

# **Measuring and analyzing the impact of bank cash credit on the growth of the Iraqi economy for the period (2004–2020)**

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## **Abstract**

Bank credit is one of the most attractive banking activities for managing commercial banks and other intermediary financial institutions, but at the same time, it negatively affects the national economy if it does not improve its use, so through it it can achieve the largest part of profits and then increase investment to achieve economic growth. In Iraq, bank credit influences economic growth, given the credit facilities provided by commercial banks to the public and private sectors. Therefore, the research aimed to identify the role and importance of bank credit in economic growth, and then measure the relationship between them in Iraq during the period (2004– 2020) using the (Eviews–12) program through three main axes, and a set of conclusions was reached, the most important of which was the existence of a direct relationship between the expansion of the volume of bank credit and economic growth according to the (ARDL) methodology, that is, if there was a clear effect of the independent variable (CRE) in the long–run dependent variable GDP.

**Keywords: Iraq, bank cash credit, economic growth, ARDL model.**

## **Introduction.**

Bank credit is an effective tool that emerges within the effectiveness of the banking sector, as well as being a sensitive tool that has positive and negative effects, Excessive use of it may lead to inflationary pressures, and its deflation leads to depression, while excessive use leads to inflationary pressures, In other words, it is a political tool, Extremely important in different economies, developed and developing, and both cases have serious economic effects that may be difficult to address. Through it, the largest part of the profits can be achieved, and without it, banks lose their role as a financial intermediary.

It is considered one of the most attractive banking activities for managing commercial banks and other intermediary financial institutions, but at the same time, it negatively affects the national economy if it does not improve its use, so through it can achieve the largest part of profits and then increase investment to achieve the growth and advancement of that economy.

As the provision of funds advances the economy, secures the currency and increases production capacity and national income, which calls for special attention from the monetary and financial authorities to monitor credit and its proper direction and path for fear of excessive use in unstable conditions, and Iraq, despite the renter nature of its economy, suffers from Distortions in economic growth, not to mention the rise in the price level, and bank credit is one of the important banking services that Iraqi commercial banks resort to revitalize the national economy, due to its mediating role between surplus economic units (depositors) and deficit economic units (investors) by granting loans and banking facilities for these units.

**Research importance:**

The importance of research stems from describing bank credit in Iraq as one of the important topics and through it influences economic growth, through its role in influencing the sectors of the national economy, especially with regard to its role in raising the level of public and private investment activity due to the credit facilities provided by commercial banks to the private and public sectors.

**Research problem**

The problem of the research lies in identifying the impact of the effectiveness of bank credit on some economic variables in Iraq represented by economic growth for the period (2004–2020), and what is the impact of the effectiveness of bank credit on that growth.

**Research objective:**

1. Recognizing the role and importance of bank credit in economic growth.
2. Measuring the relationship between bank cash credit and economic growth in Iraq during the period (2004–2020).

**Research Hypothesis:**

The hypothesis adopted by the research can be formulated as follows:

(There is a long-term relationship between bank cash credit and economic growth in Iraq during the period (2004–2020)).

**Research Methodology:**

The research depends on the quantitative method based on economic measurement with an orientation towards measuring the impact of bank credit on economic growth in Iraq during the period (2004–2020).

### **The First Axis**

#### **The nature of bank credit and economic growth**

##### **First: Essence bank credit**

Bank credit is important like other concepts in the economic, administrative and social fields. It has been defined in general as the process of providing individuals, institutions and establishments in society with the necessary funds, provided that the debtor undertakes to pay those funds and their interests at once or in installments on specific dates (Al Douri Al–Samarrai: 2006, 74).

It is defined as those services provided to clients by which individuals, institutions and projects in the community are provided with the necessary funds, provided that the debtor undertakes to pay those funds along with their interest and commissions due on them and all expenses either in one payment, or in installments on pre-recorded and specified dates (Abdul Aziz and others: 2006, 194). It is also defined as the confidence that the bank gives to the customer, whether moral or natural, when he grants him a sum of money or entrusts him with it during an agreed period of time between the two parties. (Al Douri Al–Samarrai: 2006, 74). Accordingly, it is a contract whereby the lender (the bank) undertakes to hand over to his borrowing customer a sum of money or put it in his account, in return for the customer's commitment to return this amount at the time agreed upon in addition to the loan proceeds, and the bank's commission, and from this we find that bank credit is the simplest form of bank credits. Where the bank puts the amount at the disposal of its customer and the customer can dispose of the amount without condition or restriction (Al–Banna: 2006, 452). The balance between liquidity requirements and profitability requirements is achieved through conscious and studied credit policies (Morsi: 2021, 138), as well as creditworthiness, which means the ability to Obtaining credit is an important and necessary condition in enabling the customer to obtain his request from credit on better terms. Here, creditworthiness is determined by solvency, reputation, fame and market share. The customer's creditworthiness has improved, and there are several divisions of credit, the most important of which are the following:

1. In terms of the credit owner: The credit is divided into two forms: credit granted to the private sector and credit granted to the public sector. (W. Brammertz I, 2009, 125)

2. In terms of bank credit according to finance: this credit is classified into two types, namely, direct bank credit. and indirect bank credit.
3. In terms of the nature of credit: It is classified into cash credit and pledge credit (Muznan: 2011, 72).

In terms of its importance, it contributes to the development of economic activity, as loans create employment opportunities, increase the purchasing power of individuals and improve the standard of living (Zayda: 2006, 34) and contribute to raising consumption rates for low-income individuals by providing loans to them and helping them purchase goods and services. which they are unable to buy and encourage them to save (Zaydah: 2006, 34), and it also increases the volume of money supply through the borrowers' access to bank credit, as bank credit is concerned with controlling the money supply, and credit facilities are of importance to banks and are the main source of the bank's revenues (Aquanno: 2018, P814), and it works to cover the financial deficit that hinders the movement of its activity, whether the public sector or the private sector (Al-Senussi and Mukhtar: 2003, 6).

### **Second: Essence economic growth**

The concept of economic growth constitutes a basic and main pillar in the economic variables that have received the attention of economists, as economists use the term economic growth on economic development as a positive change of a quantitative nature in the quantity of goods and services produced by the state in a certain period of time, while the term development is called as a positive change with A qualitative character related to the events of changes in the various economic and social sectors or structural changes to the economy (Mahmoud: 2003, 129), and economic growth can be understood as achieving an increase in the gross domestic product or national income within a specified period of time. Economic growth is measured by the increase in GDP compared to the GDP in previous years (Sabar: 2013, 269).

It is also defined as the process of an increase in the gross national product that achieves an increase in the average per capita real national income. (Sharafani: 2017, 85) It represents the total value added in all production units operating in different branches of production in an economy, such as agriculture, mining and industry, as the added value of a specific production unit is represented in the sum of the difference between the value of the total production for this unit and the value of intermediate goods and services consumed in that production (Mild: 20, and since economic growth leads to an increase in per capita income or output, economic

development and economic growth also include an increase in per capita income and output, even if development includes more than that increase, but it cannot to be fulfilled without him (Gebbers and Romer: 2009, 43).

The economist (P.a. Samuelson) believes that the real net output is the main indicator of economic growth, since its data are available and easily accessible. Hence, economic growth is the "relative increase in national product (Belmokadem: 1994, 09). Economic growth is determined by a set of factors, the most important of which are human and material capital, technical and technological progress, and the abundance of natural resources.

### **The Second Axis**

#### **The nature of the theoretical relationship between bank credit and economic growth**

Economic views differ on the extent of the importance of financial development in increasing investment and then economic growth. Many opinions have emerged in this field and mainly focused on the fact that financial development plays a major role in increasing and strengthening investment and thus moving the process of economic growth, as he sees in this economic field (Schumpeter) that the services provided by financial intermediation institutions whose work is summarized in attracting savings and directing them to productive investments, evaluating projects, managing risks, monitoring managers and facilitating the exchange process (Khalaf: 2011, 181), and most studies have agreed that there is a positive correlation between Funding performed by financial intermediation and economic growth, and the first research on this relationship is the studies conducted by (Cold Smith) in 1969, which focused on financial intermediation in mobilizing the savings needed by the growth process, and that this relationship changes over time as a result of the stage of economic progress of the country. Economic growth is the most important catalyst for the expansion of the financial system. Therefore, the weakness that occurs in the financial system is a reflection of the lack of demand for financial services. But when the real side of the economy develops, the demand for various financial services will increase and be provided by the intermediary financial institutions. From this it is noted that economic growth is the catalyst for financial development. Thus, the expansion of the financial system stimulates the demand for financial services. In other words, in the later stages of economic development, it is the financial system that stimulates economic growth when financial services are widely and largely available in the economy (Hamza, 2015, 93).

Some studies, including (Hoffman) study, also indicate that there is a direct relationship between the expansion in the volume of bank credit and economic growth, and that this relationship appears when an expansionary monetary policy is followed that allows banks to take measures to increase the money supply and increase the volume of bank credit in order to provide the necessary financing for institutions and individuals. Which in turn will work to increase production and improve its quality, and therefore the increase in the production of economic sectors will achieve an increase in the gross domestic product, which leads to an increase in the rate of economic growth, so economic systems try to develop strategies and policies and carry out reforms that serve as bases through which real economic growth is launched (Sharfani: 2017, 88).

### **The Third Axis**

#### **Estimating and measuring the impact of bank cash credit on economic growth in Iraq**

##### **First: Characterization and formulation of the standard model**

The quarterly data were adopted for each of the bank credit represented by (GRE) on the one hand, and the economic growth represented by (GDP) on the other hand for the period (2004–2020) for Iraq, and by (68) viewing of the variables, which the model is represented by the independent variables represented by bank credit (GRE), and the dependent variables represented by the gross domestic product (GDP).

The standard model was formulated through the following equation by adopting the logarithmic formula to express the nature and direction of the relationship between the dependent variable represented in economic growth (GDP) and the independent variable (CRE).

$$\text{Log UE} = \beta_2 - \beta_3 \text{Log INF}_t + \mu_2 \dots \dots \dots (1)$$

The economic logic refers to the assumption that there is a positive (direct) relationship between the bank credit index and the economic growth index, and it is expected that the value of the parameters referred to in the previous equation will be positive, assuming that the issue of changes in bank credit contributes to an increase in economic growth.

##### **Second: The results of the sleep test (the unit root test)**

By observing the results of the expanded Dickey–Fuller test (ADF) presented in Table (1), it is clear that the time series of the mentioned variables were not static at

the At Level, and in the first difference, and to make sure of this we go towards the (Phillips–Perron test) given in table (2)

Table (1)  
Results of the Dickey Fuller Extension Test (ADF) of the Economic Growth Model

| UNIT ROOT TEST RESULTS TABLE(ADF)             |                     |          |           |
|---|---------------------|----------|-----------|
| Null Hypothesis: the variable has a unit root |                     |          |           |
| At Level                                      |                     |          |           |
|   |                     | LOGDP    | LOGRE     |
| with Constant                                 | t-Statistic         | -2.3047  | -1.6324   |
|   | Prob                | 0.1737   | 0.4603    |
|   |                     | n0       | n0        |
| with Constant&Trend                           | t-Statistic         | -1.6986  | -0.9609   |
|   | Prob                | 0.7404   | 0.9417    |
|   |                     | n0       | n0        |
| without Constant&Trend                        | t-Statistic         | 0.3371   | 1.4393    |
|   | Prob                | 0.7796   | 0.9614    |
|   |                     | n0       | n0        |
| With Constant                                 | At First Difference |          |           |
|   |                     | d(LOGDP) | d(LOGCRE) |
|   | t-Statistic         | -2.3359  | -3.1567   |
|   | Prob                | 0.1642   | 0.0274    |
|   |                     | n0       | **        |
| with Constant&Trend                           | t-Statistic         | -2.8370  | -3.2001   |
|   | Prob                | 0.1900   | 0.0938    |
|   |                     | n0       | *         |
| without Constant&Trend                        | t-Statistic         | -2.4183  | -2.8119   |
|   | Prob                | 0.0162   | 0.0056    |
|   |                     | **       | ***       |

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

From this test, it is clear that the time series of the variables in question were static at the At Level in one case with a (general trend), and static in all cases when calculating the first difference with respect to the variable (CRE), and at a significant level of 5%, and therefore we accept The alternative hypothesis is towards the inactivity of the time series for the two mentioned variables.

Table (2)

The results of the Dickey–Phillips–Perron (P.P) test of the economic growth model

| UNIT ROOT TEST RESULTS TABLE(PP)              |                     |          |           |
|---|---------------------|----------|-----------|
| Null Hypothesis: the variable has a unit root |                     |          |           |
| At Level                                      |                     |          |           |
| with Constant                                 |                     | LOGDP    | LOGRE     |
|   | t-Statistic         | -3.412   | -4.1392   |
|   | Prob                | 0.0170   | 0.0017    |
|   |                     | **       | ***       |
| with Constant& Trend                          | t-Statistic         | -1.6764  | -1.4825   |
|   | Prob                | 0.7603   | 0.8255    |
|   |                     | n0       | n0        |
| without Constant& Trend                       | t-Statistic         | 1.7934   | 3.0677    |
|   | Prob                | 0.9816   | 0.9993    |
|   |                     | n0       | n0        |
| With Constant                                 | At First Difference |          |           |
|   |                     | d(LOGDP) | d(LOGCRE) |
|   | t-Statistic         | -2.4866  | -3.1521   |
|   | Prob                | 0.1235   | 0.0278    |
|   |                     | n0       | **        |
| with Constant& Trend                          | t-Statistic         | -3.1194  | -3.2055   |
|   | Prob                | 0.1109   | 0.0927    |
|   |                     | n0       | *         |
| without Constant& Trend                       | t-Statistic         | -2.5200  | -2.8516   |
|   | Prob                | 0.0124   | 0.0050    |
|   |                     | **       | ***       |

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



Accordingly, the ARDL methodology will be adopted to estimate parameters, whether in the long term or in the short term.

### **Third: Estimation of the Autoregressive Model of Distributed Deceleration (ARDL) of the Economic Growth Model**

Through the results of estimating the Autoregressive Distributed Deceleration Model (ARDL) of the economic growth model presented in Table (3), it is clear that it was identical to the statistical and standard tests, and then the quality of the model, as the value of the coefficient ( $R^2$ ) reached about (99.7%), which means That the independent variable included in the model explains about (99.7%) of the change in the dependent variable, and that the value of F-Statistic was about 3810.203, and with a level of significance less than (0.01), given that the value of Prob is equal to (0.000000), and that the value of Dorbin Watson (D.W) amounted to about (2.057973) to confirm that the model is free from the problem of autocorrelation, in addition to the fact that the time lag extends to two time periods for each of the two variables.

Table (3)

The results of estimating the autoregressive model of the ARDL model for the economic growth model

| Dependent Variable :LOGDP   |             |                       |             |           |
|---|-------------|-----------------------|-------------|-----------|
| Method :ARDL  |             |                       |             |           |
| Date : 06/04/22 Time : 17 : 39  |             |                       |             |           |
| Sample (adjusted) : 2004Q3 2020Q1                                       |             |                       |             |           |
| Induced observations : 63 after adjustments                             |             |                       |             |           |
| Maximum dependent lags : 4 (Automatic selection)                        |             |                       |             |           |
| Model selection method : Akalke Info criterion (AIC)                    |             |                       |             |           |
| Dynamic regressors (4 lags,automatic) : LOGCRE                          |             |                       |             |           |
| Fixed regressors : C  |             |                       |             |           |
| Number of models evalulated :20   |             |                       |             |           |
| Selected Model : ARDL(2,2)  |             |                       |             |           |
| Note : fin3l equation sample is larger than selection sample            |             |                       |             |           |
| variable  | Coefficient | Std .Error            | t-Statistic | Prob.*    |
| LOGDP(-1)   | 1.776280    | 0.079124              | 22.44940    | 0.0000    |
| LOGDP(-2)   | -0.853033   | 0.078932              | -10.80714   | 0.0000    |
| LOGCRE  | 0.489008    | 0.116888              | 4.183565    | 0.0001    |
| LOGCRE(-1)  | -0.8411983  | 0.220047              | -3.826383   | 0.0003    |
| LOGCRE(-2)  | 0.379173    | 0.116251              | 3.261664    | 0.0019    |
| C   | 0.672464    | 0.204277              | 3.291922    | 0.0017    |
| R-squared   | 0.997017    | Mean dependent var    |             | 12.09983  |
| Adjusted R-squaed   | 0.996755    | S.D. dependent var    |             | 0.407706  |
| S.E of regression   | 0.023224    | Akalke Info criterion |             | -4.596877 |
| Sum squared resid   | 0.030743    | Schwarz criterion     |             | -4.392769 |
| Log likelihood  | 150.8016    | Hannan-Quinn criter   |             | -4.516600 |
| F- Statistic  | 3810.203    | Durbin-Watson stat    |             | 2.057973  |
| Prob(F- Statistic)  | 0.000000    |                       |             |           |
| *Note : p-values and any subsequents do not account for model selection |             |                       |             |           |

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

**Fourth: The boundary test for the co-integration of the economic growth model**

It is clear from Table (4) that the calculated statistic-F value was greater than the upper limits of the first difference, the lower limits of the level and at the level of significance (10%) and greater than the lower limits of the level and at the level of significance (1%), and accordingly we accept the alternative hypothesis that It states that there is a co-integration between the two variables in question.

Table (4)

Results of the Bound Test for the Economic Growth Model

| ARDL Long Run Form and Bounds Test       |          |  |       |       |
|--|----------|--|-------|-------|
| Dependent variable : D(LOGDP)            |          |  |       |       |
| Selected Model : ARDL(2,2)               |          |  |       |       |
| Case 2: Restricted Constant and No Trend |          |  |       |       |
| Data : 06/04/22 Time : 17:49             |          |  |       |       |
| Sample : 2004Q1 2020Q4                   |          |  |       |       |
| Included observations : 63               |          |  |       |       |
| F-Bounds Test                            |          | Null Hypothesis : No levels relationship |       |       |
| Test Statistic                           | Value    | Signif                                   | I(0)  | I(1)  |
| Asymptotic : n=1000                      |          |  |       |       |
| F-Statistic                              | 4.299206 | 10%                                      | 3.02  | 3.51  |
| k  | 1        | 5%                                       | 3.62  | 4.16  |
|  |          | 2.5%                                     | 4.18  | 4.79  |
|  |          | 1%                                       | 4.94  | 5.58  |
| Finite Sample : n=65                     |          |  |       |       |
| Actual Sample Size                       | 63       | 10%                                      | 3.143 | 3.623 |
|  |          | 5%                                       | 3.787 | 4.343 |
|  |          | 1%                                       | 5.35  | 6.017 |
| Finite Sample : n=60                     |          |  |       |       |
|  |          | 10%                                      | 3.127 | 3.56  |
|  |          | 5%                                       | 3.803 | 4.363 |
|  |          | 1%                                       | 5.383 | 6.033 |

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

**Fifth: Error Correction Model (ECM) according to ARDL methodology for economic growth model**

After passing the estimated model for statistical tests and for the purpose of estimating the short relationship between variables using the ARDL model, it is clear from the data in Table (5) that  $CointEq\_1^*$  or the value of the error correction factor (EC t-1) was with a probability of prob of (0.0006) And with the availability of the negative and moral condition, the model is heading towards achieving equilibrium in the long term, meaning that (7.67%) of the errors in the short term can be corrected in (one chapter).

Table (5)  
Results of Error Correction Model (ECM) According to ARDL Methodology for  
Economic Growth Model

| ARDL Error Correction Regression                |             |                        |             |           |
|---|-------------|------------------------|-------------|-----------|
| Dependent Variable : D(LOGDP)                   |             |                        |             |           |
| Selected Model : ARDL(2,2)                      |             |                        |             |           |
| Case 2 : Restricted Constant and No Trend       |             |                        |             |           |
| Date : 06/04/22 Time : 17 :51                   |             |                        |             |           |
| Sample : 2004Q 2020Q4                           |             |                        |             |           |
| Included observations : 63                      |             |                        |             |           |
| ECM Regression                                  |             |                        |             |           |
| Case 2 : Restricted Constant and No Trend       |             |                        |             |           |
| Variable  | Coefficient | Std.Error              | t-Statistic | Prob.     |
| D(LOGDP(-1))                                    | 0.853033    | 0.074678               | 11.42274    | 0.0000    |
| D(LOGCRE)                                       | 0.489008    | 0.109836               | 4.452180    | 0.0000    |
| D(LOGCRE(-1))                                   | -0.379173   | 0.111354               | -3.405097   | 0.0012    |
| Co-int E=q(-1)*                                 | -0.076752   | 0.021006               | -3.653788   | 0.0006    |
| R-squared                                       | 0.785486    | Mean dependent var     |             | 0.021060  |
| Adjusted R-squared                              | 0.774579    | S.D. dependent var     |             | 0.048078  |
| S.E of regression                               | 0.022827    | Akaike Info criterion  |             | -4.660369 |
| Sum squared resid                               | 0.030743    | Schwarz criterion      |             | -4.524297 |
| Log likelihood                                  | 150.8016    | Hannan-Quinn criterion |             | -4.606851 |
| Durbin-watson stat                              | 2.057973    |                        |             |           |
| p-value incompatible with t-Bounds distribution |             |                        |             |           |

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

**Sixth: Estimating the long-term relationship according to the (ARDL) methodology of the economic growth model**

It is clear by examining the data shown in Table (6) that the independent variable represented by bank credit (CRE), had a clear impact on the dependent variable represented by economic growth (GDP) in the long term, and the fact of this can be identified through the value of (Prob) that it amounted to less than (1%), which

indicates the significant relationship between bank credit (CRE) and economic growth (GDP), given the role that bank credit leaves in economic growth over the long term and its role in making the required changes and what bank cash credit enjoys From a contributing role to economic growth through credit granted to the public and private sectors, and accordingly the relationship will be according to the following equation:

$$\text{LogGDP} = -8.761479 + 0.341319 \text{LogGRE} + U \dots \dots \dots 2$$

Table (6)  
Results of estimating the long-term relationship according to the (ARDL) methodology of the economic growth model

| ARDL Long Run Form and Bounds Test        |             |           |             |        |
|---|-------------|-----------|-------------|--------|
| Dependent variable : D(LOGDP)             |             |           |             |        |
| Selected Model : ARDL(2,2)                |             |           |             |        |
| Case 2: Restricted Constant and No Trend  |             |           |             |        |
| Data : 06/04/22 Time : 17:49              |             |           |             |        |
| Sample : 2004Q1 2020Q4                    |             |           |             |        |
| Included observations : 63                |             |           |             |        |
| Levels Equation                           |             |           |             |        |
| Case 2 : Restricted Constant and No Trend |             |           |             |        |
| Variable                                  | Coefficient | Std.Error | t-Statistic | Prob.  |
| LOGCRE                                    | 0.341319    | 0.047007  | 7.260979    | 0.0000 |
| C   | 8.761479    | 0.492569  | 17.78732    | 0.0000 |
| EC=LOGDP-(0.3413*LOGCRE+8.7615)           |             |           |             |        |

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

**Seventh: Diagnostic tests of the economic growth model**

It is clear from testing the autocorrelation problem through (LM Test) presented in Table (7), that the current model under consideration does not suffer from the autocorrelation problem, and therefore we reject the alternative hypothesis that states the existence of the problem.

Table (7)

The results of testing the autocorrelation problem according to the LM test of the economic growth model

| Breusch-Godfrey Serial Correlation LM Test              |          |                     |        |
|---|----------|---------------------|--------|
| Null hypothesis : No serial correlation at up to 2 lags |          |                     |        |
| F- Statistic  | 0.061666 | Prob. F(2.55)       | 0.9403 |
| Obs*R-squared   | 0.140954 | Prob. Chi-Square(2) | 0.9319 |

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

As for the test of the heterogeneity instability problem presented in Table (8), it is clear from it that there is no stability problem of heterogeneity due to the value of prob.Chi-square (1) was greater than (0.05), and therefore it is not significant, i.e. the current model is empty Its problem is the lack of consistency.

Table (8)

Results of testing the problem of inconsistency of variance homogeneity of the economic growth model

| Heteroskedasticity Test ARCH |          |                     |        |
|------------------------------|----------|---------------------|--------|
| F- Statistic                 | 0.087054 | Prob. F(1.60)       | 0.7690 |
| Obs*R-squared                | 0.089826 | Prob. Chi-Square(1) | 0.7644 |

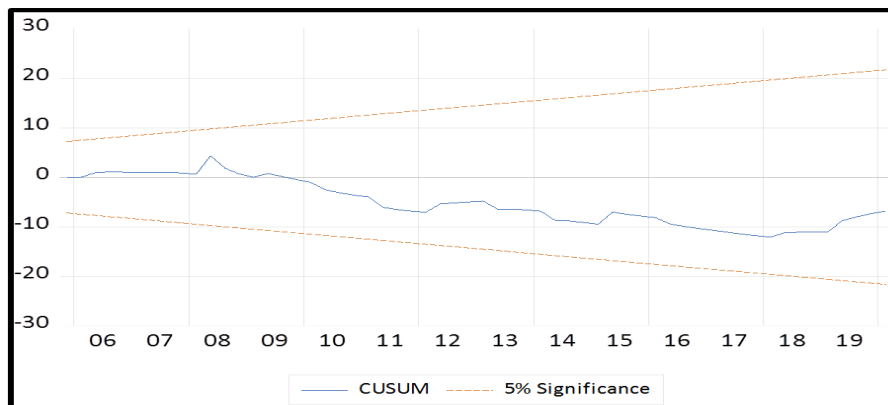
Source: Prepared by the researcher based on the statistical program (EViews:12)

**Eighth: The stability test of the model parameters for the economic growth model**

In order to reveal the stability of the estimated model (ARDL) for the long and short-term parameters during the study period In order to reveal the stability of the estimated model (ARDL) for the long and short-term parameters during the study period, it is clear from the graph in Figure (1) that the graph of the (CUSUM) test was within the critical limits at the level of significance (5%), this calls for accepting the null hypothesis, which states that the long and short-term parameters are stable (1).

Figure (1)

The results of the test for the cumulative sum of residuals (CUSUM) for the economic growth model



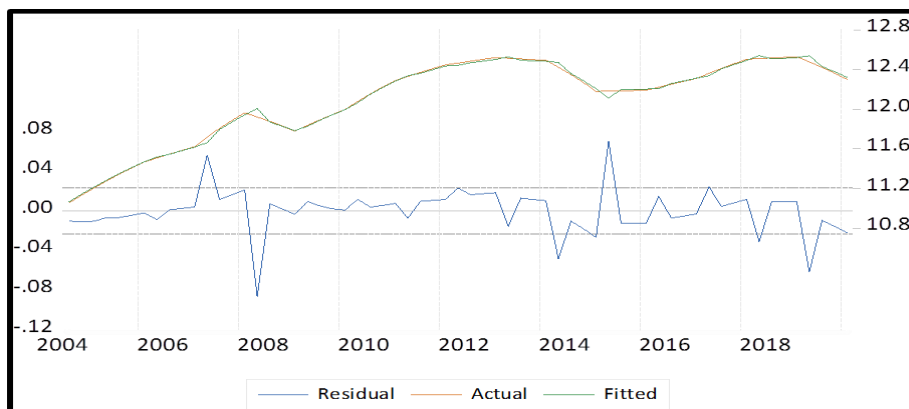
Source: Prepared by the researcher based on the statistical program (EViews:12)

**Ninth: Residues of the estimated and actual models of the economic growth model**

There is a congruence in the estimated and actual residuals of the model, as the estimations are stable over time and within the confidence limits of being within the critical limits and at the 5% level, and that the ARDL model is optimal due to the presence of consistency in the model between the results of error correction in the short and long term, and this reflects The accuracy and quality of the model estimated according to the (ARDL) methodology, and as shown in Figure (2)

Figure (2)

Remnants of the estimated and actual models of the economic growth model



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

**Conclusion**

**First: The Results**

1. There is a direct relationship between the expansion in the volume of bank credit and economic growth, and that this relationship appears when following an expansionary monetary policy that allows banks to take measures to



increase the money supply and increase the volume of bank credit in order to provide the necessary financing for institutions and individuals, and therefore the increase in the production of economic sectors will achieve An increase in the gross domestic product, which leads to an increase in the rate of economic growth.

2. The results of the static test (unit root test) and according to the Phelps–Peron test showed that the time series of the studied variables (GDP, CRE,) were static at the first difference.
3. The results of estimating the ARDL model of the economic growth model showed that they were identical to the statistical and standard tests, and then the quality of the model, and that the model was free from the problem of autocorrelation.
4. There is a co–integration between the studied economic variables, that is, there is a long–term equilibrium relationship between bank credit (CRE) and economic growth.
5. As for estimating the short relationship between variables according to the ARDL methodology, it was negative and significant in relation to the economic growth model, ie the model tends to achieve equilibrium in the long term.
6. The results of estimating the long–term relationship according to (ARDL) methodology showed that there was a clear effect of the independent variable (CRE) on the dependent variable (GDP) in the long run.

### **Second: Recommendations**

1. The necessity for commercial banks to pay attention to bank credit, especially cash, as an important variable that would contribute to achieving the goals sought by both lenders and borrowers, whether in the field of attracting savers' deposits or in the field of developing economic activity.
2. The necessity of adopting monetary and financial policies consistent with the importance of achieving monetary stability and raising the level of economic growth.
3. The necessity of directing bank credit towards the productive economic sectors by focusing on the issue of distributing bank credit in a manner consistent with the advancement of the level of economic activity.
4. The necessity of following up on the issue of mobilizing local savings and deepening the role of financial mediation between each of the investors and

savers within scientific bases that contribute to raising the bank cash credit ratio and in favor of expanding the production base.

5. The necessity of providing a safe legislative environment that would provide the necessary protection for those dealing with commercial banks, especially private ones, in order to increase confidence in the banking system.
6. It requires commercial banks to adopt measures that will reduce the risks of non-payment of bank loans, especially since national commercial banks enjoy high liquidity and thus participate in the development of the output structure.

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