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The effect of early warning indicators for the banking system on inflation in Iraq using the ARDL model

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extract

Iraq one of the countries whose banking system is often exposed to certain disturbances due to the weakness of the monetary mechanisms used in managing these crises or the weak performance of that device in activating early warning indicators on the effect on inflation. Therefore, the research came to aim at analyzing the development of these indicators and their quantitative relationship in the inflation. For the period (2006 - 2020), using the Autoregressive Distributed Time Gaps (ARDL) model, the research reached a set of conclusions, the most important of which was the weak impact of early warning indicators on the inflation, which indicates the weak effectiveness of the Iraqi banking system despite the high Ratios of capital adequacy and asset quality, which is not commensurate with the requirements of the current stage.

Keywords: early warning indicators, (CAMELS), inflation

Introduction

The banking crisis has serious effects on the local economy, as well as its effects on the international economy. Perhaps the effects on inflation and the level of use are among the important effects on the real sector of the economy, because it means the emergence of a state of economic stagnation, which may lead to a significant decline in the use of the banking sector. To the point of causing damage to the entire banking system, and crises affecting the banking system constitute turmoil in the financial markets, and since these financial and banking markets are interconnected in light of globalization, these crises quickly move their impact from one economic region to another, and the development of a group has become very inevitable. One of the early warning means is to detect these crises before they occur and to try to limit their negative effects as much as possible, before they intensify and lead, by weakening the ability of these markets to operate effectively, to significant adverse effects on the real economy.

Research Importance

The importance of the research is summarized in explaining the role played by early warning indicators in banking crises and their impact on inflation, as these indicators provide an important tool for guidance and warning to decision makers and policy makers

to take the necessary measures to protect the banking system from the impact of these crises.

Research problem

The problem of the research is summed up in the following question: (How do early warning indicators of banking crises affect inflation, and which one has a greater impact? ...)

Research hypothesis

The research stems from the hypothesis that (predicting the indicators of banking crises has positive effects on inflation)

Research Objectives

The research aims to achieve a number of points, the most important of which are:

1- Analysis of the theoretical relationship between early warning indicators of banking crises and inflation
2- Analysis of early warning indicators in the Iraqi banking system during the period (2006-2020(
3- A quantitative estimate to measure the impact of early warning indicators of banking crises on inflation

Research Methodology

In order to reach the goals sought by the research and to test the hypothesis, the researcher adopted each of the descriptive approach based on economic analysis by reviewing the development trends for each of the early warning indicators of banking crises represented by the indicators of the banking evaluation system (CAMELS), inflation in Iraq, and the quantitative method depending on On the ARDL model to show the relationship between the research variables, the data was transferred to a quarterly due to the small sample size represented in the period 2006-2020.

The first axis: the conceptual aspect of early warning indicators (CAMELS) and Inflation

First: The conceptual aspect of early warning indicators (CAMELS(

1- CAMELS SYSTEM CONCEPT

The CAMELS system is a method for analyzing the performance of banks, monitoring their performance, supervising and following up. This analysis helps to understand whether the banks are adopting the relevant laws and regulations and to establish an effective internal control system that identifies problems at an early stage[1]

2- Features of the CAMELS standard:[2]

A- This standard works on classifying banks according to a unified standard.

B - Shortening the inspection time by focusing on five main items, and not dispersing efforts in inspecting items that are unnecessary or do not affect the soundness of the bank's financial position.

c- Relying on numerical evaluation more than the structural method in writing reports, which reduces

Report size

d- Making a comprehensive classification of the banking system as a whole according to a unified approach and analyzing the results horizontally for each

A bank separately and for each similar group of banks, and vertically for each element of the banking performance referred to for the banking system as a whole.

C- It is relied upon in making the supervisory decisions and corrective measures that follow the inspection.

H- Defines the degree of transparency in reflecting the data sent by banks to the Central Bank and the extent of

The reliability of the references.

3- The rating system (CAMELS:[3]

According to this system, the regulatory agencies confirm their commitment to evaluating financial institutions comprehensively and on a unified basis for all components of (CAMELS) and on an individual basis for each component of the system. At the same time, rating 5 indicates a weak and dangerous level that requires immediate help from shareholders or external resources. The CAMELS system includes many indicators and ratios through which each element can be evaluated separately. These indicators can be clarified as follows:

A- Adequacy Capital

Capital adequacy is defined as the ability and efficiency of banks in directing and controlling the risks to which the bank is exposed in order to reduce and control them and to take decisions that are consistent with the bank's strategy and policy and support its competitiveness.[4]

B- Asset Quality

Usually the top management of a bank is mostly concerned with the quality of the loans it makes to its clients because it provides profits to the bank, and the asset quality rating gives the level of future financial risks associated with the borrowing, as well as the risks of portfolio investment, real estate and off-balance sheet risks.

C- Management Quality

Quality of management is essentially the ability of the board of directors to identify, measure and control the risks of the organization's activities and to ensure the safe, sound and effective operation in accordance with applicable laws and regulations.

Earning Management Profitability:

D- Liquidity quality

The concept of bank liquidity is the ability of the bank to meet its financial obligations, which consists largely of meeting the requests of depositors to withdraw from deposits and meet the requests of borrowers to meet the needs of society, and the absolute concept of liquidity means cash, while the technical concept of liquidity means the ability of assets to convert to cash quickly and without losses[5].

E- Sensitivity to Market Risk

This indicator reflects the degree to which the bank's profitability depends on fluctuations in interest rates and exchange rates, as well as on changes in buying and selling prices. It indicates anything exposed to market risks.

Second: The conceptual aspect of inflation

1- The concept of inflation

Inflation is one of the most common economic terms. Despite the prevalence of the term inflation, there is a difference among economists about the concept of inflation, as there is no comprehensive concept in the economic literature for inflation[6].

Since the theories of inflation have gone through many developments as a result of the development of the stages of economic thought, there were different ways of defining inflation due to the different theories[7].

Inflation is defined as an upward movement of prices characterized by self-continuity as a result of high levels of demand and low supply [8], and inflation is the general and continuous rise in general levels of prices, and since the general trend of price increases must be upward and continuous, therefore, price increases are excluded only once. This is because the reason for excluding a one-time price rise from the definition of inflation is related to politics, so there is no need to make a policy in the event of a one-time price rise. On the contrary, in light of inflation, prices increase continuously and indefinitely[9].

2- types of inflation

Due to the multiplicity of concepts and theories of inflation, this means that there are multiple types of inflation, and each type has its causes and ways of treating it. Despite that multiplicity, there is a kind of overlap and overlap between the types of inflation. The emergence of another type of inflation, however, there remains a common characteristic among all types of inflation, and this characteristic is represented by the inability of money to perform its functions in the required manner in light of inflation as a result of the rise in prices and the deterioration of the currency value. Among these types are the following:

A - normal inflation

It occurs as a result of the increase in the population and then the increase in demand for goods and services, so the state finances part of public spending through excessive currency issuance without a cover, which leads to a rise in the general level of prices, and this type of inflation suffers from the vast majority of countries in the world, and from The methods used to confront this type of inflation: that countries develop special programs to regulate the number of family members and to determine births[10]

B - desired inflation

This type of inflation in which the rate of increase in the general level of prices is less than (2%), which constitutes an incentive to encourage producers to increase their production to maintain an adequate standard of living [11].

C- imported inflation

This type appears in the economies of developing countries as they are more open to the outside world, and the reason for this type of inflation is attributed to the rise in the prices of imported goods from abroad, and there is difficulty in controlling this inflation because it is imported inflation, and that most countries that suffer from this type of inflation As a result of its dependence on imported goods, whether consumer goods or production goods, in order to implement its development programs [12].

- cost inflation

Cost inflation occurs as a result of the increase in the prices of domestic and imported production factors and the prices of primary commodities, which affects the prices of produced goods [13].

-5Suppressed inflation

As a result of the increase in price levels that would have occurred had it not been for government intervention, by following the policy of price control and providing subsidies to producers and price support for goods and services [14].

- 6hyperinflation

It is one of the most dangerous types of inflation, which appears as a result of an excessive increase in the quantity of money with a severe shortage in the commodity supply.

The production, which pushes it to a new increase in prices, and this inflation is accompanied by the collapse of the value of the currency, which is a strong inflation that takes place within a short period of time. [15]

The second axis: the reality of early warning indicators according to the evaluation system (CAMELS) for the Iraqi banking system for the period (2006-2020)

Table (1)

Early warning indicators of the Iraqi banking apparatus

the years	Sufficiency of capital %	Delayed debt rate / total assets	Total loa total depo
2006	112	0.05	0.84
2007	116	0.07	7.85
2008	157	0.07	10.36
2009	138	0.07	11.16
2010	130	0.07	20.25
2011	107	0.31	27.19
2012	138	0.25	36.85
2013	195	0.96	35.87
2014	104	1.04	38.06
2015	87	1.38	47.08
2016	109	1.51	49.05
2017	211	2.80	46.18
2018	285	3.97	40.50
2019	173	3.15	43.12
2020	253	3.24	30.24

Source: Prepared by the researcher, relying on the Central Bank of Iraq, the General Directorate of Statistics and Research, the annual bulletin (separate years)

First: Capital Adequacy's capital adequacy

With regard to the capital adequacy ratio of the Iraqi banking system, the ratio has maintained its stability during the period (2006-2020) and at rates much higher than those applied internationally according to Basel III Agreement, which indicates that the Iraqi banking system enjoys high solvency and enhances its ability to absorb losses. The potential capital adequacy ratio for the Iraqi banking system in 2006 was (112

percent), which is a very high capital adequacy ratio, which amounts to 12% specified by the Central Bank and is equivalent to 9 times the rate specified by the Central Bank and continued to increase for the years (2007, 2008).), which amounted to (116%, 157%), respectively, with a growth rate of (35.34%, 3.57%), while the capital adequacy ratio recorded a slight decrease for the years (2009-2011) amounting to (107%, 130%, 138%) with a growth rate of (138%) Negative (17.69%-5.79%-12.10%), respectively, and through the table data, we note that the capital adequacy ratio of the Iraqi banking system for the years (2012-2020) fluctuated between high and low, as it reached the lowest ratio during the period (87%).) in 2015 and the highest percentage was (285%) in 2018. Despite the fluctuation of these percentages, they exceeded the percentage established by the Central Bank The Iraqi banking system, which is 12%, is an indicator that the banking system has a strong capital that enables it to face various risks. In addition, the percentage achieved by the banking system exceeded the standard rate issued by the Central Bank of Iraq, and exceeded the percentage determined by the Basel Committee, and it obtained the first classification (1)) from the evaluation model, because of exceeding the percentage achieved by the required standard ratio, and although the high of this percentage is evidence of the availability of greater protection for the bank in the face of potential risks, but its high leads to the freezing and disruption of its available resources

Second: Asset Quality

From Table (1) it is noted that the ratio of asset quality according to the overdue debt index to total assets was stable for the years (2006-2010), reaching (0.05%) in 2006, and reaching (0.07) in 2010, while it recorded a remarkable increase, reaching (0.31) %) for the year 2011 as a result of the rise in overdue debts from (275.0) billion dinars in 2010 to (459.0) billion dinars in 2011, an increase of (184) billion dinars, and the ratio of bad debts to total assets decreased in 2012, reaching (0.25%) as a result of Total assets increased from (143766.0) billion dinars in 2011 to (190980.9) billion dinars in 2012 with a slight increase in bad debts in 2012, and the ratio of overdue debts to total assets increased significantly in 2013, reaching (0.96%) as a result of the increase in bad debts It recorded (1994.4) billion dinars compared to 2012, which amounted to (459.0) billion dinars, and it was ranked (1) from the evaluation model, and this indicates that the banking system has strong assets and good loan management, and these percentages continued to rise for the years (2014-2020). Except for 2019, the ratio of bad debts to total recorded Assets decreased by (3.15%) compared to (3.97%) in 2018, as a result of a decrease in overdue debts from (4900.0) billion dinars in 2018 to (4200.0) billion dinars in 2019 and rose again for the year 2020 to reach (3.24%((

Third: Management Quality

From Table (1), we note that the Iraqi banking system recorded its lowest performance level in 2016 as it reached 49.05%. In risk management, the banking sector ranked (5). The Iraqi banking sector recorded its highest performance level in 2007, which amounted to (7.85%), and the reason for this is due to the increase in total deposits by (9260.7) billion dinars from 2006, and it obtained the first classification (1)) from the evaluation model, and this indicates that the administration is a strong performer, and the banking system has a management commensurate with the amount of risks that it may be exposed to and control over them

Fourth: The quality of profitability Earning Management

The researcher relied on the use of profitability ratios through the available data and according to the return on assets indicator and the return on equity indicator

First, the return on assets (ROA.(

The return on assets indicator is one of the important financial ratios that measure the bank's performance and an indicator used to measure the bank's ability to achieve profits through the total assets owned in the future. It is noted from Table (1) that the highest rate achieved by the Iraqi banking sector as a return on assets during the study period was in 2007, when it amounted to (0.19) and that the rates of return on assets fluctuated between Increases and decreases if they reached (0.20%) in 2010, then increased to (0.64%) in 2011, followed by 2012 (20.8%), then the profitability ratios decreased, reaching (.710%) in 2013, as well as in 2014 (0.54%). For 2015 (0.47%) and for 2016 (0.50%), this decrease in the profitability ratios of the Iraqi banking system is attributed to the deterioration of the security situation and the war, in addition to the occurrence of a deficit in the public budget as a result of the drop in international oil prices, which negatively affected the economic sectors, especially on business results. Banking institutions limited their profits and then increased again for the year 2017 to (0.84%) due to the improvement in the political and economic conditions of the country, which reflected positively on the economic sectors, especially the financial and banking institutions, while the rate of return on assets decreased for the year 2018 to (0.53%), as a result of The decline in banks' profits, as the net profit decreased from (1322) billion dinars in 2017 to (656) billion dinars in 2018, while the return on assets amounted to (0.89,8% 0.80%) for the years (2019-2020), and this increase is a result of the bank's direction The Central Bank urged banks to grant credit through a number of initiatives it presented to banks, in addition to the increase in banks' profits, as the net profit rose from (656) billion dinars in 2018 to (10781240) billion dinars, respectively, for the years (2019-2020) Although Iraq and the world were affected by the closure as a result of the Corona pandemic.

Second, the return on equity, ROE

The rate of return on equity is a comprehensive measure of profitability because it measures the return on shareholders' investments in the bank, so it is considered an indicator of the bank's ability to attract investments because the return on investment is a fundamental determinant of investors' decisions(), and it became clear from Table (1) that the profitability of the Iraqi banking sector High compared to the profitability rate determined by the Central Bank, which was set by 0.5%, where the profitability ratio in 2007 amounted to 2 (45.8), compared to (453.3) in 2006, and it recorded an increase in 2009, which amounted to (36.3), and the rate of return on equity decreased for the years (2010). -2011) to (23.01, 26.75%) respectively due to the financial crisis on the economy and the profitability ratios in banks increased in 2012 to (26.94%) and the profitability indicator of the Iraqi banking sector represented in the return on equity during the period (2013-2018) It recorded a continuous decline, and that the lowest percentage was recorded (04.3%) in 2018, which is a higher percentage than the percentage specified by the Central Bank, as a result of the increasing increase in the capital of the Iraqi banking sector, as well as the decrease in the net profit achieved during the period, while the rate of return on The property rights for the years (2019-2020) amounted to (7.30, 6.90%) respectively for the Iraqi banking system, and this ratio reflects the rate of return obtained by investors, the efficiency of the banking system and its success in generating profits, and the main reason for increasing this ratio is the rise in net Profit and increase the value of assets.

The fifth requirement: Liquidity position

It is noted from the data of Table (1) that the liquidity ratios of the banking system in Iraq towards this indicator witnessed fluctuating ratios between high and low. Liquidity as a result of the decrease in the volume of liquid assets in relation to total assets, and the bank may be exposed to risks when paying its obligations, especially as it decreased

from the percentage specified by the Central Bank of Iraq, but this policy is considered to have high returns, while the percentages of this indicator witnessed a slight increase for the years (2010, 2009, 2008) as the ratio reached (23.6%, 24.1%, 23.7%) with a growth rate (-2.1, 1.7%, 3.9%, respectively), and these percentages of liquidity are lower than the percentage established by the Central Bank of Iraq, but which is dominated by The percentage increase in this indicator compared to the lowest percentage, and this indicator reached its highest percentage in 2014, when it reached (66.8%), as it is considered a high percentage in terms of the standard percentage specified by the Central Bank of Iraq, but it has low returns, and then this is considered The ratio is good to keep banks from bankruptcy, and this ratio is considered high After that, this indicator witnessed fluctuating rates between decrease and rise, but at very slight percentages until the end of 2017, which amounted to (65.5%.(

The sixth requirement: Sensitivity to market risk

And the element of sensitivity to market risks refers to the bank's ability to recognize, monitor and manage market risks and highlight problems in order to give an indication to the management to take the necessary measures in this regard and to analyze the sensitivity to market risks and the ratio that we used to measure the sensitivity of the Iraqi banking sector in researching our thesis is the absolute gap |**GAP**| Through which the sensitivity of banks to market risks is measured, and it is calculated through the ratio of the gap to the total assets sensitive to interest rates and from Table (1) we note that the Iraqi banking sector achieved a positive gap for the length of the study period (2006-2020) and this was shown by the gap ratio, which is greater than one, as a result of the increase in interest rate-sensitive assets against interest rate-sensitive liabilities, and this increase comes due to the banks' desire to increase the returns achieved by those assets, which are the interest received on the deposited amounts, investment in various tools and cash credit, and through the table data we also note that the lowest gap Achieved by the Iraqi banking sector was in 2006 and amounted to (212.5) billion dinars, while the highest gap reached (60082.6) billion dinars in 2020, any rise in interest rates leads to a rise in the interest return, and as a result of banks retaining large assets, the rise in interest rates will achieve profits Large and vice versa in the case of a decline in interest rates, and the absolute gap ratio shows the intensity of sensitivity of banks towards these changes, as this ratio ranged between (5.8%) as a very low in the year 200 6 and (90.8%) as a general maximum, and these percentages are very large, so banks must strike a balance between interest rate sensitive assets and interest rate sensitive liabilities to avoid losses, especially when interest rates drop.

The second requirement: the development of inflation rates in Iraq for the period (2006-2020(

The inflation rate in the Iraqi economy reached varying rates during the period 2006-2020, between high and low at other times. After it reached about 30.89% in 2007, it decreased to reach 0.61% in 2020, and its highest rate during the research period was in 2007 of About 30.89% indicated that it decreased to 12.7% in 2008. The reason for this is attributed to the increase in foreign reserves, especially after the lifting of international sanctions, which contributed to an increase in oil prices and exported quantities, which also contributed to the improvement of the exchange rate of the national currency, and it continued to decline during the years (2009-2013).) That is, from 12.70% in 2012 to 1.86% in 2013, and the important role in this area in the low rate of inflation comes to monetary policy measures through the currency sale window that the Central Bank of Iraq resorts to in achieving monetary stability and then controlling the general price level despite From the growth in the money supply, the situation has continued to decline until achieving a negative rate of -0.20% in 2019 and

0.61% in 2020, which indicates the continuation of the previous monetary policy approach to achieving monetary stability, as well as the stability of the exchange rate in those countries. Years

Table (2)

Records for consumer prices in Iraq and annual inflation ratesFor the period (2006-2020)

the years	The general level of prices	Inflation rate %
2006	76.4	–
2007	100.0	30.89
2008	112.7	12.7
2009	122.1	8.92
2010	125.1	2.46
2011	132.1	5.60
2012	140.1	6.06
2013	142.7	1.86
2014	145.9	2.24
2015	148.0	1.44
2016	148.1	0.07
2017	148.4	0.20
2018	149.0	0.40
2019	148.7	– 0.20
2020	149.6	0.61

Analysis of the relationship between early warning indicators .(CAMELS) and inflation (IN) using the ARDL model

First: the effect of early warning indicators (CAR, AQ, MQ, E, L) on (IN(

For the purpose of showing the impact of early warning indicators represented by (Capital Adequacy CAR, Asset Quality AQ, Management Quality MQ, Profitability E, Liquidity L) on Inflation (IN) in Iraq for the period (2006 - 2020) it is noted from Table (3) that the model Which was chosen between that the optimal slowdown period is (1, 5, 1, 5, 5, 5) according to the AIC criterion, which represents the lowest value for this criterion, and that the explanatory powers of the model were 0.97% through the R2 test, meaning that The independent variables included in the estimated model (CAR, AQ, MQ, E, L) explain about (97%) of the changes in the dependent variable (IN), while the remaining (3%) are random variables that the model did not take into consideration, and these variables represent the effects of The random variable on the dependent variable As for the (F-statistic) test of the estimated model, the probability value amounted to zero, which is less than 5%, and this means the morality of the model.

Table (3)

ARDL methodology for the impact of early warning indicators –

(CAR, AQ, MQ, E, L) on (IN)

Dependent Variable: N
Method: ARDL
Date: 08/17/22 Time: 10:24
Sample (adjusted): 2007Q2 2020Q4
Included observations: 55 after adjustments
Maximum dependent l gs: 5 (Automatic selection)
Model se ection method: Akaike info criterion (AIC)
Dynamic regressors (5 lags, automatic): CAR AQ MQ E L
Fixed regressors: C
Number of models evalulated: 38880
Selected Model: ARDL(1, 5, 1, 5, 5, 5)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
N(-1)	0.739919	0.134331	5.508194	0.0000
CAR	-0.090697	0.012083	-7.506025	0.0000
CAR(-1)	0.072843	0.016696	4.362864	0.0002
CAR(-2)	-4.88E-15	0.005006	-9.74E-13	1.0000
CAR(-3)	4.04E-16	0.005006	8.06E-14	1.0000
CAR(-4)	-0.059336	0.008349	-7.107249	0.0000
CAR(-5)	0.043572	0.011311	3.852114	0.0007
AQ	5.997472	0.963405	6.225287	0.0000
AQ(-1)	-4.902580	1.177520	-4.163480	0.0003
MQ	-0.181194	0.059350	-3.052966	0.0050
MQ(-1)	0.137172	0.071227	1.925852	0.0647
MQ(-2)	-1.17E-13	0.052153	-2.24E-12	1.0000
MQ(-3)	6.81E-15	0.052153	1.31E-13	1.0000
MQ(-4)	-0.621788	0.081997	-7.583033	0.0000
MQ(-5)	0.462125	0.110934	4.165768	0.0003
E	15.72768	1.875424	8.386203	0.0000
E(-1)	-12.42071	2.876277	-4.318329	0.0002
E(-2)	-7.90E-13	1.574052	-5.02E-13	1.0000
E(-3)	1.37E-13	1.574052	8.67E-14	1.0000
E(-4)	10.10175	2.833993	3.564493	0.0014
E(-5)	-8.994920	2.937797	-3.061791	0.0049
L	-0.539880	0.086514	-6.240362	0.0000
L(-1)	0.409426	0.118008	3.469479	0.0018
L(-2)	1.25E-13	0.061046	2.05E-12	1.0000
L(-3)	-5.77E-14	0.061046	-9.45E-13	1.0000
L(-4)	0.533929	0.100465	5.314571	0.0000
L(-5)	-0.375974	0.117070	-3.211537	0.0034
C	7.881441	4.851599	1.624504	0.1159

R-squared	0.971529	Mean dependent var	4.215273
Adjusted R-squared	0.963058	S.D. dependent var	5.486159
S.E. of regression	0.714090	Akaike info criterion	2.471071
Sum squared resid	13.76797	Schwarz criterion	3.492986
Log likelihood	-39.95444	Hannan-Quinn criter.	2.866254
F-statistic	117.0485	Durbin-Watson stat	2.020000
Prob(F-statistic)	0.000000		

Source: prepared by the researcher based on the statistical program (Eviews: 12)

Second: Border Test

In order to know the degree of correlation between the standard variables of the standard, and when there was a joint integration relationship between the variables, through the border testing and through the table (4) the boundary (Bound Test) was tested, as the results of the table (4) indicate that the value of his calculated statistics f has reached (1.026587) It is less than the critical value of the higher and minimum limits of statistical values and at a moral level (10%, 5%, 1%) and then we accept the hypothesis of nothingness, which states that there is no common integration relationship or a balanced relationship between the variables of the model and we reject the alternative hypothesis that stipulates On the existence of a common integration or a long -term balanced relationship that is directed from all explanatory variables towards the dependent variable.

Table (4)

Results of the Bound Test for the joint integration of the impact of early - warning indicators (CAR, AQ, MQ, E, L) on (IN)

Test Statistic	Value	K
F-statistic	1.026587	5
Critical Value Bounds		
Significance	I (0)	I (1)
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

- Source: Prepared by the researcher based on the results of the statistical program (Eviews: 12)

Third: Diagnostic tests (self -association) and (non -homogeneity of contrast) in the ARDL model

To ensure that the estimated model is free of the self-association problem, it is tested using a Breusch-Angdfrey Corial Coriallation LM Test) as well as the (HETEROSDADASTICITY TEST: Arch) test to ensure that the estimated model is free from the problem of not homogeneity of contrast at a moral level (5%) of the relationship between The variables are the subject of research, as the results of the standard criteria for the model and shown in Table (5) showed that the standard model does not suffer from the problem of self-association according to the Breusch-Serial Correlation LM Test), that is, we accept the hypothesis of nothingness that states that there is no problem of self-association, because the value (Prob. F) and (Prob. Chi-Square) is non-moral at a moral level (5%), and we reject the alternative hypothesis that stipulates the existence of a problem of self-association, and these tests enhance the quality of the model, as well as the estimated model of the problem of non-homogeneity of contrast As the values of (Prob. F) and (Prob. Chi-Square) were non-moral at the level of (5%) according to the test (Heterostedasticity Test: Arch) and this supports the validity and accuracy of the standard of the standard model used, as schedule (5) shows The value of 0.6332) (Prob.chi-Square has reached a test LM is larger than (5%), as well as 0.7339)) -Square prob.chi in the Arch test, which is greater than (5%) and accordingly we accept the hypothesis of nothingness and reject the alternative hypothesis.

Table (5)

Model diagnostic tests for the impact of early warning indicators -

(CAR, AQ, MQ, E, L) on (IN)

F-statistic	**0.211251**	**Prob.F**	**0.8110**
Obs*R-squarested	**0.914057**	**Prob.Chi-Square**	**0.6332**
Heteroskedasticity Test : ARCH			
F-statistic	**0.120422**	**Prob.F**	**0.7300**
Obs*R-squared	**0.124764**	**Prob.Chi-Square**	**0.7339**

- Source: prepared by the researcher based on the results of the statistical program (Eviews: 12)

Fourth: ECM Correction Form according to the ARDL methodology

Based on the foregoing, the existence of a joint integration relationship allows the move to estimate the short -term relationship between the variables using the ARDL Table (6) refers to Cointeq (-1)* The value of the error correction coefficient .model (ECM) reached (-0.260081) negative signal and high-level morality of (0.0063: Prob) negative and moral, which are two main conditions in the (ECM) method The model is directed towards achieving a balance in the long term, and in other words there is a correction from the short -term to the long term at a rate of (0.16%), so the estimates of the long -term parameters measure the total effect, whether direct or indirect to change in independent variables on the dependent variable, While it measures the direct effect only in the short term.

Table (6)

The results of the error correction model (ECM) according to "ARDL methodology for the impact of early warning indicators (CAR, AQ, MQ, E, L) on (IN)

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CAR)	-0.090697	0.010064	-9.011763	0.0000
D(CAR(-1))	0.015764	0.006209	2.539020	0.0172
D(CAR(-2))	0.015764	0.006209	2.539020	0.0172
D(CAR(-3))	0.015764	0.006209	2.539020	0.0172
D(CAR(-4))	-0.043572	0.008434	-5.166047	0.0000
D(AQ)	5.997472	0.789144	7.599969	0.0000
D(MQ)	-0.181194	0.047060	-3.850272	0.0007
D(MQ(-1))	0.159663	0.063365	2.519727	0.0180
D(MQ(-2))	0.159663	0.063365	2.519727	0.0180
D(MQ(-3))	0.159663	0.063365	2.519727	0.0180
D(MQ(-4))	-0.462125	0.079423	-5.818515	0.0000
D(E)	15.72768	1.492758	10.53599	0.0000
D(E(-1))	-1.106828	1.073807	-1.030751	0.3118
D(E(-2))	-1.106828	1.073807	-1.030751	0.3118
D(E(-3))	-1.106828	1.073807	-1.030751	0.3118
D(E(-4))	8.994920	2.216441	4.058272	0.0004
D(L)	-0.539880	0.070062	-7.705743	0.0000
D(L(-1))	-0.157955	0.066070	-2.390738	0.0241
D(L(-2))	-0.157955	0.066070	-2.390738	0.0241
D(L(-3))	-0.157955	0.066070	-2.390738	0.0241
D(L(-4))	0.375974	0.090520	4.153507	0.0003
CointEq(-1)*	-0.260081	0.087758	-2.963616	0.0063

Source: Prepared by the researcher based on the results of the statistical program – (Eviews: 12)

Fifth: Estimating the long -term relationship according to the ARDL methodology

From Table data (7) related to the results of estimating the relationship between variables in the long term

The parameters with the reverse effect: It is clear from the results of the long -term response, the existence of a long -term reverse effect, as they exercise independent variables (COAR's adequacy, MQ quality) is an opposite effect with the dependent variable (inflation in), as the high rates of capital adequacy and improvement of quality are improved The banking administration of the Iraqi banking apparatus leads to the low rate of inflation, as a result of the high rates of capital adequacy for the Iraqi banking system at very large rates that exceed the standard proportions specified by the Central Bank of Iraq, and this indicates that banks retain the obstructed capital, that is, twice the investments, as well as weakness Legal policy.

- Teachers that did not show any effect: It is clear from the results of the long -term response that there is no effect, as it is noted that independent variables (the quality of the assets AQ, profitability E, liquidity L) did not have any effect on the dependent variable (in), as the teacher appeared to the variables Independent is positive and is compatible with economic logic, but it is statistically non -moral, and this indicates that

there is no long -term balance between (the quality of AQ assets, profitability E, liquidity L) and inflation (in).

Table (7)

The results of the long-term relationship according to the ARDL methodology for the impact of early warning indicators (CAR, AQ, MQ, E, L) on (IN)

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAR	-0.129262	0.050870	-2.541049	0.0171
AQ	4.209816	2.637092	1.596386	0.1220
MQ	-0.783158	0.181157	-4.323089	0.0002
E	16.97088	13.75683	1.233634	0.2280
L	0.105741	0.375750	0.281414	0.7805
C	30.30382	7.733578	3.918474	0.0005

EC = N - (-0.1293*CAR + 4.2098*A2 -0.7832*M + 16.9709*E + 0.1057*L + 30.3038)

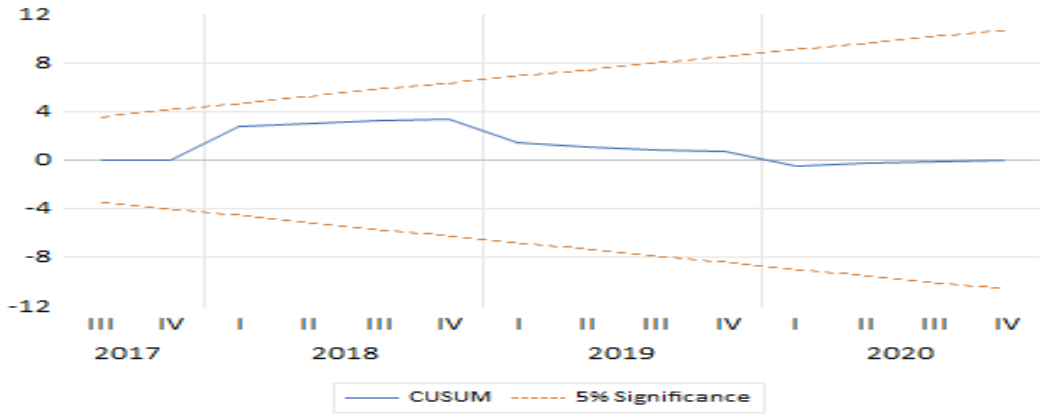
Source: Prepared by the researcher based on the statistical program (Eviews: 12)

Sixth: Forms Stability Test (Cumulat Cumm) Cusum

- The cumulative group of the rest of the remains (CUSUM) is one of the most important tests in this field because it shows two important things, the extent of stability and harmony of long -term teachers with short -term parameters, and clarifying the extent of any structural change in data, and according to this test and in order to verify the structural stability of the model The estimated (ARDL) for long and short -term parameters, as the graph for the cumulative total test of the rest within the critical limits at a morale is 5%, in this case the hypothesis of nothingness is accepted that stipulates that the parameters of the model are long and short -term, and these parameters are unstable then The graphic form is transmitted outside the critical limits at this level, as the hypothesis of nothingness and acceptance of the alternative hypothesis is rejected, which states that the parameters are unstable, as it becomes clear through Figure (1) that the estimated line falls within the critical limits and fluctuates about the zero value and the higher and the lowest and at the level 5% moral, thus the long and short -term parameters are stable for the estimated model ARDL

Figure (1)

The results of the test of the cumulative sum of the residuals CUSUM for the effect of early warning indicators (CAR, AQ, MQ, E, L) on (IN)



Source: Prepared by the researcher based on the outputs of the statistical program (Eviews: 12)

Conclusions

1- Early warning indicators of banking crises represented by the banking evaluation system (CAMELS) are the most important early warning models in the financial performance of banks from all technical, financial and administrative aspects, and identify strengths and strengthen them and weaknesses to put treatments to overcome them.

2- The capital adequacy ratios for the Iraqi banking system during the study period 2006-2020 recorded very high ratios that exceed the standard ratios set by the Central Bank of Iraq by 12%, as the lowest value was (112) in 2006 and the highest value was (285) in 2018, and the ratios also exceeded The standard set by Basel and thus the banking system obtained a classification (1) according to the (CAMELS) standard, and although the high capital adequacy ratio is evidence of greater protection for the banking system in the face of risks, but the high of this ratio leads to disruption and freezing of available resources, which is reflected negatively on macroeconomic variables.

3- Through the research, it became clear that the Iraqi banking system is not developed through the use of (CAMELS) indicators for banking evaluation, and that it was not able to play an important and effective role in the rate of inflation growth in Iraq during the period 2006-2020. This conclusion was reached through Standard model using ARDL

Recommendations

1- The need to focus and pay attention to the early warning indicators of banks (capital adequacy ratio, asset quality, management quality, profitability, liquidity) and analyze them and take their results in order to hedge against any future banking crises, by identifying and strengthening strengths and weaknesses to overcome and counter potential threats

2- The need to focus and pay attention to the early warning indicators represented by (capital adequacy ratio, asset quality, management quality, profitability, liquidity) and analyze them and take their results in order to hedge against any future banking crises,

by identifying and strengthening strengths and weaknesses to overcome and counter potential threats

3- The need to focus and pay attention to the early warning indicators represented by (capital adequacy ratio, asset quality, management quality, profitability, liquidity) and analyze them and take their results in order to hedge against any future banking crises, by identifying and strengthening strengths and weaknesses to overcome and counter potential threats

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