between depositors and creditors in banks. (Al-Shammari, 2009: 36). The following ratio was used:

$$\text{Equation No. (2) ... Liquidity} = \frac{\text{Cash}}{\text{total the findings}} * 100\%$$

(Masud& Haq, 2016:61)

Profitability index:

Profitability is defined as the final outcome of various policies and administrative decisions, and the profitability rate that represents the net operating operations as a result of the combined effects of liquidity, asset management and public debt management (Achim, 2014:4). Profitability is of great importance, as it is one of the main reasons for the existence of financial institutions, and the continuation of its work and effectiveness is through achieving profits. Banks are considered one of the business institutions that aim to achieve profits similar to others. In this regard, profitability is one of the important indicators for investors and indicates the success of the bank in managing its activities and financial operations (Yilmaz, 2013:105). Profitability is also a reflection of how banks manage in light of the environment in which they operate. The following ratios were used to calculate profitability

Equation No. (3)

$$\text{The rate of return to total assets (ROA)} = \frac{\text{Net profit after tax}}{\text{Total the findings}} * 100\%$$

credit risk index:

Credit risk is defined as the possibility that the bank will be exposed to unexpected and unplanned losses, or the fluctuation of the expected return on a particular investment. (Hammad, 2003: 197).

(Issawi, 2020: 66) and (Hammad, 2003: 196) refer to credit risks and their importance, considering that the process of granting credit must be based on several factors, including determining the size of the risks surrounding the credit granted by the bank and determining the nature of that risk in order to take into account In the event that the borrower is unable or unable to fulfill his obligation and pay the amount of credit granted to him. Precautionary measures must be taken to protect the amount of credit from losing it and not losing the bank and exposing it to liquidity risks and credit risks.

The following ratios were used in calculating credit risk:

$$\text{Equation No. (4) credit risks} = \frac{\text{provision for doubtful debts}}{\text{Total loans}} * 100\%$$

Regulation indicator

It is the second job in the administrative process that contains a set of activities and operations that are practiced by the manager, working to collect and unify the individual activities within the bank to achieve the general goal. Regulation is one of the most important basic pillars for measuring the extent of the health and solidity of the bank, as the success and failure of the bank is primarily due to the composition structure of its board of directors and the senior management must be of competence, integrity and experience. In order to ensure sound practices of the bank's activities in a manner consistent with the regulations and laws issued by the Central Bank, in addition to that, the banking administration has the task of adhering to the procedures and policies described by the Board of Directors (Al-Karasneh, 2010: 7). It is necessary to address the importance of banking regulation, because it is one of the components of the PATROL model, as (Al-Maqli, 2002: 273) indicates several points that are essential to the importance of regulation, as follows:

1. Achieving the bank's economic savings by using the available human and material resources.
2. Achieving cooperation and harmony among a group of employees by collecting and coordinating individual efforts, and maximizing the benefit from the results of interaction between members of the work group.

3. Determining the relations between employees in the bank, which helps each individual to know his administrative position and his relations with his superiors, subordinates and colleagues at work.
4. Enabling the bank to deal with diversity in human resources and to benefit from each individual in the bank regardless of his behavior, personality and motives.
5. Classifying and distributing work according to the importance of its activities and objectives.

And that the organization is one of the most important foundations and rules of the internal organization is the interest in the training plans for employees, so the organization will be expressed in banks according to indicators of operating expenses and operating revenues.

$$\text{Equation No. (5) Organization} = \frac{\text{The total operating expenses}}{\text{Total operating revenue}} * 100\%$$

Applied side

Measuring the effect of PATROL indicators using tablet data

Tablet data models

Tablet data

It is the data that includes units (cross-sections-banks) and specific time periods. The units can be expressed in X_i , as i starts from (1 to N) and refers to the units of cross-sectional sections, and T starts from 1 to T and expresses the time of observations.

There are two types of tablet data as follows:

Balanced panel data: It is the data that contains information for all the surveyed units (banks).

Unbalanced panel data: This is data that is missing some values for some years.

Panel Data has three models that can be described as follows:

Pooled Regression model: It means that there is no difference between the estimated segments and assuming the homogeneity of the data set. Here we collect 60 annual observations and run the regression model, ignoring the nature of the cross-section data and time series.

The main problem with this model is that it does not distinguish between the different banks in the same research, in other words, we collect the six banks, assuming the rejection of heterogeneity or the entity that the bank enjoys and that may exist between these banks.

Fixed Effect Model (LSDV).

This model allows the existence of a fixed limit difference for each group, one segment is added to each unit in the model Although the constant boundary may vary across the six banks, the intersection boundary does not vary over time, and as such, does not change over time (capturing all traces that define the characterization of the bank).

Random Effects Model:

The limit is written for each section in the model, and the regression and random effect are fixed, and it is a random parameter in the regression analysis, assuming that all the factors that affect the dependent variable, but we do not add them to the independent variables, and it is appropriate to reduce them to the random error limit, and here the banks (6) have a common average value To the intersection limit and after estimating the above models, we have to

determine which of the above models is suitable for the studied data, and before applying this model we must use the Hausman test.

Applied side and results analysis

This paragraph deals with the study of descriptive statistics, DescriptiveStatiti, for the sample research banks. In addition to studying the correlation coefficients between financial performance variables (capital adequacy, credit risk, profitability, organization, liquidity and performance). Statistical tests.

First: descriptive statistics.

This paragraph focuses on the descriptive statistics of the financial performance variables of the sample banks, which are represented by: average, minimum values, maximum values, standard deviation and the normal distribution test (Jarque-Bera) during the research period (2012-2022) and using the program Eviews12 and the statistical program Spss23 and Table No. (66) shows these indicators.

Table (3): *Descriptive statistics for the variables of the banks of the research sample*

	CAP_ADQ	CRD_R	LIQ	ORG	PERF	PROFT
Mean	200.92	34.48	51.10	31.56	67.61	2.06
Maximum	760	397.1	92.34	102	158.57	24.45
Minimum	21	0.01	8.77	0.1	19.58	-6.98
Jarque-Bera	18.62	403.43	3.82	3.83	3.42	773.17
Probability	0.00009	0.00	0.147	0.147	0.18	0.00
Observations	60	60	60	60	60	60

Source: *prepared by the researcher using the Eviews12 program.*

Table (3) shows the statistics of the financial performance variables (the explanatory variables) that determine the performance of the banks of the research sample. These variables are represented by:

CAP-AD: Capital Adequacy

CRED-R: credit risk

LIQ: liquidity

org: organization

PROFT: profitability.

It was clear from the above table that the minimum value of capital adequacy was (21%) and the maximum value was (760%) with an average of (200.926%). As for credit risks, the minimum value was (0.01%) and the maximum value was (397%) with an average equal to (34.48%). % while the minimum value of liquidity was (8.77%) and the maximum value (92.34%) with an arithmetic mean equal to (51.10%). The minimum value for the regulation variables was (0.1%) and the maximum value (102%) with an arithmetic mean of (31.56%). As for the profitability variable, the minimum value was (-6.98%) and the maximum value was (24.45%), with an average of (2.06%).

*Second: the normal distribution test (Jarque-Bera**)*

Here, the test applies from two hypotheses:

1. Null hypothesis (Ho): The sample data is drawn and its data follows a normal distribution.

2. Alternative Hypothesis (H1): The sample data is drawn from a population whose data does not follow a normal distribution.

It is clear from the results of the statistical analysis of the (Jarque-Bera) test in Table No. (66) that the value of (P.Value) is equal to (0.009%) for the capital adequacy variable (CAP-ADQ). It is less than (5%), and then we accept the alternative hypothesis that the sample data is drawn from a population whose data does not follow a normal distribution. As for the normal distribution of the credit risk variable (CRD-R). We find that the testable probability value (Jarque-Bera) is equal to (0.00%) and it is also less than a significant level (5%), and therefore we reject the null hypothesis and accept the alternative hypothesis. However, the data of the sample drawn from a population whose data do not follow a normal distribution. While the probability value (P.Value) for the liquidity variable was equal to (14.8%), which is greater than the level of significance (5%), and then we accept the null hypothesis, which says that the data of the sample drawn from a population whose data follow a normal distribution. As for the probability value, P.Value)) for the organization variable, it amounted to (14.7%), which is greater than the level of significance (5%). Hence, we accept the null hypothesis, that is, the sample data is drawn from a population whose data follow a normal distribution. As for the probability value (P.Value) for the performance variable, it amounted to (18.0%), which is greater than the level of significance (5%), and then we accept the null hypothesis that the data of the sample drawn from a population whose data follow a normal distribution. Finally, the probability value (P.Value) Value) of the profitability variable, it amounted to (0.00%), which is less than the level of significance (5%), and then we reject the null hypothesis and accept the alternative hypothesis, that the data of the sample drawn from a population whose data does not follow the normal distribution.

Third: Correlation coefficients between search variables (Pearson correlation coefficient)

Correlation analysis is used to estimate the degree of linear correlation between a variable and the direction of this relationship. In this paragraph, the Pearson correlation coefficient is calculated, which is one of the parametric measures that are used in the case of quantitative variables. To show the degree of relationship between financial performance indicators (capital adequacy, credit risk, profitability, organization, and liquidity) as well as its relationship with banking performance. It is based on the following statistical assumptions:

Table (4): Matrix of correlation coefficients between the variables of the research sample banks

	CAP_ADQ	CRD_R	LIQ	ORG	PERF	PROFT
CAP_ADQ	1	0.532	0.215	0.107	0.229	-0.125
Sig.(2-tailed)*		0.000	0.099	0.414	.078	0.341
CRD_R	0.532	1	0.262	-0.083	-0.075	0.085
Sig.(2-tailed)*	0.000		0.043	0.531	0.571	0.518
LIQ	0.215	0.262	1	-0.000	-0.002	-0.047
Sig.(2-tailed)*	0.099	0.043		0.997	0.987	0.723
ORG	0.107	0.083	0.000	1	0.036	-0.147
Sig.(2-tailed)*	0.414	0.531	0.997		0.785	0.264
PERF	0.229	-0.075	-0.002	0.036	1	-0.367
Sig.(2-tailed)*	0.078	0.571	0.987	0.785		0.004
PROFT	-0.125	0.085	-0.047	-0.147	-0.367	1
Sig.(2-tailed)*	0.341	0.518	0.723	0.264	0.004	

Source: prepared by the researcher using the SPSS23 program

Null hypothesis (HO): The linear correlation coefficient between any two variables is not significant.

Alternative Hypothesis (Hi): The linear correlation coefficient between any two significant variables.

Table (4) shows the following:

1. Correlation coefficient between capital adequacy (CAP-ADQ) and credit risk (CRD-R). It is clear from the above table that there is a direct correlation between capital adequacy and credit risk amounting to (+0.532). It was also found that the P.Value amounted to (0.00), which is less than the significance level of 0.05, and therefore we reject the null hypothesis and accept the alternative hypothesis that the correlation between the variables (capital adequacy and credit risk) is different from zero, in other words, the correlation is significant.
2. Correlation coefficient of capital adequacy (CAD-ADQ) and liquidity (LIQ). The results of Table (4) show that there is a positive correlation between capital adequacy and liquidity amounting to (0.215), and the P.Value amounted to (0.099), which is greater than the level of significance (0.05). Accordingly, the null hypothesis is accepted, that is, the linear correlation coefficient Between capital adequacy and liquidity is not different from zero, in other words, the correlation is not significant from a statistical point of view.
3. Correlation coefficient of capital adequacy (CAD-ADQ) and regulation (ORG). The results of Table (4) indicate that there is a direct (positive) correlation between capital adequacy and organization. As the correlation coefficient between them reached (0.107), while the value of probability P.Value equals (0.414), which is greater than the value of the level of significance (0.05), and therefore the null hypothesis is accepted that the correlation between the two variables, capital adequacy and organization is not different from zero In other words, the correlation is not statistically significant.
4. Correlation coefficient between capital adequacy (CAD-ADQ) and performance index (PERF). Table (4) data shows that the correlation coefficient between capital adequacy and performance amounted to (0.229), meaning that there is a direct correlation between the two variables. The value of the probability P.Value amounted to (0.078), which is greater than the level of significance (0.05). Therefore, the null hypothesis is accepted, that is, the correlation coefficient is not significant from a statistical point of view.
5. Correlation coefficient between capital adequacy (CAD-ADQ) and profitability (PROFT). The results of Table (4) reflect that the correlation coefficient between capital adequacy and profitability is a negative relationship, as the value of the correlation coefficient was (-0.135). The probability P.Value (0.341), which is greater than the level of significance (0.05). Accordingly, the null hypothesis is accepted that the correlation coefficient is not significant.
6. Correlation coefficient between credit risk (CRD-R) and liquidity (LIQ). Table (4) reflects that the correlation coefficient between credit risk and liquidity is direct, reaching (0.262). It is also noted that the probability value P.Value has reached (0.043), which is less than the significance level (0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. That the correlation between the two variables (credit and liquidity risk) is different from zero. In other words, the correlation is significant.
7. Correlation coefficient between credit risk (CRD-R) and regulation (ORG). It is clear from the results of table (4), that is, there is a negative correlation between credit risk and regulation, as it amounted to (-0.083) - and the probability value P.Value has reached (0.531), which is greater than the level of significance (0.05), so the null hypothesis is accepted The non-significance of the correlation coefficient.

8. Correlation coefficient between credit risk (CRD-R) and performance (PERF). The results of Table No. (4) show that the correlation coefficient between credit risk and performance is negative, reaching (-0.507). The P.Value was (0.571), which is greater than (0.05). Accordingly, the null hypothesis is accepted that the correlation coefficient between credit risk and performance is not significant.
 9. Correlation coefficient between credit risk (CRD-R) and profitability (PROFT). The results of Table No. (67) indicate that the correlation coefficient between credit risk and profitability is direct and positive as it reached (+0.085) - and the P.Value value has reached (0.578), which is that the linear correlation coefficient between credit risk and profitability is not significant.
 10. Correlation coefficient between liquidity (LIQ) and regulation (ORG). The results of Table (4) show that the correlation coefficient between liquidity and organization is inversely related (-0.000) - as the probability value reached P.Value and reached (0.997), which is greater than the level of significance (0.05). Accordingly, the null hypothesis is accepted, which states that the linear correlation coefficient between liquidity and organization is statistically insignificant.
 11. The correlation coefficient between liquidity (LIQ) and performance (PERF). It is noted from the results of Table (4) that the correlation coefficient between liquidity and performance was negative (inverse) as it reached (-0.002) - and the probability P.Value amounted to (0.987).) which is greater than the level of significance (0.05). Therefore, the null hypothesis is accepted, which states that the correlation coefficient between liquidity and performance is not significant.
 12. Liquidity correlation coefficient (LIQ) and profitability (PROFT). The data of Table (4) indicates that the correlation coefficient between liquidity and profitability is an inverse correlation, as it reached (-0.047), while the P.Value amounted to (0.723), which is greater than the level of Significance (0.05). Accordingly, the null hypothesis is accepted, which states that the correlation coefficient between liquidity and profitability is not significant.
 13. Correlation coefficient between organization (ORG) and performance (PERF). The data of Table (4) reflects that there is a direct correlation between organization and performance - but weak - as it reached (0.036). While the value of p.Value (0.785), which is greater than the value of the significance level (0.05). Therefore, the null hypothesis is accepted, which states: The correlation coefficient between organization and performance is not significant.
 14. Correlation coefficient between organization (ORG) and profitability (PROFT). The data of Table (4) shows that there is a negative correlation between organization and profitability, as the correlation coefficient reached (-0.147). Also, the P.Value value reached (0.264), which is greater than the level of significance (0.05). Therefore, the null hypothesis is accepted, which states that Insignificant link between organization and profitability.
 15. The correlation coefficient between performance (PERF) and profitability (PROFT). The results of Table (4) reflect that there is a negative correlation between performance and profitability, as the correlation coefficient reached (-0.367), while the P.Value was (0.004), which is less than The level of significance is (0.05), so the null hypothesis is rejected and the alternative hypothesis is accepted
- Capital adequacy and credit risk.
 - Credit and liquidity risks.
 - Performance and profitability.

The results also indicate that the highest value of the correlation coefficient between the explanatory variables (financial performance indicators) amounted to (0.532) between capital adequacy and credit risk, and the lowest value amounted to (-0.147) between

profitability and organization. This confirms that there is no double linear problem (Multicollinearity) between the explanatory variables (financial performance indicators), which, if any, make it difficult to isolate the effect of each of the explanatory variables and indicate its value in the banks performance index.

Fourth: Estimating and analyzing tablet data models for the banks of the research sample for the period (2012-2021).

The three models (the combination regression model, the fixed effect model, and the random effect model) (Baltagi, 2005: 137,176) will be estimated using the statistical program (Eviews12) and based on the consideration that:

- PERF: It is the dependent variable
- CAD-ADQ capital adequacy
- CRED-R credit risk
- PROFIT PROFIT
- ORG
- Liquidity, LIQ, which is the independent variables.

Table (5): Estimating the impact of financial indicators on banking performance in the research sample banks during the period (2012-2021) according to tablet data models

Dependent variable: PERF				independent variables
Duration: (2012 - 2021) Views = N.T = 10 x 6 = 60				
REM random effects model	FEM fixed effects model	Combined regression model		
Random Effects Model	Fixed Effects Model	Pooled Regression Model		
0.101175	0.065553	0.101175	CAP –ADQ T test	
12.62554	5.220844	4.733116		
Prob.(0.000)	Prob.(0.0000)	Prob. (0.0000)	CRED – R T test	
-0.025008	-0.083368	-0.025008		
-1.203893	-3.648416	-0.451320	PROFT T test	
Prob.(0.2339)	Prob.(0.0006)	Prob.(0.6536)		
-1.077517	-0.281340	-1.077517	ORG T test	
-3.343365	-0.836456	-1.253375		
Prob.(0.0015)	Prob.(0.4070)	Prob.(0.2155)	LIQ T test	
-0.028642	-0.040285	-0.028642		
-0.630735	-0.755640	-0.236453	R ²	
Prob.(0.5309)	Prob.(0.4535)	Prob.(0.8140)		
-0.080676	0.360618	-0.080676	F	
-1.603431	6.036692	-0.601101		
Prob.(0.1147)	Prob.(0.0000)	Prob.(0.5503)	Prob.(F)	
0.398273	0.923265	0.398273		
7.148347	58.95575}	7.148347	D.W	
0.000034)(0.000000)({0.0000}		
0.398273	1.830574	0.270169		

Source: prepared by the researcher using the Eviews 12 program. See Statistical Appendix

No. (3) (4) (6)

Sig.(2-tailed)=P value*

Then a comparison is made between the models according to statistical tests to determine which of the models is the appropriate model. to be accepted and interpreted.

Table (5) indicates the estimation of the impact of the components (variables) of the PATROL model on the performance of the banks of the research sample during the period (2012-2021), and by using the tablet data models represented by (the combined regression model, the fixed effects model and the random effects model). The appropriate model will be chosen. , and as follows:

Comparison between the combination regression model and the fixed effects model.

After estimating both models as shown in Table (6), the (Brenxh-Pagan) test was adopted. As shown in the table below:

Table (6) *For the comparison between the combination regression model and the fixed effects model (Breusch-Pagan) test:*

Lagrange Multiplier Tests for Random Effects			
Null hypotheses: No effects			
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives			
	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	127.5612 (0.0000)	3.640311 (0.0564)	131.2015 (0.0000)

Source: *prepared by the researcher using the Evievs 12 program. See Statistical Appendix No. (3) (4)*

It was shown from the table that the value of the cross-sectional test according to Brenxh-Pagan was (129.56) and the corresponding probability value was n) (0.00). Random data As long as the P.Value of (0.00) is less than the level of significance (0.05), we reject the null hypothesis that the evaluation and the existence of an effect of different cross-sections on the cutting edge (Arellano, M.2001:153).It is worth noting that Combination regression model We assume that the banks of the research sample have the same characteristics, and this is contrary to reality, as the banks are characterized by different characteristics, and therefore there is a possibility of heterogeneity and heterogeneity means that there are certain characteristics in the banks that cannot be observed such as: location, bank culture, management philosophy, Etc. In addition, this model assumes that the characteristics of the bank differ across the banks and are fixed over time.The description of the bank is included in the error limit, and here arises the problem of homogeneity in which the error limit is associated with one or more of the independent variables.And thus they are together. The estimated regression compilations are biased, uncoordinated, and lead to erroneous inferences. Therefore, the results of this model cannot be relied upon. To address this problem (the homogeneity problem), we resort to using the fixed effects model and the random effects model that takes into account the unobserved heterogeneity (ObiPat, PanlDataRegression, com/watch?v=e5R5SQInkGg8).

In order to compare between the effects model and the random effects model, the Hasman test is used. The following table shows the results of this test.

Table (7): Comparison between the aggregate model and the fixed effects model (HausmanTest)

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	335.237125	5	0.0000

Source: prepared by the researcher using the Evievs 12 program. See Statistical Appendix No. (5)

This test is based on the null hypothesis (HO): which states that the random effect model is suitable for the model

Table (7) shows that the value of the statistic (Chi-Statistic = 335.24), the corresponding probability value is (0.000), which is less than the significance level (0.05), so we reject the null hypothesis. That is, we reject that the random effect model is the appropriate model, and we accept that the fixed effects model is the appropriate model for studying the research sample banks.

Interpretation of the results of the fixed effects model

Statistical interpretation

The results of the statistical supplement table No. (4) indicate that there is a positive effect of capital adequacy on the performance of the banks of the research sample, as the value of the (T) test amounted to (5.2208), which is greater than (2) with a significant level (0.05) and degrees of freedom (54). The corresponding probability value was (0.0000), which is less than (0.05). Accordingly, the adequacy of capital has a significant impact on the performance of the banks of the research sample.

The results also indicate that the credit parameter has a significant and negative effect on the performance of the banks of the research sample. The value of the (T) test was (3.048), which is greater than (2), with a level of significance (0.05) and degrees of freedom (54). In addition, the probability P.Value amounted to (0.0006), which is less than the level of significance (0.05). This This means that credit risk has a negative and significant effect on the performance of the sample banks.

The results of the Statistical Appendix Table No. (4) indicate that liquidity has a positive and significant effect on the performance of the banks of the research sample. As the value of the (T) test was equal to (6.03669), which is greater than (2), with a significant level (0.05) and degrees of freedom (54). Also, the probability P.Value has reached (0.000), which is less than the level of significance (0.05). Therefore, liquidity plays a major role in the level of performance of the sample banks.

As for the profitability variable, it had a negative and insignificant effect on the performance of the banks sampled in the study. As the value of the (T) test was (0.836), which is less than (2), and the probability value - P.Value - amounted to (0.4070), which is greater than the level of significance (0.05). Accordingly, the null hypothesis is accepted that the effect of profitability does not differ About zero banks perform sample research.

As for the organization variable, its effect was negative and insignificant, as the value of the (T) test was (0.75564), which is less than (2). Also, the probability P.Value was (0.4535),

which is greater than the level of significance (0.05). Accordingly, the null hypothesis is accepted, that is, the regulation variable does not affect the performance of the research sample banks.

The results of the estimation indicate that the PATROL model variables have determined (93.3%) of the total variance in the performance of the banks of the research sample. As for the remainder, amounting to (6.7%), it is due to other factors that did not affect the studied model.

The probabilistic significance of the model, as reflected by the F test of (58.956) and the corresponding probability value of (0.0000) is less than the level of significance (0.05) on it. The estimated model is statistically significant.

The results indicate that the model does not suffer from the problem of autocorrelation between the residuals. As the value of the (Drain-Watson) test (DW) of (1.83574) is greater than the upper limit of the table value of (1.77) at the level of significance (0.05). Therefore, the model does not suffer from the problem of autocorrelation between the residuals.

Financial interpretation

The results of the assessment indicate - and as reflected in the table in Statistical Appendix No. (4) the following:

Capital adequacy variable CAP-ADQ

An increase in capital adequacy by (1%) will lead to an increase in performance by (0.066%), assuming that the effect of other independent variables remains constant.

CRER-R credit risk variable

An increase in credit risk by (1%) will lead to a decrease in performance in banks sampled by (0.083%), assuming the stability of the effect of other independent variables.

PROFT profitability variable

The decrease in profitability by (1%) will lead to a decrease in performance in the banks of the research sample by (0.28134%). Assuming the stability of other independent variables.

Org variable

The decrease in the level of organization by (1%) will lead to a decrease in the level of performance in the banks of the research sample by (0.0402%), assuming the stability of the effect of other independent variables.

Liquidity variable LIQ

Increasing the liquidity of the banks of the research sample by (1%) will lead to an increase in the level of performance of these banks by (0.360618%), assuming the stability of the effect of other independent variables.

Conclusions

1. The results of the assessment showed that the capital adequacy index was significant and positive in its impact on the level of performance of the sample banks. An increase in capital adequacy by (1%) will lead to a decrease in performance by (0.066%).
2. The results of the report reflected that the credit risk was significant in its impact on the level of performance of the banks sampled in the study, and positive at the same time.

- As an increase in credit risk by (1%) will lead to a decrease in the level of performance by (0.083%).
3. The regulation indicator was negative and insignificant in its impact on the level of performance of the banks, and it is concluded from that that the banks did not invest in the human element, which carried expenses higher than the returns.
 4. As for the liquidity indicator, it was significant in its impact on the performance indicator, as an increase in liquidity (1%) will lead to an increase in performance (0.36%).

Recommendations

1. The need to adopt the results of estimating the fixed effects model in order to predict the changes that will occur in the indicators of the PATROL model and thus develop appropriate banking policies.
2. The need for the banks sampled in the research to adopt financial indicators that are in line with the ratios specified internationally and locally, in order to avoid the risks to which they are exposed.
3. The need to adopt other advanced models and compare them with the PATROL model in banking evaluation.
4. Work to limit the increase in liquidity of banks, because this is inconsistent with the profitability of these banks.

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