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The impact of financial liberalization on economic growth: Insights from Iraq and lessons for emerging economies

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Abstract:

This study examines the relationship between financial liberalization policy and its impact on economic growth in Iraq, spanning the Period 2004-2023. Drawing on a combination of time-series econometric analysis and policy review, the research examines key dimensions of liberalization, including interest rate deregulation, capital account openness, and banking sector reform. The findings reveal a nuanced relationship: a long-term, positive relationship between the indicators (the basic interest rate, the ratio of domestic credit provided to the private sector to GDP, and inflation) and GDP in Iraq during the study period. Meanwhile, the long-term relationship was negative, as indicated by the ratio of foreign direct investment to GDP. Therefore, Iraq's economic policy needs to promote greater liberalization of foreign direct investment. It is also important to adopt a balanced monetary policy that helps control inflation rates and interest rates, thus activating its positive role in financial liberalization policy

Keywords: Financial liberalization, economic growth, Iraq, emerging economies, policy reform.

1. Introduction:

Throughout its history, the Iraqi financial system has witnessed extensive state dominance and limited competition, which has impacted its development. However, the post-2004 period marked a significant turning point, as Iraq embarked on radical reforms, including financial liberalization, as part of its efforts to rebuild the national economy and open up to global markets, following decades of isolation and conflict. These reforms included liberalizing interest rates, easing restrictions on private sector credit, facilitating capital flows, and increasing access to external financing. This policy aligned with the approach of many developing countries, including Iraq, to stimulate economic growth and promote integration into the global financial system. The implementation of financial liberalization in Iraq represents a significant economic transformation after years of near-total dependence on oil revenues. It is expected to contribute to expanding access to credit for businesses and households, supporting investment and increasing economic activity. Accordingly, this study aims to clarify the concept of financial liberalization and examine its impact on economic growth in Iraq from 2004 to 2023, drawing on economic literature and related studies to support the proposed hypotheses. This period was chosen because it represents a turning point in the Iraqi economy after the occupation that occurred in 2003.

1.2 Research Problem:

The research problem can be formulated as follows: Did the financial liberalization policy implemented in Iraq after 2004 contribute to supporting and raising economic growth rates?

1.3 Significance of the Research:

The importance of the research stems from the scarcity of recent studies that address the impact of financial liberalization in the Iraqi context and its unique circumstances.

- The importance of this research lies in clarifying the role of financial liberalization policies in the Iraqi financial markets and banking sector, specifically in terms of increasing capital accumulation rates and promoting economic growth.
- It also contributes to understanding the relationship between financial liberalization policies and economic growth, providing valuable insights for policymakers and economic officials in the formulation of better financial policies that promote economic growth.
- It also provides Arab and international libraries with an updated analysis of the Iraqi experience, which can be compared to the experiences of other developing countries, allowing for the drawing of lessons of scientific and practical value.

1.4 Research Hypothesis:

To answer the research question, the following hypotheses were formulated:

- Financial liberalization policies, based on the basic interest rate index (BASIC-IN), the private sector credit-to-GDP ratio (CR), and the foreign direct investment-to-GDP ratio (FDI-GDP), have a positive long-term impact on raising the economic growth rate in Iraq.
- Financial liberalization policy, based on the inflation index (INF), has a negative long-term impact on economic growth in Iraq.

1.5 The research objectives

1. Establish a cognitive framework for financial liberalization, including the requirements for successful financial liberalization policies, their key indicators, and their relationship to economic growth.
2. Measure the relationship between financial liberalization indicators and economic growth in Iraq during the research period using the ARDL model.

1.6 Previous Research

The work of McKinnon and Shaw serves as the starting point for several theoretical and empirical studies that have demonstrated the positive impact of financial liberalization on economic growth. This is achieved through criticism of the financial repression policies implemented in developing countries and their adverse effects on economic growth. According to McKinnon and Shaw, financial liberalization is the optimal solution to overcome the financial repression that developing countries were suffering from and a means to accelerate economic growth rates (**Kharboush et al., 2017, p. 70).**

1.6.1. Supporting works for the analysis of (McKinnon) and (Shaw) include:

- **KAPUR 1976**: This economist was one of the first to support the McKinnon and Shaw analysis, concluding that it is better to increase the nominal interest rate on deposits than to reduce the growth rate of the money supply. The former solution achieves two goals: reducing inflation by reducing demand for currency and directly stimulating savings.
- **MATHISESON 1979**: The financial liberalization model was formulated in an open economy. The basic idea of this model is that it focuses on the potential changes in the real exchange rate resulting from financial liberalization. A rise in real interest rates can generate large capital inflows, depending on the behavior of local institutions.
- **GALBIS 1997**: This economist constructed a two-sector model: the traditional sector, where the return on capital is fixed and low, and the modern sector, where the return on capital is fixed but higher. The former finances its investments internally (meaning it cannot obtain bank loans), while the latter finances its investments through savings and loans. In this financial liberalization model, higher real interest rates on deposits increase the average productivity of investment by an amount that allows savings to be transferred from the former to the latter.

1.6.2. Numerous studies have addressed financial liberalization in Iraq, including:

- Saad Abdul Najm Al-Abdeli - Hamid Talib Fadhel (2018). The researchers measured and analyzed financial liberalization indicators in Iraq during the period (1990-2015) using the Financial Liberalization Index (FLI) method. The study focused on four main variables: interest rate liberalization, reducing the legal reserve, the freedom of foreign banks to enter Iraq, and the abolition of credit controls during the study period. The research revealed an acceleration in the pace of financial liberalization in Iraq between 2004 and 2015.
- Ammar Hamad Khalaf (2011). The researcher measured the impact of financial liberalization on financial depth in Iraq for the period 2005-2010 using the interest rate index and analyzing the data based on the ARDL methodology. The research concluded that interest rate liberalization as an indicator of financial liberalization worked to stimulate financial depth in the long term only.

2. Theoretical Framework

2.1 Concept of Financial Liberalization

Definitions of financial liberalization have varied, with varying interpretations and viewpoints offered by economists and financiers. However, they share common themes and connotations, including:

Some economists view financial liberalization as a set of measures aimed at removing restrictions on the financial sector and improving the institutional framework for monetary policy. The goal is to reform a country's domestic and external financial sector (**Zayan** & **Shuwaikat, 2018, p. 22**). Financial liberalization can also be defined as the removal of restrictions on the domestic and foreign capital account and the stock market sector, as well as the liberalization of the capital account, exchange rates, and capital flow controls through a fully liberalized financial system that allows banks and companies to borrow freely from abroad. Reserve requirements are assumed to be present but less than 10%, and there are no restrictions on capital outflows, in addition to the absence of controls on interest rates, allowing foreign investors to hold local shares without restrictions (**Arestis & Caner, 2004, p. 2**). Financial liberalization is also defined as the elimination of government restrictions on the pricing, allocation, or direction of credit, as well as on the movement of international capital (**Goyal, 2012, p. 64**). Financial liberalization expresses the government's attempt to ease restrictions imposed on the financial system, which includes financial institutions, financial markets, and financial instruments, to activate their participation in economic growth and achieve a state of financial openness for the financial market's work in terms of determining the exchange rate of the national currency, the freedom to exchange currencies, and leaving the interest rate to be determined according to market mechanisms, and then drawing monetary policies that are consistent with the state of the open market (**Al-Jamil, 2012, p. 33**).

2.2 Requirements for the Success of The Financial Liberalization Policy

The success of a financial liberalization policy requires a set of factors, including:

- A stable economic environment: Macroeconomic stability is the fundamental foundation before adopting a financial liberalization policy. A stable economic environment ensures the absence of risks, such as inflation and budget deficits, that impact openness to and integration into the global financial system. **(Andoras, 2005, 88)**
- An efficient and stable financial sector: This prevents the financial system from being used to achieve objectives unrelated to the established policy. If the government relies on inappropriate financial interventions, this will burden the financial system with additional costs **(Khalaf, 2011, p. 46)**
- The necessity of adequate market information: The success of a financial liberalization policy requires the availability of sufficient information about the financial and banking markets and their

accessibility to those wishing to enter them. This information is provided by supervisory and oversight bodies, such as laws regulating banking activity, as well as by banks, which make it available to these bodies and traders and investors, enabling them to make informed financial decisions. (**Wasila and Abbas, 2017, 11)**

- Availability of an appropriate institutional and legal structure: It is essential to have a legal framework that protects property rights and an efficient judicial system that resolves lawsuits fairly and expeditiously, coupled with an effective mechanism for enforcing judgments. It is also essential to have an appropriate regulatory and oversight framework that ensures transparency in transactions, prevents collusion, and reduces risks (**Barbari & Tarshi, 2008, p. 9).**

2.3 The Optimal Sequence for Implementing Financial Liberalization Measures:

There are two approaches to financial liberalization policy, namely **(Abdul-Ali & Aloush, 2022, p. 909):**

- **The first approach** is gradual: liberalization is sequential, deliberate, and cautiously implemented. It begins at the level of the domestic economy, with its real and financial sectors. In the real sector, prices are set according to market forces, taxes are rationally imposed on businesses, state price subsidies are lifted, privatization policies are implemented, and the private sector is encouraged. In the financial and banking sector, banks are granted greater independence in making credit-related decisions, sector specialization is abandoned, and restrictions on the flow and movement of capital in foreign trade are temporarily lifted. Liberalization then extends to the external level, with both the financial and banking sectors being liberalized, and financial transfers abroad are permitted. The financial and banking sector has also been restored, with the establishment of foreign banks permitted, capital movement is free, currency convertibility is guaranteed, and exchange rates are freely determined.
- **The Second Approach** is the direct approach, whereby the domestic and external financial sectors are liberalized simultaneously, with all liberalization measures being implemented simultaneously.

2.4 Financial Liberalization Indicators

Financial liberalization indicators document the direction and pace of financial reforms in the country. There are many indicators used in financial liberalization policy, as they vary according to the level of financial system development in the country, depending on its economic conditions. Traditional quantitative indicators are among the most reliable and accurate tools for assessing the reality of financial liberalization and monitoring its impact. The most important of these indicators are:

- **Interest Rate Liberalization Index**:

Interest rates are defined as the price borrowers pay for the use of credit. The Institute of Chartered Accountants of Nigeria (ICAN) believes that interest is the price one pays to access funds from financial markets. Interest rate liberalization refers to the process of allowing interest rates to be determined by market mechanisms, thereby enabling financial markets to develop and credit to be allocated more efficiently. (**Al-Abdali and Fadil, 2018, 392)** Liberalizing interest rates involve reducing controls, such as setting ceilings for credit and debit interest rates, and allowing them to be determined in the market by the convergence of supply and demand for investment funds. This is achieved by aligning consumption with investment spending, thus increasing economic growth. This cannot happen unless rates stabilize at a certain level (**Saudi & Saudi, 2022, p. 2**).

- **The ratio of bank credit granted to the private sector to GDP:**

This indicator reflects the level of development of the financial sector, as it measures the amount of real funds directed to the private sector. These funds are reflected in increased investment and economic growth, resulting in enhanced financial services, the development of financial intermediation, and the strengthening of productive sectors (**Al-Sanjari & Al-Naimi, 2022, p. 138**). This indicator measures the level of growth in the banking sector. This indicator accurately measures the actual amount of funds directed to the private sector more than any other measure. The ratio of credit granted to the private sector to GDP is directly linked to investment and economic growth. The increase in this ratio can be attributed to the expansion of services provided, the enhancement of financial intermediation, and the growth in total deposits (**Abid, 2024, p. 415**).

- **Foreign Direct Investment Index:**

Foreign direct investment (FDI) is defined as a company or entity investing in projects located outside its home country, to exert some influence over the operations of those projects. FDI can take many forms, such as establishing a completely new project, owning the assets of existing enterprises, or through mergers and acquisitions (**Al-Hassanko, 2019, p. 264**). The International Monetary Fund (IMF) and the Organization for Economic Co-operation and Development (OECD) define FDI as investment in projects within one country, controlled by residents of another country (**Qaddam, 2021, p. 9**). These FDIs are financed through capital provided by the foreign investor and take the form of debt-equity financing in various forms. The method used in their movement is multinational corporations. Thus, the foreign investor is the one who makes FDI. A foreign investor can be either a natural or a legal person, representing the business of a company or institution. The FDI may also be a country, but the most common form of FDI is multinational corporations. The transfer of funds occurs either directly or through financial intermediary institutions (**Ahmed and Khadir,2010**). Foreign direct investment (FDI) can ensure the optimal allocation and distribution of resources while liberalizing all transactions related to cross-border capital and removing various other regulatory, legislative, quantitative, and price restrictions that could hinder the cross-border flow of this type of capital. (**Masoul and Fares, 2023, 325**) The FDI index is considered a crucial variable in explaining changes in economic growth, as foreign capital seeks promising opportunities in economies that possess the necessary elements for growth. It also seeks a financial system that facilitates the transfer or reinvestment of the funds it has earned. Consequently, FDI accelerates the pace of economic growth and increases the size of the financial market, which in turn leads to increased economic growth. **(Zayan and Shobkat, 2018, 29)**

- **Inflation Index**

Inflation can be defined, as Al-**Afandy** (**2012, 489**) sees it, as the sustained rise in the general price level over a long time. It can also be defined as the continuous rise in prices resulting from excess aggregate demand, which exceeds the ability of aggregate supply to meet the increase in aggregate demand (**Dagher, 2018, p. 199**). The renowned economist Milton-Friedman defines inflation as an imbalance between the supply of money and demand. An increase in the money supply is the primary factor responsible for the phenomenon of inflation, as it increases the average amount of money per unit of GDP (GDP) obtained from the existing amount of money (**Maala, 2017, p. 182**). Macroeconomic stability is considered a prerequisite for the successful implementation of financial liberalization policies in developing countries. Economic stability, as represented in theoretical literature, is characterized by the stability of the general price level and a reduction in the state's overall budget deficit. Therefore, the inflation index was used to measure the degree of macroeconomic stability in the country under study, as a higher inflation rate indicates a more negative real interest rate, which negatively impacts economic growth.

2.5 Economic growth

Economic growth is defined as the increase in the gross domestic product (GDP) that achieves

an increase in the average real per capita income (**Sulaiman, 2023: 35).** It is also defined by (**Muharab, 2001: 148**) as the increase in the gross domestic product resulting from a combination of an increase in production for individuals and population growth. Thus, we find that the increase in the gross domestic product is accompanied by economic growth. Economic growth is also defined as the continuous increase in national income or national product over a specific period. Economic growth is often measured by the growth in the real national product or real national income, i.e., it is determined by the changes in real output and income over time (**Kafi, 2014, p. 543).**

2.6 Relationship between Financial Liberalization and Economic Growth

In the financial liberalization theory presented by Shaw and McKinnon in 1973, the role of financial liberalization policies was explained as leading to increased savings, which drives investment forward and thus increases economic growth. It was discussed that the high interest rates resulting from financial liberalization will allocate resources more efficiently, thus increasing the level of investment and increasing economic growth, as the focus of financial liberalization was on replacing the control system with a system in which prices reflect economic costs, with heavy reliance on the private sector as an engine of growth (**Sulaiman et al, 2012, p. 18**). In addition, strengthening and increasing global relations facilitate increased cross-border financial flows, which in turn lead to enhanced economic growth **(Arestis & Caner, 2004, p. 5).**

In Iraq, the Banking Law (No. 94) and the Iraqi Central Bank Law (No. 56) were issued in 2004 and subsequently amended in 2017. These laws are the most important condition for reforming the Iraqi banking system. These laws govern the functioning of the banking system through a free and open economic policy. The main objective of the Banking Law is to establish a legal framework for financial transactions in the field of exchange that is consistent with international standards and in line with the financial liberalization policy. One of the most significant outcomes of these laws was the liberalization of interest rates (**Al-Janabi & Al-Shibawi, 2017, p. 238**).

Based on this law, the Central Bank decided to complete the liberalization of interest rates on deposits, loans, credits, securities, and all other financial instruments. This decision represents a radical shift in the work of the banking system in Iraq, moving towards strengthening the role of price signals for interest rates by market rules and efficiency, to achieve an equilibrium price that reduces the gap between credit and debit interest rates. It is the ideal means to achieve the efficiency of the financial mediation process and increase competition within the banking system (**Khalaf & Sanhita, 2009, p. 387**).

We note, as shown in Appendix No. (1) The nominal interest rate fluctuated and reached its highest rate in 2007, at 0.2%. It then declined and began to rise again in 2009, following the Central Bank of Iraq's low-interest rate policy aimed at providing high liquidity to the banking system. The study period also witnessed an increase in credit granting due to giving the private sector a greater role in economic development by allowing it to establish private banks, after it was a monopoly of the public sector, in addition to the increase in the number of private banks and the size of their capital due to the improvement in oil revenues and expectations of growth in demand for banking facilities, whether for credit purposes or Deposit (**Abid**, **2024, p. 417**)

In addition to the financial liberalization witnessed by the Iraqi markets during the study years, which was represented in the financial market in an actual way through the freedom of the banking system and the unleashing of its capabilities in determining its credit and debit interest rates, i.e. financial liberalization, which was a fundamental pillar of strengthening the financial authority, which is the essence of financial stability, especially after the abandonment of the compulsory measures that the previous monetary policy adopted through

its direct means, in addition to resorting to indirect policies that depend on market forces to avoid the phenomenon of financial repression, which is represented by placing ceilings on the bank credit granted or determining the credit source or imposing administrative interest rates that fall outside the market and its balances **(Saleh, 2011, p. 6).**

We note that the highest percentage of credit granted to the private sector of the gross domestic product was in 2023, when it reached 13.5%. As a percentage of the gross domestic product, foreign direct investment reached its highest level in 2014, at 4.5%. As for the inflation index, it fluctuated and reached its highest percentage in 2005, at 35.9. The reason for this was the deterioration of the security situation during that period.

3. The Practical Aspect

In this chapter, the results of the econometric model used to assess the impact of financial liberalization indicators on economic growth in Iraq for the period 2004-2023 will be presented. Due to the small size of the time series of variables used in the analysis, annual data were converted to quarterly data using the economic analysis program Eviews 12. The econometric model used can be described statistically, demonstrating the relationships between the variables used. The dependent variable is economic growth, represented by the current value of the gross domestic product (GDP) in US dollars. The independent variable includes the financial liberalization indicators, as follows:

- The nominal interest rate index, symbolized by (BASIC-IN), is determined by the Central Bank of Iraq.
- The domestic credit to the private sector ratio to GDP measures the contribution of local banks to the private sector's lending and facilities. It is symbolized by (CR).
- The foreign direct investment ratio to GDP measures nets inward investment as a percentage of GDP. It is symbolized by (FDI/GDP).
- The inflation index, symbolized by (INF), indicates the level of overall economic stability.

Based on the theoretical framework of the study, it is assumed to test the following functional relationship:

$$GDP = a + B_1 BASIC - IN + B_2 CR + B_3 FDI\backslash GDP + B_4 INF + u_t \ldots (1)$$

GDP stands for Gross Domestic Product, BASIC-IN, CR, FDI/GDP, and INF stand for financial liberalization indicators, and (u_t) is the error term that represents the unexplained variance in the dependent variable that is not taken into account when estimating the model. Appendix (1) shows the time series data for the variables of the standard model.

3.1 Results of the time series stationarity test for the research variables (Unit Root)

Several tests are used to detect the unit root problem and determine the stationarity of time series related to economic variables, as well as their degree of integration. The most prominent of these tests is the Phillips-Perron (PP) test. The Phillips-Perron test is based on a more general assumption (that the time series are generated by Autoregressive integrated moving average ARIMA), so the Phillips-Perron test has better testing ability, and is more accurate than the extended Dickey-Fuller test, especially when the sample size is small. The criteria used in this test are based on two basic hypotheses:

- If the probability value is greater than 0.05, the null hypothesis (H_0: B=0) is accepted, indicating the presence of a unit root, meaning the time series is not stationary.
- If the probability value is less than 0.05, the alternative hypothesis (H_0: B>0) is accepted, meaning there is no unit root and the time series data is stationary.
- Table 1 shows that the probability value (P-value) calculated by the standard analysis program (Eviews 12) for the variables under study was greater than 0.05. This indicates that the time series of the variables under study are not stationary and suffer from the unit root problem at their original level (At Level), except for

(inflation INF) in the case of only a constant term. However, in the case of a constant and a general trend, the variables (domestic credit provided to the private sector as a percentage of GDP, and inflation) were stationary at the 5% level. In the absence of a constant or a general trend, the inflation variable was stationary at the 1% level. This means accepting the null hypothesis, which indicates that the time series of most variables are not stationary due to the presence of the unit root problem.

In order to address this problem, the first differences (At First Difference) were taken for the time series data, as the probability values became less than 0.05. Thus, we reject the null hypothesis that indicates the presence of a unit root problem and accept the alternative hypothesis that indicates the absence of a unit root in the time series and that the time series are integrated of the first order (I_1), in all three cases, i.e., with the presence of a fixed term or a fixed term and a general trend for the variables or without a fixed term and a general trend.

Table No. (1) Phillips-Perron Test

PP	At Level					
	Variables	BASIC-IN	CR	FDI-GDP	INF	GDP
With constant	t-Statistic	-1.6843	-0.7793	-2.0227	-3.2778	-1.6577
	Prob.	0.4352	0.8192	0.2767	0.0193	0.4486
	Result	No	No	No	**	No
With constant & Trend	t-Statistic	-2.1780	-3.6657	-2.0310	-3.8691	-2.2793
	Prob.	0.4948	0.0307	0.5753	0.0179	0.4399
	Result	No	**	No	**	No
Without constant & Trend	t-Statistic	-0.7708	1.0870	-0.8200	-3.2618	0.6663
	Prob.	0.3792	0.9268	0.3577	0.0014	0.8579
	Result	No	No	No	***	No
	At First Difference					
	Variables	ASIC-IN)	d (CR)	(FDI-GDP)	d (INF)	d (GDP)
With constant	t-Statistic	-8.7190	-9.0210	-8.7279	-8.7276	-8.9394
	Prob.	0.0000	0.0000	0.0000	0.0000	0.0000
	Result	***	***	***	***	***
With constant & Trend	t-Statistic	-8.6625	-8.9648	-8.6788	-8.6721	-8.9282
	Prob.	0.0000	0.0000	0.0000	0.0000	0.0000
	Result	***	***	***	***	***
Without constant and trend	t-Statistic	-8.7750	-8.7750	-8.7750	-8.7750	-8.7750
	Prob.	0.0000	0.0000	0.0000	0.0000	0.0000
	Result	***	***	***	***	***
Notes:	a: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1% and (no) Not Significant b: Lag Length based on AIC					

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

3.2 Cointegration test according to the ARDL methodology

3.2.1 Initial estimation of the model according to the ARDL methodology

After conducting a time series stationarity test for the variables of the research focus using the Phillips-Perron unit root test, we found that some variables are stationary at the level and others are not. However, at first difference, all variables are stationary. Given that the ARDL model methodology relies on stationary data at the first difference or a combination of the first

difference and the level, provided that there are no stationary variables at the second difference (I_2), the ARDL test was adopted for the variables under study. After conducting the test, the results were as follows:

Table No. (2) ARDL test results

Dependent Variable: LOG (GDP)
Method: ARDL
Date: 06/26/25 Time: 16:45
Sample (adjusted): 2005Q1 2023Q4
Included observations: 76 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): BASIC_IN, CR, FDI_GDP, INF

Fixed regressors: C
Number of models evaluated: 2500
Selected Model: ARDL (4, 0, 4, 4, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG (GDP (-1))	**0.262040**	**0.083596**	**3.134603**	**0.0027**
LOG (GDP (-2))	**6.79E-13**	**0.086295**	**7.86E-12**	**1.0000**
LOG (GDP (-3))	**-2.34E-13**	**0.086295**	**-2.71E-12**	**1.0000**
LOG (GDP (-4))	**0.697375**	**0.084424**	**8.260363**	**0.0000**
BASIC_IN	**0.762727**	**0.212367**	**3.591554**	**0.0007**
CR	**-0.050547**	**0.008499**	**-5.947429**	**0.0000**
CR (-1)	**0.007741**	**0.011635**	**0.665261**	**0.5085**
CR (-2)	**5.61E-14**	**0.011532**	**4.87E-12**	**1.0000**
CR (-3)	**-4.30E-15**	**0.011532**	**-3.73E-13**	**1.0000**
CR (-4)	**0.050717**	**0.009283**	**5.463665**	**0.0000**
FDI_GDP	**-0.009019**	**0.014270**	**-0.632054**	**0.5298**
FDI_GDP (-1)	**-0.003612**	**0.019057**	**-0.189544**	**0.8503**
FDI_GDP (-2)	**1.57E-14**	**0.018836**	**8.36E-13**	**1.0000**
FDI_GDP (-3)	**-1.59E-14**	**0.018836**	**-8.45E-13**	**1.0000**
FDI_GDP (-4)	**-0.019761**	**0.014035**	**-1.407970**	**0.1645**
INF	**0.004587**	**0.000580**	**7.911898**	**0.0000**
INF (-1)	**-0.001020**	**0.000581**	**-1.755938**	**0.0844**
C	**0.250459**	**0.110006**	**2.276768**	**0.0265**
R-squared	**0.989135**	Mean dependent var		**5.088090**
Adjusted R-squared	**0.985950**	S.D. dependent var		**0.462158**
S.E. of regression	**0.054781**	Akaike info criterion		**-2.767560**
Sum squared resid.	**0.174054**	Schwarz criterion		**-2.215545**
Log likelihood	**123.1673**	Hannan-Quinn criterion.		**-2.546948**
F-statistic	**310.5929**	Durbin-Watson stat		**1.066006**
Prob(F-statistic)	**0.000000**			

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

Table 2 presents the results of the initial estimation of the ARDL model, indicating that the model is acceptable. The corrected coefficient of determination reached 0.98, indicating that the independent variables explain 98% of the variation in the dependent variable. In comparison, the remaining 2% represents the effect of other variables not included in the model. In addition, the value of (F) of (310.5929) and its probability value of (0.0000) shows that the model used in estimating the long- and short-term parameters is highly significant. Regarding the statistical value of the Durbin-Watson statistic, which reached 1.066006, it indicates the presence of positive autocorrelation in the errors.

3.2.3 Cointegration Test Results According to The Bounds Test

To test the existence of a cointegration relationship, i.e. a long-term equilibrium relationship between the independent variables and the dependent variable, the (F) statistic is calculated through the limits test, then it is compared to the values of the upper and lower limits (critical value bounds) set by the economist Besran and distributed at different significance levels as **shown in Table (3)**

Table No. (3) shows the results of the Bounds Test

Test statistic	**Value**	**K**
F- statistic	**28.76081**	**4**
Critical Value Bounds		
significance	I_0 ***bounds***	I_1 ***bounds***
10%	**2.2**	**3.09**
5%	**2.56**	**3.49**
2.5%	**2.88**	**3.87**
1%	**3.29**	**4.37**

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

From Table (3), it is clear that the value of the (F) statistic reached (28.76081), which is greater than all the lower and upper limits, at all the different significance levels (1%, 2.5%, 5%,10%). This indicates the existence of a joint integration relationship, meaning a long-term equilibrium exists between the dependent variable (gross domestic product) and the independent variable (financial liberalization indicators). This result leads to the adoption of an error correction model in both the short and long term.

3.2.4 Estimation of error correction model according to ARDL methodology

After verifying the existence of a cointegration relationship between the model variables using the F-statistic value, we proceed to estimate the short- and long-term parameters of the error correction model. We then verify the quality of this model's performance, as follows:

Short-term relationship analysis: The results (as in Table 4) indicate the following**:**

- We note that the indicator (the ratio of domestic credit granted to the private sector to the gross domestic product) has a negative and weak impact on the gross domestic product in Iraq during the period under study, as its probability value reached (0.0000) at a significance level of 5%. This is due to Iraq's heavy dependence on oil revenues for its gross domestic product.
- We also note the presence of a weak, negative relationship between the foreign direct investment (FDI) to GDP ratio and GDP during the research period. However, it is not statistically significant, as its p-value of 0.1298 falls below the 5% significance level.
- We also note the presence of a weak, positive relationship between the inflation index and GDP, as its probability value reached 0.000. This is due to Iraq's unstable economy.

- The results also indicate that the error correction vector parameter (Coint-Eq (-1)) for this model reached -0.040585, and its probability value reached (Prob. = 0.0000), which is significant at the 5% level. This suggests the existence of a long-term equilibrium relationship between financial liberalization indicators and GDP in Iraq during the research period. This means that 0.04 errors in the short term can be corrected over time to achieve equilibrium in the long term.

Table No. (4) shows the results of the ECM error correction model

ARDL Error Correction Regression Dependent Variable: DLOG (GDP) Selected Model: ARDL (4, 0, 4, 4,1) Case 2: Restricted Constant and No Trend Sample: 2004Q1 2023Q4 Included observations: 76				
ECM Regression Case 2: Restricted Constant and No Trend				
Variable	**coefficient**	**Std. Error**	**T-statistic**	**Prob.**
DLOG (GDP (- 1))	-0.697375	0.077605	-8.986226	0.0000
DLOG (GDP (- 2))	-0.697375	0.077605	-8.986226	0.0000
DLOG (GDP (- 3))	-0.697375	0.077605	-8.986226	0.0000
D(CR)	-0.050547	0.007804	-6.477497	0.0000
D (CR (-1))	-0.050717	0.008657	-5.858839	0.0000
D (CR (-2))	-0.050717	0.008657	-5.858839	0.0000
D (CR (-3))	-0.050717	0.008657	-5.858839	0.0000
D(FDI_GDP)	-0.009019	0.013097	-0.688638	0.4938
D (FDI_GDP (-1))	0.019761	0.012861	1.536531	0.1298
D (FDI_GDP (-2))	0.019761	0.012861	1.536531	0.1298
D (FDI_GDP (-3))	0.019761	0.012861	1.536531	0.1298
D(INF)	0.004587	0.000499	9.193906	0.0000
CointEq (-1)	-0.040585	0.002964	-13.69092	0.0000
R-squared	0.809550	Mean dependent var		0.025315
Adjusted R-squared	0.773274	S.D. dependent var		0.110388
S.E. of regression	0.052562	Akaike info criterion		-2.899139
Sum squared resid.	0.174054	Schwarz criterion		-2.500461
Log likelihood	123.1673	Hannan-Quinn criterion.		-2.739808
Durbin-Watson stat	1.066006			

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

3.3 Long-term relationship analysis

The results of Table 5 indicate the long-term relationship between the parameters, revealing an effect between financial liberalization indicators and GDP. The results were as follows:

There is a direct relationship between the interest rate index and the country's GDP. That is, a 1% increase in the value of this index leads to a 0.762727% increase in GDP, with a probability value of 0.0007, which is significant at the 5% level. This is consistent with the economic literature, which emphasizes the direct relationship between interest rates and financial liberalization.

- There is a direct relationship between the ratio of credit granted to the private sector to GDP and GDP. That is, a 1% increase in the value of this index leads to a

0.007910% increase in GDP. This effect is statistically significant at the 5% level, with a probability value of 0.0339. This is consistent with the logic of economic theory, which indicates that an increase in the ratio of credit granted to the private sector to GDP leads to a boost in GDP. - There is an inverse relationship between (foreign direct investment to GDP) and GDP. This means that a 1% decrease in the value of this indicator results in a 0.032392% increase in GDP. The probability value indicates that the result is significant at the 5% level, as its probability value is 0.0000. This is because foreign direct investment is primarily directed towards the oil extraction sector.

- Regarding the inflation index, the results suggest a direct correlation with GDP. Its probability value reached 0.0000, which is significant at the 5% level. This confirms the instability in the Iraqi economy, as it was exposed to two double shocks during the period under study.

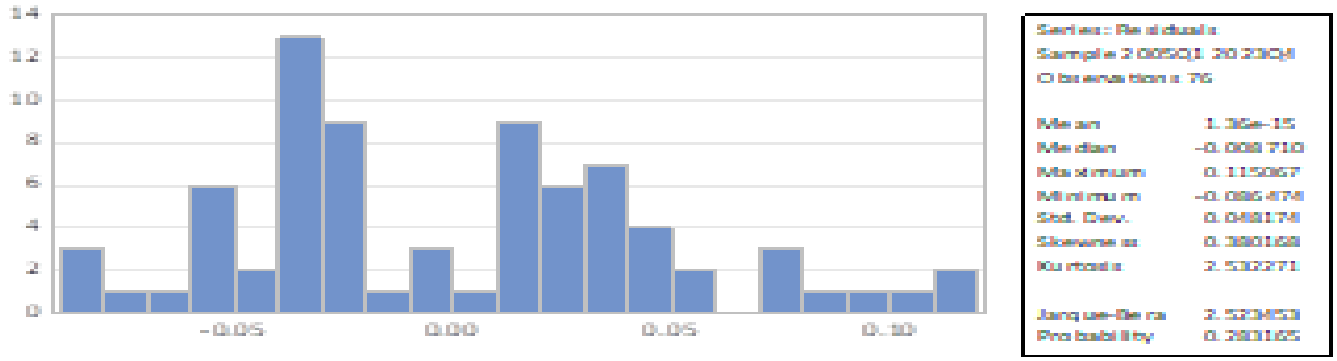
Table No. (5) shows the analysis of the relationship in the long term

Long run form				
Variable	**coefficient**	**Std. Error**	**T-statistic**	**Prob.**
C	**0.250459**	**0.110006**	**2.276768**	**0.0265**
LOG (GDP (-1))	**-0.040585**	**0.022979**	**-1.766150**	**0.0826**
BASIC_IN	**0.762727**	**0.212367**	**3.591554**	**0.0007**
CR (-1)	**0.007910**	**0.003642**	**2.172120**	**0.0339**
FDI -GDP (-1)	**-0.032392**	**0.007063**	**-4.586032**	**0.0000**
INF (-1)	**0.003567**	**0.000539**	**6.613492**	**0.0000**
DLOG (GDP (-1))	**-0.697375**	**0.084424**	**-8.260363**	**0.0000**
DLOG (GDP (-2))	**-0.697375**	**0.084424**	**-8.260363**	**0.0000**
DLOG (GDP (-3))	**-0.697375**	**0.084424**	**-8.260363**	**0.0000**
D(CR)	**-0.050547**	**0.008499**	**-5.947429**	**0.0000**
D (CR (-1))	**-0.050717**	**0.009283**	**-5.463665**	**0.0000**
D (CR (-2))	**-0.050717**	**0.009283**	**-5.463665**	**0.0000**
D (CR (-3))	**-0.050717**	**0.009283**	**-5.463665**	**0.0000**
D(FDI_GDP)	**-0.009019**	**0.014270**	**-0.632054**	**0.5298**
D (FDI_GDP (-1))	**0.019761**	**0.014035**	**1.407970**	**0.1645**
D (FDI_GDP (-2))	**0.019761**	**0.014035**	**1.407970**	**0.1645**
D (FDI_GDP (-3))	**0.019761**	**0.014035**	**1.407970**	**0.1645**
D(INF)	**0.004587**	**0.000580**	**7.911898**	**0.0000**

3.3.3.1 ARDL Model Quality Tests

1.Test of normal distribution of residuals Jarque Bera JB

This test depends on the probability value of the (JB) statistic. The null hypothesis states that the residuals of the model are normally distributed. If the p-value is greater than 0.05, the alternative hypothesis suggests that the residuals of the model are not normally distributed; if the p-value is less than 0.05, the alternative hypothesis is rejected. Figure 1 shows the results of the residuals from the study model, indicating that the residuals are normally distributed. This is confirmed by the probability value of the (JB) test, which is 0.28, and is therefore greater than 0.05



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

2.Lagrange factorial test for serial correlation between residuals

This test depends on the probability value of the chi-square (x^2). The null hypothesis indicates that the model is free from the problem of serial autocorrelation of the residuals if the probability value is greater than 0.05. The alternative hypothesis indicates that the model suffers from the problem if the p-value is less than 0.05. The test results appear in Table No. (6) as follows:

Table No. (6) shows the results of the LM test

Breusch-Godfrey serial correlation LM test: **Null hypothesis: No serial correlation at up to 2 lags**			
F-statistic	**16.01566**	**Prob. F (2,54)**	0.0000
Obs*R-squared	**27.65357**	**Prob. Chi-Square (2)**	0.0000

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

Since the probability value reached (0.0000), which is less than (0.05), the alternative hypothesis is accepted, which indicates that the model suffers from the problem of serial autocorrelation of the residuals, and we reject the null hypothesis

3.Test of invariance of variance

This test depends on the probability value of the chi-square (x^2). The null hypothesis indicates that the model is free from the problem of non-constant variance, while the alternative hypothesis indicates the presence of a problem of non-constant variance. Regarding the variables under study, the results were as in Table No. (7).

Table No. (7) shows the results of the Breusch-Pagan-Godfrey test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	**1.598149**	**Prob. F (2,54)**	**0.0947**
Obs*R-squared	**24.24380**	**Prob. Chi-Square (2)**	**0.1130**

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

Table 7 shows that the probability value of the chi-square reached 0.1130, which is greater than 0.05. Therefore, the null hypothesis is accepted, indicating that the model is free from the problem of non-constant variance, and we reject the alternative hypothesis.

3.3.3 ARDL model stability tests are the CUSUM and CUSUMQS tests.

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These two tests aim to ensure the structural stability of the short-term and long-term transactions. This is done through the cumulative sum of residuals
(CUSUM) test and the cumulative sum of squared residuals (CUSUMQS) test. The structural stability of the estimated model is achieved when the graphs of both tests fall within the critical limits at a 5% significance level. Figures (2) and (3) show the test results. As shown in Figure 2, the blue series remained within the red limits during the study period, indicating

the model's stability. After that, the (Cumulative Sum of Squares) test was conducted, and the result was as in Figure 3, and structural stability was achieved

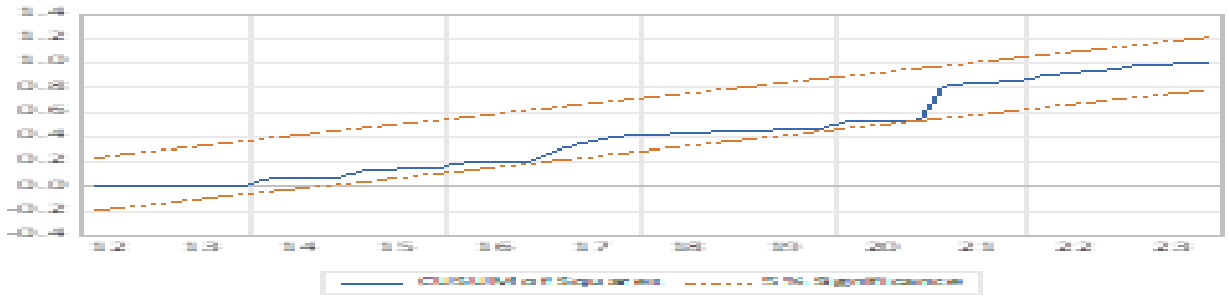

Figure (2): Cumulative sum of residuals test CUSUM.

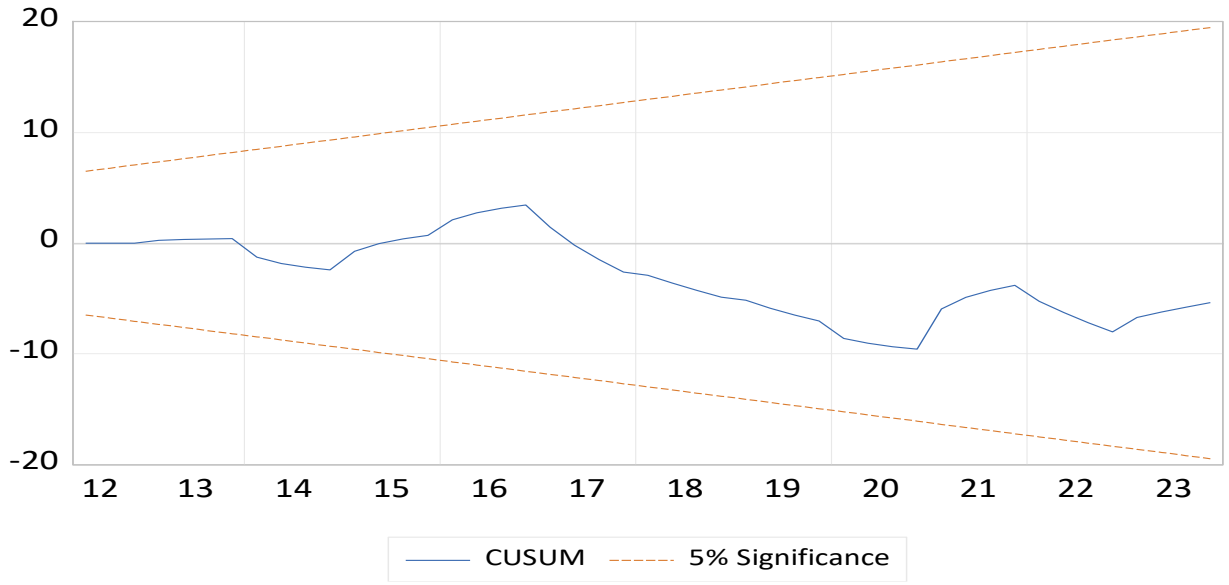

Figure (3): Cumulative sum of squared residuals test CUSUM.

Econometric analysis shows that:

Financial liberalization policies, as measured by the interest rate index, private sector credit-to-GDP ratio, and inflation index, have a positive impact on economic growth in Iraq in the long term.

Financial liberalization policies, as measured by the foreign investment-to-GDP index, have a negative long-term impact on economic growth in Iraq.

4. Conclusions:

1. Financial liberalization in Iraq occurred directly when the Central Bank of Iraq announced the liberalization of interest rates in 2004, which is a key indicator of financial liberalization. This policy was not gradual, which was reflected in the difficulty the financial sector faced.
2. The ratio of bank credit granted to the private sector to GDP and the ratio of foreign direct investment to GDP during

the study period were low, as they did not exceed 13.5% for the year 2023 and 4.5% for the year 2014, respectively. These are small ratios that do not support economic activity or financing development projects. This is due to the rentier nature of the Iraqi economy and its heavy dependence on oil revenues. The results of the (PP) test showed that the series are a mixture of stable at the level and stable at the first difference, which allowed us to use the (ARDL) model and show that there is cointegration, i.e. the presence of a long-term equilibrium relationship between the variables under study using the bounds test.

5. Recommendations

1. Emphasizing the gradual implementation of financial liberalization procedures and creating a safe environment for investors.
2. There is a need to introduce quantitative and qualitative improvements to the financial systems to ensure the success of the financial liberalization policy in achieving economic growth and supporting the private sector in Iraq. It is also important to emphasize the need to reduce the average interest rate margin through monetary policy in Iraq by having the Central Bank of Iraq reduce the nominal interest rate, thus removing the barrier between the forces of supply and demand and setting the equilibrium interest rate at a low level. This will encourage increased foreign direct investment and increase the amount of credit granted to the private sector.
3. The banking sector in Iraq must be encouraged to simplify existing procedures, which ultimately discourage individuals from engaging with the banking sector and turn to unofficial sources to obtain loans to finance their projects, particularly small ones. Financial literacy must be promoted through appropriate advertising and marketing, encouraging individuals to save their money in banks and earn interest, rather than hoarding it at home.

Data Availability:

The data used to support the results of this study has been included in the article.

Conflict of Interest:

The authors declare that they have no conflicts of interest.

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Appendix 1

year	Nominal Interest Rate	ratio of domestic credit to the private sector to GDP	Inflation	Foreign Direct Investment to GDP	GDP Current Value in US Dollars
2004	0.06	1.3	17.3	0.8	36.63
2005	0.07	1.6	35.9	1	50.07
2006	0.16	2.3	23.1	0.6	65.15
2007	0.2	2.5	14.4	1.1	88.84
2008	0.15	2.7	30.2	1.4	131.6
2009	0.07	3.8	-19.5	1.4	111.7
2010	0.06	5.4	16.6	1	138.5
2011	0.06	5.4	24.7	1.1	185.8
2012	0.06	5.9	2.7	1.6	218
2013	0.06	6.3	0	1	234.64
2014	0.06	6.8	-4.8	4.5	228.4
2015	0.06	9.9	-28.8	4.5	166.8
2016	0.04	10.1	-11.1	3.8	166.7
2017	0.04	9.5	14.7	2.7	187.2
2018	0.04	8.6	18.2	2.1	227.4
2019	0.04	8.8	-2.7	1.3	233.6
2020	0.04	13.3	-11.2	1.6	180.9
2021	0.04	11.3	-38.9	1.3	209.7
2022	0.04	9.6	27	0.7	286.6
2023	0.075	13.5	-18.2	2.1	250.8

Source: World Bank Group, Iraq data for the years 2004-2023