

The role of international reserves in stimulating bank credit in Iraq for the period (2004-2022)

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Abstract : The study aims to analyze the role of international reserves in stimulating bank credit in Iraq for the period (2004-2022), by highlighting the role of international reserves and indicating their impact on bank monetary credit in Iraq, as the problem of the study was represented in the form of questions (Do international reserves have a moral impact on Activating bank cash credit in Iraq for the period “2004-2022”. The study used the descriptive analytical approach, and modern standard models also used the Autoregressive Distributed Lag (ARDL) model. This was done by adopting quarterly data for the period (2004-2022), using the program Statistician Eviews13, the study reached a set of conclusions, the most important of which was that there is a direct and significant relationship between international reserves and monetary credit (total monetary credit and government and private credit). The study also recommended the necessity of providing credit to the private sector to support productive projects that contribute to increasing the country's exports and thus saving currencies Foreign loans, as well as reducing credit granted for consumer purposes.

Keywords: international reserves, bank credit.

INTRODUCTION: The Iraqi economy is a unilateral rentier economy, as it depends on oil revenues in the accumulation of international reserves that have an important role in facing the shocks and crises that the country is exposed to, whether internal or external, as international reserves are used to achieve external stability directly in order to meet The needs of the balance of payments or indirectly by interfering in the currency exchange rate, as well as its function in providing liquidity for the various economic sectors, including the banking sector that positively affects deposits and credit in the Iraqi banking sector, as a result of the important role played by the banking sector in mobilizing and directing savings Towards investment, as it works to accept deposits that constitute a large percentage of banking resources, through which the banking sector can perform a job granting.

The importance of research: The importance of the study is the extent to which international reserves contribute to stimulating bank cash credit through its contribution to the growth of non -oil output, and thus diversify government revenues instead of relying on one source, which is oil revenues, that is, it is used to support the economic sectors that need funding to do With its projects and providing facilities for them, by increasing entry and then increasing deposits and thus the ability of the banking sector to grant credit to the government and private sector.

Research problem : The main problem : Does international reserves have a moral impact on stimulating total bank cash credit in Iraq for the period (2004-2022)? And branch into:

1- Does international reserves have a moral impact on stimulating the cash credit granted to the government sector for the period (2004-2022)? .

2- Does international reserves have a moral impact on stimulating cash credit granted to the private sector for the period (2004-2022)?

Research hypothesis : The main hypothesis : There is no moral impact on international reserves in stimulating total bank cash credit in Iraq for the period (2004-2022). And branch into:

1- There is no moral impact on international reserves in stimulating the cash credit granted to the government sector in Iraq for the period (2004-2022).

2- There is no moral impact on international reserves in stimulating the cash credit granted to the private sector in Iraq for the period (2004-2022).

Research objective : The research aims to explain the role of international reserves in stimulating bank cash credit in Iraq for the period (2004-2022) through:

- 1- Analysis of international reserves in Iraq for the period (2004-2022) and cash credit in Iraq for the period (2004-2022), as it is analyzed to the cash credit granted to the government and private sector.
- 2- Analysis and measurement of the impact of international reserves on the total bank cash credit in Iraq for the period (2004-2022).

Research limits:

time limits : included the period from (2004-2022).

spatial limits : the Iraqi economy.

Society and Research sample : the Iraqi banking sector.

The first topic : international reserves and bank credit

First: International reserves : International reserves are defined as (the amount of balance of gold and foreign currencies used to meet the deficit in the balance of payments, or the set of financial and technical means necessary to finance international trade and settle payments between countries). (Al-Issawi: 2008 : 295)

1- The components of international reserves

International reserves are a major source for covering international obligations, and international reserves consist of:

A - Gold : It is the gold that the monetary authority possesses, which it preserves as backup assets (as assets), and they are in the form of alloys or coins, which maintains cash gold as a result of the confidence of countries with gold as a stock of value and gains its strength from itself, while other currencies are gaining their strength From the strength of its state, (Odeh: 2021: 28)

B- Foreign Currencies : It means transferred foreign currencies to each other, and it is called foreign currency reserves, and the convertible currencies are the only backup that the public and private sectors in the economy (Taru Lehto : 1994 : 9).

C- Special Drawing Rights : Terminal loans used by the International Monetary Fund to support its organized members to the Special Rights Units System as they are mathematical units that have a legal base that depends on it and it is the commitment of members to provide what is corresponding to international currencies if he is asked This is the legal commitment to member states is a mechanism on which the fund is based, especially in issuing private withdrawal rights, (Rafak , Ahmed : 2019 : 68)

D- Reserves at the International Monetary Fund : The country's position is represented by the International Monetary Fund, and it does not represent the share of countries in its share in the capital of the fund, but it represents liquid claims for the fund that represents the fund sales of the currencies of member states to meet the demand from other member states that need To finance the balances of its payments and these amounts constitute the debt of the international fund under the loan agreement and the evaluation of those currencies on the basis of a basket of currencies and not in exchange for a specific currency and those amounts are indebted to the fund and it is available to the member state at any time and the possibility of borrowing most of this amount under a new agreement (IFM : 2013 :18).

E- Other reserves assets : They are liquid assets available at the disposal of the monetary authorities, but they were not included in other reserve assets, and include the net market value of financial derivatives, including future contracts, futures, exchanges and options with non -residents, short -term loans Of foreign currencies, that is, payable and presented by the cash authorities of non -resident banks (IMF: 2013 : 23).

2- Determinants of demand for international reserves

A- The size of the economy : It expresses the size of the economy with the gross domestic product and is defined as the scale that measures the value of goods and services to the state during a specific period of time. The more the population and the size of the economy, the more international transactions, increase, which increases the demand for international reserves as a result of increasing commercial transactions that require backup liquidity if the market declines in times of crisis.

B- The weakness and contraction of the current account : The more commercial openness increases the demand for international reserves, as well as the great fluctuations in the level of exports that require greater levels of international reserves, (Al –Hindawi, etal: 2022 9-10). Since the trade balance is an indicator that measures the difference between the value of exports and the value of imports for international goods and services, the relationship between the current account and international reserves has positive or negative effects, and the positive impact is evident in the event that the current account achieves a surplus, it leads to a high value of the local currency and continuation The Central Bank in buying international reserves during the surplus period, which increases the level of reserves in the country, and the current account surplus may be an indication that the state is less likely to external

shocks. Its reserves for the purchase of the local currency, which leads to a decrease in reserves, and thus it is an important specific to demand international reserves. (Nasir : 2017 23-24)

C- The degree of flexibility of the exchange rate : The exchange rate represents the link between local and international prices. It reflects the strength and durability of the economy, including its stability, the currency capacity for conversion and the nature of the drainage system followed within the country, (Attia , etal: 2021 197-200).

D- The cost of an alternative opportunity to possess international reserves : It is the case in which the comparison between the benefits achieved from possessing reserves and return can be obtained from alternative investments, that is, it is the lost opportunity that the state sacrifices as a result of its retaining these reserves. (Safia : 2020: 56). Some writers believe that there are two types of costs associated with reserves, which are the cost of an alternative opportunity and the cost of amendment, and indicates the cost of alternative opportunity that it is lost profits from investment, while the cost of amendment indicates that it is the cost that is accompanied by the exhaustion of reserves, and that the high rate of reserves would increase From the cost of alternative opportunity but reduces the cost of modification (Nor etal : 2008 : 49).

Second: Bank credit: credit is the amount that the creditor (the bank) lends to the borrower (the customer), whether on the basis of confidence or without confidence. Both credit and predecessors are an important element in the aspect of the assets of the public budget of the commercial bank, and the bank also gets benefits on loans and predecessors, which is one of the main sources of income for the bank. (Lamichhane :2010: 16).

1- Types of bank credit

A - Cash credit (direct): Credit is the main axis of the work of the banking system and it represents the job corresponding to the job of accepting deposits, and cash credit can be defined as a "flowing current granted to customers (individuals and institutions) provided that the debtor undertakes to pay funds, benefits, commissions and expenses at once , Or in installments on specific dates (al-ali, al-asady: 2021: 166)

B- Occupational credit (indirect): This type differs from direct cash credit not to allow the credit student to use cash directly as it does not represent a direct debt on the customer towards the bank, except in the case in which the credit applicant does not abide by his pledges, (Al –Safi : 2017 : 28).

2- There are other divisions of bank credit, namely:

1- Bank credit, according to the requesting party:

A - credit granted to the public sector: It is the credit granted by commercial banks for the public sector or government institutions and is often less volume compared to the credit granted to the private sector. (Khalaf : 2006 : 269)

B - The credit granted to the private sector: It is the credit that individuals or bodies and companies working within the private sector are obtained, and it constitutes the main percentage of credit provided by commercial banks. (Al – Afandi : 2018 : 128)

2- Bank credit according to its purpose:

A- Commercial credit: It is the credit that is provided to commercial projects to finance its ongoing operations, and the bills and ear bonds represent the appropriate tool for its circulation. (Wasmi , Ismail : 2021 : 6)

B - Investment (productive) credit: They are loans granted to productive projects to finance the fixed capital they need. (Jassim : 2022 : 10)

C- Consumer credit: They are loans granted to individuals for the purpose of financing their consumer needs, with the aim of securing their access to some goods and services (Rabeh : 2020 : 25).

Third: The relationship of international reserves with bank credit

The increase in international reserves resulting from the increase in oil revenues led to an increase in government spending, means that individuals, projects and public institutions get entering part of it to banks in the form of banking deposits, which are the most important resource of bank credit, so increasing entry means more deposits and thus increasing the sector's susceptibility The banker is to grant credit to meet the credit needs that generated the expansion of the economic activities created by increased income, (Al-Khalil : 2004: 85). The granting of credit stimulates consumption and production, as directing it towards consumption raises the current purchasing power of consumers from the limited incomes to obtain some commodities, which means that credit helps in stimulating and increasing the total demand and this increase in the demand must be met an increase in production, (Al-Baldawi , Ismail: 2019: 133). The countries with an advanced production structure that meets the production of goods and services that are increasingly demanded, leads to reducing imports, Consequently, the depletion of international reserves is less, either in developing countries that are characterized by the backwardness of their productive structures, the credit granted to the low -income people to finance the purchase of consumer goods generates pressure on international reserves by importing these goods, and thus more bank credit leads to a tendency to comprehensive consumption and absorb e Imported commodity on the account of international reserves (Roshani : 2017 : 271-277). Since the banking sector is

an important channel for progress in both industries and economic growth, the credit directed to support investment projects represented in infrastructure projects increases the production of these projects. The main axis of the revenue of any bank, (Al –Harzawi , Al –Naimi : 2010 : 40). The bank credit offered to the private sector witnessed a strong increase in many countries that have built significant international reserves, due to the contribution of these reserves to the growth of non -oil output, which contributes to diversifying government revenues instead of relying on oil revenues, which leads to the accumulation of international reserves,(Mohanty ,Turner : 2006 : 48).

The rise in international reserves leads to a high domestic demand, which leads to an increase in bank confidence, lending and a decrease in troubled loans, and on the side of the total supply, it is also likely that the productive capacity of countries will expand through public and private investments that have been fed by high international reserves, which prompted growth rates to Top levels, with support from international reserves, the two countries tended to engage in large activities, investment programs to diversify the local economy and develop human capital, and financial institutions have received great profits and they looked financially stable with sound levels of capital adequacy and decrease in troubled loans, and in general international reserves affect the economy Through direct and indirect channels. In the direct channel, international reserves can affect the profitability of banks directly by relying on international reserves in lending, commercial activity or excessive liquidity in the banking sector. Either the indirect channel, as international reserves constitute a large part of the external and government income in the countries, the expectations of the income of international reserves resulting from oil income affect financial spending, which affects the profitability of companies and banks, (Poghosyan , Hesse : 2009 : 3) .

As for the decrease in international reserves due to the low oil revenues, it affects the performance of the banking sector through its reflection on government expenditures, and the following influence the liquidity of the banking sector, the reducing the volume of banking activities and the reduction of credit payment rates, which affects the stability of the banking sector,(mohammad et al : 2019 :88) This decrease that leads to a decrease in government spending leads to a decrease in savings, which affects the level of the growth of deposits flow, the low credit and financing level, the high volume of non -performing loans, the decline in the level of investment portfolios and the market value of bank guarantees, the high level of specializations and banking reserves, The level of bank profits, which is reflected in investors and shareholders, decreased. (Al -Hamdani : 2019 :70). The decrease in international reserves causes a reduction in government spending, which affects investment expenditures and postpones or shrinks of the size of investment projects. This results in a decline in project profits, which leads to reducing the growth of deposits, and then commercial banks are forced to reduce bank credit grants, (Al –Zubaidi : 2016 :31). Which leads to the emergence of existing fluctuations that raise investment risks and negatively affect national production and producers face significant financial losses in order to pay these loans, (Jamshidia , et al :2023: 189).

The second topic : analysis of international reserves and bank credit

First: Analysis of Iraq's international reserves and their components for the period (2004-2022)

Table No. (1) Analysis of international reserves and their components for the period (2004-2022) (million dollars)

Year	International reserves million dollars	Growth %rate	Gold in Baghdad and abroad	Balances in foreign banks and New York (investments)	Foreign exchange in bank	vaults Special drawing rights
2004	9395	-----	79	6660	1920	736
2005	12250	30	97	8799	2687	667
2006	17959	47	108	14593	2623	635
2007	30451	70	152	28582	1320	397
2008	49321	62	160	45561	3200	400
2009	44335	(10)	208	40406	1634	2087
2010	50642	14	266	47029	1310	2037
2011	61034	21	297	57417	1320	2000
2012	70326	15	1593	64765	1981	1987
2013	77743	11	1631	69712	4584	1816
2014	65120	(16)	3399	55643	5122	956
2015	53366	(18)	3047	48537	1782	-----
2016	44216	(17)	3325	38936	1955	-----
2017	48173	9	3725	42989	1459	-----
2018	63880	33	3940	57879	2061	-----
2019	67158	5	4682	61500	976	-----

2020	53995	(20)	5853	44772	3370	---
2021	63374	17	5595	55917	1862	---
2022	95949	51	7546	87249	1154	---

The source was prepared by the researchers based on: the Central Bank of Iraq, the annual statistical bulletin, and the annual economic report for different years from (2004-2022).

Table No. (1) shows Iraq's international reserves and their components for the period (2004-2022). International reserves recorded their lowest balance in 2004 at an amount of (9,395) million dollars and continued to rise until they reached (49,321) million dollars in 2008, with a growth rate of (62 %), and this increase is attributed to the increase in gold, foreign investments abroad, foreign exchange in the bank's coffers, and special drawing rights, reaching respectively (160), (45561), (3200), and (400) million dollars as a result of the increase in oil revenues. In 2009, the balance of international reserves decreased to reach (44,335) million dollars, with a growth rate of (-10%). This decrease came as a result of the decline in oil revenues due to the decline in oil prices following the repercussions of the global financial crisis. During the years (2010-2013), international reserves increased, reaching in 2013 (77,743) million dollars, with a growth rate of (11%) as a result of the increase in the country's oil revenues. In 2014, international reserves decreased to reach (65,120) million dollars, with a growth rate of (-16%) as a result of the decrease in foreign investments abroad to reach (55,643) million dollars, and the decrease in special drawing rights to reach (956) million dollars, and the decline continued until 2016. Its balance recorded (44,216) million dollars, with a growth rate of (-17%). The decrease in reserves from (2014-2016) is explained as a result of a deficit in the general budget and for the purpose of financing expenditures, in addition to the increase in military funding for the country, due to the war with terrorist organizations. As for the years (2017-2019), international reserves achieved an increase. In 2019, they recorded a balance of (67,158) million dollars, with a growth rate of (5%) as a result of the increase in oil revenues. In 2020, international reserves decreased to reach (53,995) million dollars, with a growth rate of (-20%), due to the impact of the Corona pandemic that ravaged the global economy as a whole. In the years 2021 and 2022, it rose to reach (63,374) million dollars, at a growth rate of (17%), (95,949) million dollars, at a growth rate of (51%), which is the highest balance recorded in reserves during the research period. The increase is due to the rise in gold, recording (7,546) million dollars, and an increase. Foreign investments abroad reached (87,249) million dollar, as a result of the decline of the Corona pandemic, the improvement of economic conditions, and the increase in oil revenues.

Second: Analysis of the development of bank credit in the Iraqi banking sector

Cash credit will be approved for study.

Table (2) Development of cash credit granted by the Iraqi banking sector for the period (2004-2022) (million dinars)

Year	Total Cash Credit	% Growth Rate	Cash Credit Granted to the Government Sector	Cash Credit Granted to the Private Sector
2004	824673	-----	202197	622476
2005	1717450	108.3	767163	950287
2006	2664898	55.2	783884	1881014
2007	3459020	29.8	1071587	2387433
2008	4587454	32.6	609153	3978301
2009	5690062	24	1043895	4646167
2010	11721535	106	3194404	8527131
2011	20344076	73.6	8987768	11356308
2012	28438688	39.8	13788586	14650102
2013	29952012	5.3	13004479	16947533
2014	34123067	13.9	16377926	17745141
2015	36752686	7.7	18682628	18070058
2016	37180123	1.2	18999153	18180970
2017	37952829	2.1	18500536	19452293
2018	38486947	1.4	18270874	20216073
2019	42052511	9.3	21010298	21042213
2020	49817737	18.5	23951085	25866652
2021	52971508	6.3	23393215	29578293
2022	60576391	14.4	25559482	35016909

The source was prepared by the researchers based on: the Central Bank of Iraq, the annual statistical bulletin for different years for the period (2004 - 2022).

Table No. (2) shows the development of cash credit granted by the Iraqi banking sector for the period (2004-2022). We note that the monetary credit granted to the government sector was modest during the period (2004-2010) and began to rise significantly during the period (2011-2022), while the credit granted to the private sector was high

compared to the credit granted to the government sector during the period (2004-2010), The credit granted to the private sector also recorded an increase compared to the credit granted to the government sector during the period (2011-2022), as a result of raising the credit ceilings for banks operating in Iraq and in accordance with the Central Bank of Iraq Law No. (56) of 2004. We also note that monetary credit takes an upward trend during the study period, as in 2004 it recorded a balance of (824,673) million dinars, while the credit granted to the government sector recorded (202,197) million dinars, while most of the credit goes to the private sector, recording a balance of (622,476) million dinars. This increase is due to banks granting advances and loans to large segments of citizens, in addition to the increase in economic sectors' demand for credit. Total cash credit also recorded an increase during the years (2011-2022), and the cash credit balance for 2011 also recorded an increase to reach (20,344,076).) million dinars, with a growth rate of (73.6%), as the credit granted to the private sector recorded a value of (11,356,308) million dinars, while the credit granted to the government sector recorded (8,987,768) million dinars, and the cash credit balance in 2022 recorded an increase to reach (60,576,391) million dinar, as it is the highest balance recorded in total monetary credit during the research period and with a growth rate of (14.4%), most of the credit goes to the private sector, recording a value of (35,016,909) million dinars, while the credit granted to the government sector recorded a value of (25,559,482) million dinars. This increase came as a result of the banks' orientation to the market for the purpose of expanding the granting of credit to increase economic growth and achieve economic development, as well as the decision to localize salaries, which made it easier for individuals to obtain credit. The economic and security situation has stabilized and revenues have increased significantly, in addition to the increase in initiatives launched by the Central Bank to finance various sectors.

The third topic : Measuring the impact of international reserves on bank cash credit in the Iraqi banking sector.

First: A matrix of multiple correlation coefficients between the model variables :

The correlation relationship between the variables was tested through the Pearson correlation coefficient, as shown in Table (3).

Table (3): Matrix of correlation coefficients between model variables

	IR	TBC	GSC	PSC
IR	1	0.813393	0.749367	0.859646
TBC	0.813393	1	0.99109	0.992408
GSC	0.749367	0.99109	1	0.967184
PSC	0.859646	0.992408	0.967184	1

Source: Prepared by the researchers based on the statistical program Eviews13

The table above shows that there is a very strong correlation between international reserves and bank cash credit, whether total or sectoral. The correlation coefficient between international reserves and total bank monetary credit reached about (0.81), meaning that the strength of the correlation between them is (81%) and has a positive trend. The relationship of international reserves with bank cash credit to the government sector was also positive, with a strong correlation of about (75%). The same applies to bank cash credit to the private sector. It was also positive, with a strong correlation of about 86%, which is stronger than its correlation with government credit.

Second: Testing the stability of time series:

The unit root problem for the variables under study was verified using the ADF test and pp.test. We obtained the following results shown in Table (4). The test relied on the probability value Prob, which is an alternative criterion for the value of tau (τ). According to the results of the ADF and PPTest tests to test the unit root problem in the studied time series.

Table (4): Results of the stability test for the variables of international reserves and bank cash credit

Variables	ADF				PP				Test
	At level		1 st		At level		1 st		
	ADF-Test	prob	ADF-Test	Prob	PP-Test	prob	PP-Test	Prob	

IR	-1.988	0.927	-3.935**	0.0435	-0.856	0.955	2.1200~	0.021	None
TBC	-0.85	0.5975	-2.207**	0.0012	-1.7622	0.7131	-2.3609	0.0196	None
GSC	-2.6146	0.2753	-3.075**	0.0025	-2.0766	0.5500	-3.0731	0.0025	None
PSC	-2.993	0.1418	*2.1617~	0.0352	-0.6003	0.9760	-2.0049	0.0340	None

Source: Prepared by the researchers based on the statistical program Eviews13

*At the 1% level ** At the 5% level ***At the 10% level

We note from Table (4) above that there is agreement in the results of the ADF and PP test, as we find that in both tests, the dependent variables, represented by total bank credit (TBC) and bank credit to the government and private sectors, and the independent variable, total international reserves (IR), did not stabilize at the level where the probability value was The test value is greater than 0.05 for all types of tests and at all levels of significance. But it stabilized after taking the first difference with a significance level of less than 5%, meaning it is stable at rank I~(1). Therefore, we accept the null hypothesis which indicates that there is no unit root problem.

Third: Estimating the autoregressive distributed lag (ARDL) model for the bank cash credit model

1- Total bank cash credit equation

The following equation for total bank cash credit was estimated: $TBC = a_0 + a_1IR + U_1$

One of the conditions for applying the model is to determine the slowdown periods for the model variables, which depends on the minimum slowdown period according to slowdown tests such as the Akaike test, and as shown in Figure (1), which indicates (2.0) as the optimal slowdown period.

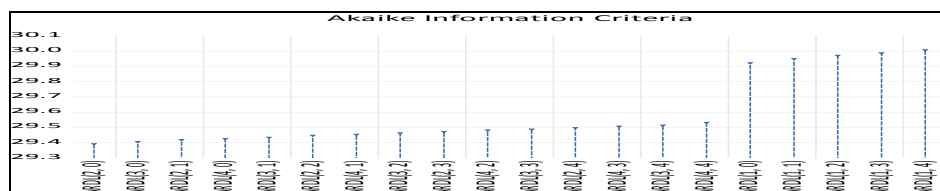


Figure (1) The optimal deceleration period for the model.

Source: Prepared by the researchers based on statistical program Eviews 13

While the results of the ARDL model in Table (5) indicated that total international reserves have a significant impact at the level of 5% on the total bank cash credit, while the explanatory power of the model was 0.94, which indicates that 94% of the change occurring in the bank cash credit results from the change in the total International reserves: The remaining 6% is due to other factors not included in the model. As we note, DW reached (2.146980) and it falls within the area of accepting the null hypothesis, which indicates that there is no problem of autocorrelation between the independent variable represented by international reserves and the dependent variable: total bank cash credit. When studying the overall significance of the model, we find that the calculated F value reached (27379.35) with a probability of (0.00000), which is greater than the tabulated F value at a significant level of 1%. This indicates the quality of the model in expressing the relationship between international reserves and total bank cash credit in the Iraqi banking sector for the period 2004. -2022.

Table (5) ARDL model for total bank cash credit

Dependent Variable: TBC				
Method: ARDL				
Included observations: 74 after adjustments				
Maximum dependent lags: 4 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (4 lags, automatic): IR				
Fixed regressors: C				
Number of models evaluated: 20				
Selected Model: ARDL(2, 0)				
Note: final equation sample is larger than selection sample				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*

TBC(-1)	1.639671	0.090683	18.08126	0.0000
TBC(-2)	-0.648542	0.089453	-7.250083	0.0000
IR	0.011392	0.004218	2.700658	0.0087
C	-195869.5	173647.3	-1.127973	0.2632
R-squared	0.949149	Mean dependent var		26973487
Adjusted R-squared	0.939112	S.D. dependent var		18796174
S.E. of regression	560110.5	Akaike info criterion		29.36219
Sum squared resid	2.20E+13	Schwarz criterion		29.48674
Log likelihood	-1082.401	Hannan-Quinn criter.		29.41188
F-statistic	27379.35	Durbin-Watson stat		2.146980
Prob(F-statistic)	0.000000			
*Note: p-values and any subsequent tests do not account for model				

Source: Prepared by the researchers based on the statistical program Eviews13

2- Bounds Test for cointegration: To confirm the presence or absence of cointegration between the model variables, we adopt the Bounds Test, as shown in Table (6), which reveals “the existence of a cointegration relationship between international reserves and bank cash credit in the government and private sectors.” That is, there is a long-term balanced relationship between the independent variable and the dependent variable, so it appeared in the test that the calculated F value of (4.598731) is greater than the upper limit value (4.32 and 3.597) at the 5% and 10% level, respectively. Therefore, we reject the null hypothesis and accept the hypothesis. The alternative that stipulates the existence of “cointegration,” which confirms the existence of long-term linear relationships between international reserves and total bank monetary credit in the long term.

Table (6) Bounds Test for Cointegration Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.598731	10%	3.02	3.51
K	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58
Actual Sample Size	74		Finite Sample: n=75	
		10%	3.133	3.597
		5%	3.777	4.32
		1%	5.26	5.957

Source: Prepared by the researchers based on the statistical program: Eviews13

3- Estimating the short-term relationship: using the error correction model (ECM): This model is used to “ascertain whether there is a short-term cointegration relationship between the two variables and to estimate the short-term relationship through the error correction model (ECM), and this model measures the speed of adaptation that” It is carried out by the independent variable to correct imbalances that “occur in the short to long term. If the error correction parameter is negative and significant, this confirms the existence of a short-term balanced relationship between the two variables,” and this is what Table (7) shows.

Table (7) Estimation of the short-run relationship for total bank cash credit

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TBC(-1))	0.648542	0.087002	7.454354	0.0000
CointEq(-1)*	-0.08870	0.002355	-3.767011	0.0003

Source: Prepared by the researchers based on the statistical program: Eviews13

Table (7) shows that “the error correction factor had a negative and significant value as it reached (-0.08870), that is, the existence of a cointegration relationship between the independent variable represented by the total international reserves and the total cash bank credit in the government and private sectors as a dependent variable, in other words the existence of a long-term equilibrium relationship.” Among the variables studied in the short term, “as it becomes clear to us from the results that the negative and significant value of the error correction factor reveals to us the speed of the return of the variable of total bank monetary credit towards its equilibrium value in the long term in a period of time, and that the error correction rate is 0.08870 - meaning that 8.8% The short-term imbalance from the previous period (t-1) can be corrected in the current period towards long-term equilibrium. That is, international reserves can address 8.8% of the imbalances that occur in bank monetary credit. As for the long-term relationship, it is shown in Table (8), which indicates the existence of a direct and significant relationship between international reserves and total bank monetary credit. That is, whenever international reserves increase by 1%, bank cash credit increases by (12%), as shown by the value of parameter (B). This result is consistent with the economic theoretical relationship. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted, which confirms the existence of a significant relationship between the two variables. As in the following equation:

$$TBC = -22081080.4258 + 1.2843 * IR$$

Table (8) Estimating the long-term relationship to total bank cash credit

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IR	1.284260	0.567460	2.263174	0.0267
C	-22081080	20848246	-1.059134	0.2932
EC = TBC - (1.2843*IR - 22081080.4258)				

Source: Prepared by the researchers based on the statistical program: Eviews13

Fourth: Estimating the autoregressive distributed lag (ARDL) model for the government bank cash credit model

1- Government bank cash credit equation

The following government bank cash credit equation was estimated: $GSC = b_0 + b_1 IR + U_2$

According to deceleration tests, such as the Akaike test shown in Figure (2), which indicates (2,2) as the optimal deceleration period.

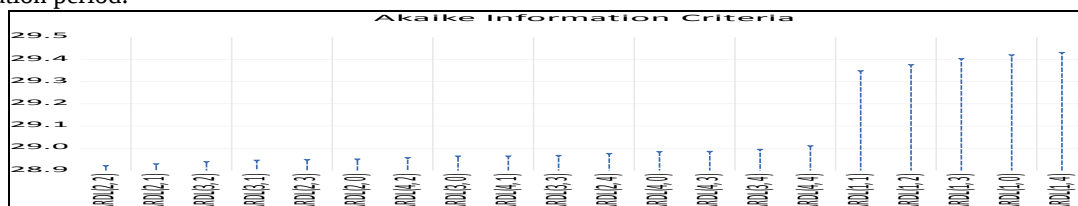


Figure (2) The optimal deceleration period for the model.

Source: Prepared by the researchers based on the statistical program Eviews 13

The results of Table (9) indicate that international reserves have a significant impact on bank cash credit to the government sector at a level of 5%, while the explanatory power of the model was 0.92, indicating that 92% of the change occurring in bank cash credit to the government sector is due to the change in international reserves, while the remaining percentage is 8 % is due to other factors not included in the model, as we note that the DW reached (2.122745), which indicates that there is no problem of autocorrelation between the independent variables represented by the total international reserves and the dependent variable, the bank cash credit to the government sector. When studying the overall significance of the model, we find that the calculated value of F was (6340.227) and with a probability of (0.00000), which is greater than the tabular F value at a significant level of 5%. This indicates the quality of the model in expressing the relationship between international reserves and bank cash credit to the government sector in the Iraqi banking sector for the period 2004-2022.

Table (9): ARDL model for bank cash credit to the government sector

Dependent Variable: GSC			
Method: ARDL			

Sample (adjusted): 2004Q3 2022Q4				
Included observations: 74 after adjustments				
Maximum dependent lags: 4 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (4 lags, automatic): IR				
Fixed regressors: C				
Number of models evaluated: 20				
Selected Model: ARDL(2, 2)				
Note: final equation sample is larger than selection sample				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GSC(-1)	1.593869	0.095680	16.65826	0.0000
GSC(-2)	-0.609604	0.093141	-6.544932	0.0000
IR	-0.041554	0.020754	-2.002260	0.0492
IR(-1)	0.088113	0.042170	2.089464	0.0404
IR(-2)	-0.038665	0.024407	-1.584214	0.1178
C	-152988.2	143661.3	-1.064923	0.2907
R-squared	0.927860	Mean dependent var		12335249
Adjusted R-squared	0.917702	S.D. dependent var		9113988.
S.E. of regression	436885.1	Akaike info criterion		28.89033
Sum squared resid	1.30E+13	Schwarz criterion		29.07715
Log likelihood	-1062.942	Hannan-Quinn criter.		28.96486
F-statistic	6340.227	Durbin-Watson stat		2.122745
Prob(F-statistic)	0.000000			

Source: Prepared by the researchers based on the statistical program Eviews13

2- Co-integration test: To test the co-integration relationship between the independent variable international reserves and the dependent variable bank cash credit to the government sector, the Bounds Test was used. It appeared in the test that the calculated F value of (4.679515) is greater than the upper limit value (4.32) of the test at a significant level. 5% and 10%. Therefore, we reject the null hypothesis, which states that there is no co-integration, and we accept the alternative hypothesis, which states that there is co-integration.” This confirms that there is a long-term linear relationship between international reserves and bank cash credit to the government sector for the period 2004-2022.

Table (10): Co-integration test

F-Bounds Test				
Null Hypothesis: No levels relationship				
Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n=1000				
F-statistic	4.679515	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=75				
Actual Sample Size	74			
		10%	3.133	3.597
		5%	3.777	4.32
		1%	5.26	5.957

Source: Prepared by the researchers based on the statistical program Eviews13

3- Estimating short-term and long-term relationships: Table (11) shows that “the error correction factor had a negative and significant value, reaching (-0.015735), meaning the existence of a cointegration relationship between the independent variable represented by the total international reserves and the bank cash credit to the government sector as a dependent variable. In other words, the existence of “A long-term equilibrium relationship between the variables studied in the short-term.” “It also appears to us from the results that the negative and significant value of the

error correction factor reveals to us the speed with which the variable of bank cash credit to the government sector returns towards its long-term equilibrium value in a period of time, and that the percentage of error correction is 0.0157.” It means that about 1.5% of the “short-term imbalance from the previous period (t-1) can be corrected in the current period towards a long-term equilibrium,” meaning that international reserves can address 1.5% of the imbalances that occur in bank monetary credit to the government sector in the long term. .

Table (11) Estimating the short-term relationship of bank cash credit to the government sector

ARDL Error Correction Regression				
Dependent Variable: D(GSC)				
Selected Model: ARDL(2, 2)				
Case 2: Restricted Constant and No Trend				
Sample: 2004Q1 2022Q4				
Included observations: 74				
ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GSC(-1))	0.609604	0.090564	6.731212	0.0000
D(IR)	-0.041554	0.020044	-2.073172	0.0419
D(IR(-1))	0.038665	0.023835	1.622233	0.1094
CointEq(-1)*	-0.015735	0.005470	-2.876625	0.0054

Source: Prepared by the researchers based on the statistical program Eviews13

As for the long-term relationship, it indicates the presence of a positive relationship with a moral significance amounting to about 0.5017, meaning that increasing international reserves by 1% leads to an increase in bank cash credit to the government sector by 50%, which is a theoretically logical result, which indicates the acceptance of the alternative hypothesis that confirms the existence of a positive and moral relationship. Between these two variables. As in the following equation:

$$GSC = - 9722847.8755 + 0.5017 * IR$$

Table (12) The long-term relationship of government bank cash credit

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IR	0.501677	0.183988	2.726680	0.0081
C	-9722848.	9001862.	-1.080093	0.2839
EC = GSC - (0.5017*IR - 9722847.8755)				

Source: Prepared by the researchers based on the statistical program: Eviews13

Fifth: Estimating the ARDL autoregressive distributed lag model for the private sector bank cash credit model

1- Bank cash credit equation for the private sector

The following private bank cash credit equation was estimated:

$$PSC = c_0 + c_1 IR + U_3$$

According to deceleration tests, such as the Akaike test shown in Figure (3), which indicates (2,2) as the optimal deceleration period.



Figure (3): The optimal deceleration period for the model.

Source: Prepared by the researchers based on the statistical program Eviews 13

The results of Table (13) indicate that international reserves have a significant impact on bank cash credit to the private sector at a level of 5%, while the explanatory power of the model is 0.86, indicating that 86% of the change occurring in bank cash credit to the private sector is due to the change in international reserves, while the remaining percentage is 14 % is due to other factors not included in the model, as we note that the DW reached (2.176401), which indicates that there is no problem of autocorrelation between the independent variables represented by the total international reserves and the dependent variable, bank cash credit to the private sector. When studying the overall significance of the model, we find that the calculated value of F was (17949.46) with a probability of (0.00000), which is greater than the tabular F value at a significant level of 5%. This indicates the quality of the model in expressing the relationship between international reserves and bank cash credit to the private sector in the Iraqi banking sector for the period 2004-2022.

Table (13): ARDL model for bank cash credit to the private sector

Dependent Variable: PSC				
Method: ARDL				
Sample (adjusted): 2004Q3 2022Q4				
Included observations: 74 after adjustments				
Maximum dependent lags: 4 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (4 lags, automatic): IR				
Fixed regressors: C				
Number of models evaluated: 20				
Selected Model: ARDL(2, 2)				
Note: final equation sample is larger than selection sample				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
PSC(-1)	1.645036	0.092188	17.84436	0.0000
PSC(-2)	-0.649906	0.092016	-7.062947	0.0000
IR	0.056874	0.013597	4.182769	0.0001
IR(-1)	-0.096541	0.026806	-3.601513	0.0006
IR(-2)	0.043910	0.015295	2.870901	0.0055
C	-50333.21	95531.35	-0.526876	0.6000
R-squared	0.869243	Mean dependent var		14638238
Adjusted R-squared	0.859187	S.D. dependent var		9845903.
S.E. of regression	280699.7	Akaike info criterion		28.00556
Sum squared resid	5.36E+12	Schwarz criterion		28.19238
Log likelihood	-1030.206	Hannan-Quinn criter.		28.08009
F-statistic	17949.46	Durbin-Watson stat		2.176401
Prob(F-statistic)	0.000000			

Source: Prepared by the researchers based on the statistical program Eviews13

2-Co-integration test: To test the co-integration relationship between the independent variable international reserves and the dependent variable bank credit to the private sector using the Bounds Test, it appeared in the test that the calculated F value of (3.866874) is greater than the upper limit value (3.597) of the test at a significance level of 10. % Therefore, we reject the null hypothesis, which states that there is no co-integration, and we accept the alternative hypothesis, which states that there is co-integration. This confirms that there is a long-term linear relationship between international reserves and bank cash credit to the private sector for the period 2004-2022.

Table (14) Co-integration test of the model

F-Bounds Test				
Null Hypothesis: No levels relationship				
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	

F-statistic	3.866874	10%	3.02	3.51
K	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58
Actual Sample Size	74		Finite Sample: n=75	
		10%	3.133	3.597
		5%	3.777	4.32
		1%	5.26	5.957

Source: Prepared by the researchers based on the statistical program Eviews13

3 - Estimating short-term and long-term relationships: Table (15) shows that “the error correction factor had a negative and significant value, reaching (-0.004870) and with a probability of (0.002), that is, the existence of a cointegration relationship between the independent variable represented by total international reserves and bank cash credit to the private sector as Dependent variable, in other words, the existence of a long-term equilibrium relationship between the studied variables in the short term. “It also appears to us through the results that the negative and significant value of the error correction factor reveals to us the speed with which the variable of bank cash credit to the private sector returns towards its equilibrium value in the long term in a period of time.” The error correction ratio - 0.004870 means that about 0.4% of the “short-term imbalance from the previous period (t-1) can be corrected in the current period towards a long-term balance,” meaning that international reserves can address 0.4% of the imbalances that occur in credit. Banking cash for the private sector.

Table (15) Estimation of the short-run relationship

ARDL Error Correction Regression				
Dependent Variable: D(PSC)				
Selected Model: ARDL(2, 2)				
Case 2: Restricted Constant and No Trend				
Sample: 2004Q1 2022Q4				
Included observations: 74				
ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PSC(-1))	0.649906	0.089159	7.289265	0.0000
D(IR)	0.056874	0.012988	4.379100	0.0000
D(IR(-1))	-0.043910	0.014473	-3.033918	0.0034
CointEq(-1)*	-0.004870	0.001533	-3.176299	0.0022

Source: Prepared by the researchers based on the statistical program Eviews13

As for the long-term relationship, it indicates the presence of a positive relationship with a moral significance amounting to about 0.871040, meaning that increasing international reserves by 1% leads to an increase in bank cash credit to the private sector by 87%, which is a theoretically logical result, which indicates the acceptance of the alternative hypothesis that confirms the existence of a positive and moral relationship. between these two variables. As in the following equation:

$$PSC = -10335969.7021 + 0.8710 * IR$$

Table (16) The long-term relationship of bank cash credit to the private sector

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IR	0.871040	0.830739	1.048511	0.2981
C	-10335970	19023163	-0.543336	0.5887
EC = PSC - (0.8710*IR - 10335969.7021)				

Source: Prepared by the researchers based on the statistical program: Eviews13

Conclusions:

- 1- The balance of international reserves was characterized by fluctuations, up and down, but it began to increase in the last two years during the study period, in addition to the increase in most components of international reserves. This is an indicator that indicates the country's ability to confront emergency conditions that the country may be exposed to.
- 2- Imports deplete international reserves because they lead to the flight of capital out of the country, as a result of meeting the continuous demand for goods and services due to the backwardness of the production structure and its inability to meet local demand.
- 3- During the study period, we notice an increase in credit granted to the private sector compared to credit granted to the government sector, due to banks granting advances and loans to customers.
- 4- It was found that there is a direct and significant relationship between international reserves and monetary credit (total monetary credit and government and private credit), as the ability of banks to grant credit increases due to the increase in bank deposits, which are the most important source of bank credit, and as a result of relying on international reserves in borrowing and providing Liquidity for the banking sector.

Recommendations:

- 1- The necessity of preserving international reserves, which serve as a buffer against shocks and crises, and using them as a reserve stock for self-insurance, and working to establish sovereign wealth funds for the purpose of investing the surplus of international reserves in various investments with high returns, as it can be referred to in times of urgent need for funds or... In the event of addressing a budget deficit.
- 2- Establishing import controls in a way that limits the depletion of international reserves, in addition to the necessity of using international reserves to support economic projects or create new projects in order to build a production base capable of meeting the local demand for goods and services on the one hand, and expanding exports that lead to income The country's hard currency on the other hand.
- 3- Encouraging the private sector to save by raising the interest rate on deposits, which leads to directing funds to banks, and thus increasing deposits with banks, which enhances their ability to grant credit.
- 4- Providing credit to the private sector to support productive projects that contribute to increasing the country's exports and thus increasing economic growth, and thus the private sector becomes an important role in the economy as a result of its provision of foreign currencies and then the private sector is considered a source of accumulation of international reserves instead of the government being the main source. To form international reserves, as well as reduce credit granted for consumer purposes.

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