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RESEARCH ARTICLE

MEASURING AND ANALYZING THE DETERMINANTS OF FOREIGN DIRECT INVESTMENT ATTRACTION THROUGH MONETARY POLICY IN IRAQ FOR THE PERIOD (2004–2023)

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Abstract

This research analyzes the relationship between monetary policy and foreign direct investment (FDI) inflows in Iraq (2004–2023), using the ARDL methodology to test both short- and long-term relationships. The study focuses on key monetary policy variables such as money supply, exchange rate, inflation rate, and interest rate, and their impact on net FDI. The results revealed a long-term equilibrium relationship among the studied variables, showing a significant negative impact of money supply and inflation, while exchange rate and interest rate had a significant positive effect on FDI inflows. The study concludes that adopting more stable and flexible monetary policies is crucial for enhancing the investment environment and attracting foreign capital, especially in light of the economic and financial challenges facing the Iraqi economy.

Introduction:-

Foreign direct investment is considered one of the vital tools upon which developing countries rely to support their development plans and enhance their productive capacities, given the financial, technological, and managerial opportunities it provides. In Iraq, despite its economic potential, FDI inflows remain below the desired level, which is linked to various economic and financial factors, most notably monetary policy. Over the past two decades, Iraq's monetary policy has witnessed significant developments, particularly in money supply, exchange rates, interest rates, and inflation rates, necessitating a study of the extent of these variables' influence on foreign investor behavior.

This research sheds light on how monetary policy instruments interact with FDI inflows and aims to determine the general direction of the relationship between them, using advanced econometric models to analyze the dynamic relationship among the studied variables. Through this analysis, the study seeks to offer recommendations to policymakers in Iraq to help improve the foreign investment environment and strengthen macroeconomic stability.

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Significance of the Study:-

The significance of this study lies in its attempt to understand the crucial role that monetary policy plays in influencing FDI flows, especially in an economy facing structural challenges and financial volatility like Iraq. It highlights the interactive relationship between monetary policy tools (such as money supply, exchange rate, inflation rate, and interest rate) and foreign investor responses during a period marked by sharp economic changes. The scientific value of the study is demonstrated through its use of advanced econometric models that enhance the ability to quantitatively interpret these relationships, thus contributing strategic insights for decision-makers to improve the investment environment and attract foreign capital.

Objectives of the Study:-

The study aims to measure and analyze the relationship between monetary policy variables and FDI inflows in Iraq, and to determine the direction of influence using the ARDL model. Furthermore, it seeks to provide practical recommendations on how to activate monetary policy tools in a manner that enhances foreign investment attraction and economic stability, in alignment with the requirements of sustainable growth in an economy facing internal and external structural challenges.

Problem Statement

The main problem addressed by this study is the persistent contraction of FDI inflows into Iraq, despite the existence of a promising investment environment. This raises the question regarding the effectiveness of monetary policy in stimulating such inflows. Therefore, the study revolves around the following main research question:

To what extent do monetary policy indicators—such as money supply, exchange rate, interest rate, and inflation—affect the attraction of FDI into Iraq during the period (2004-2023)?

Research Hypothesis

The main hypothesis of the study posits that monetary policy is among the influential economic policies that play a major role in attracting and stimulating FDI through indicators such as exchange rates, interest rates, money supply, and inflation rates.

From this primary hypothesis, the following sub-hypotheses can be derived:

1 .There is a significant inverse relationship between broad money supply and FDI.
2 .There is a significant positive relationship between exchange rate and FDI.
3 .There is a significant inverse relationship between inflation and FDI.
4. There is a significant positive relationship between interest rate and FDI.

Chapter One: Theoretical Framework of Foreign Direct Investment and Monetary Policy

First: The Concept of Foreign Direct Investment (FDI)

FDI has garnered wide-ranging attention from the governments of both developed and developing countries due to its positive and direct impact on economic development. FDI is considered one of the main drivers of the economic development process and one of the most important forms of international capital movement, on which developing countries especially rely as a supplement to domestic savings for financing various development projects.

Key definitions of FDI include: FDI is a long-term investment in fixed capital assets within a particular country, reflecting the benefit of an investor who does not belong to that country and who has the right to manage the investment projects, whether individually, as a group, or as an organization (UNCTA, 2005:297).
FDI is any direct investment in production activities in a country by individuals or companies from another country, either by acquiring a company or shares in the target country or by expanding existing operations there (Wanjiru, 2014:1).

FDI refers to any natural person, public or private institution, government, or group of individuals who are linked together, or any group of institutions linked through legal personality, which owns a branch or subsidiary company that carries out operations in a country other than where the foreign investor resides, as a foreign direct investor (Kaki, 2013:21).

Second: The Concept of Monetary Policy

Monetary policy is considered a fundamental pillar of general economic policies in countries, and interest in it has increased with the exacerbation of financial crises and economic instability witnessed globally. The development of monetary policy philosophy has evolved alongside modern economic theories, particularly after the mid-20th century**.**

Monetary Policy:

It refers to a set of monetary procedures used to achieve monetary and non-monetary goals. It can also include non-monetary procedures aiming to achieve monetary objectives (Einzig, 1972:36)**.**

Another definition describes monetary policy as one of the two main policies (the other being fiscal policy) through which government authorities influence the market economy regularly and steer the direction of macroeconomic activity (Friedman, 2000:1).

Third: Analysis of FDI and Monetary Policy Indicators

1. Inflows and Outflows of Foreign Direct Investment in Iraq(2004-2023).

FDI inflows to Iraq remain below the required levels despite the existence of significant investment opportunities in sectors such as agriculture, services, industry, and others. The volume and evolution of FDI inflows and outflows in Iraq can be reviewed through Table (1) as follows:

Table (1):- Inflows and Outflows of Foreign Direct Investment (FDI) for Iraq during the Period (2004–2023) (Million USD).

year	Inward FDI (1)	Growth rate %(2)	Outward FDI (3)	Growth rate %(4)
2004	300	-	-	-
2005	515	71.67	89	-
2006	383	-25.63	305	242.70
2007	972	153.79	8	-97.38
2008	1856	90.95	34	325
2009	1598	-13.90	72	111.76
2010	1682	0.05	125	73.61
2011	5959	2.54	366	192.8
2012	10040	58.96	490	33.88
2013	6316	-37.09	227	-53.67
2014	6675	5.68	242	6.61
2015	5030	-24.64	148	-38.84
2016	3187	-93.68	304	105.41
2017	4453	39.72	78	-74.34
2018	5503	23.58	188	141.02
2019	6976	26.77	194	3.19
2020	4901	-29.74	147	-24.23
2021	-2637	-1.54	135	-8.16
2022	-2088	-20.88	238	76.30
2023	-5273	-152.45	279	17.23

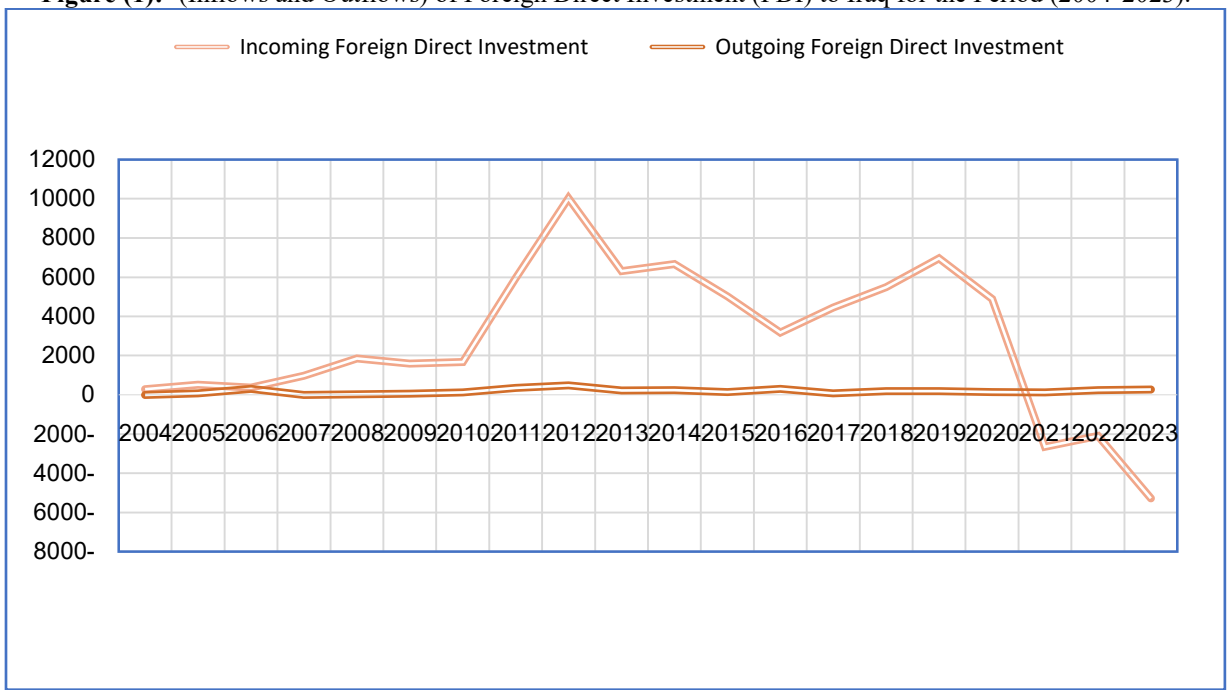
Source: United Nations Conference on Trade and Development (UNCTAD), Data Centre.

-Columns (1,2) prepared bythe researcher.

It is noted from Table (1) that inward foreign direct investment flows to Iraq have witnessed remarkable fluctuations since (2004), starting with (300) million dollars and rising in (2005) to (515) million dollars at an annual growth rate of (71.6%) as a result of the improvement of the security situation and the lifting of sanctions. However, it was negatively affected by the global financial crisis in (2008), as it decreased to (1598) million dollars with an annual growth rate of (-13.90%). Then inflows declined significantly during the period (2014-2018) due to terrorist attacks and the deterioration of infrastructure, where investments ranged between (6674 and 5503) million dollars, due to economic and security crises. Inflows also decreased in (2020) to (4901) million dollars as a result of the impact of the coronavirus pandemic, and continued to decline in (2022 and 2023) to negative values amounting to (-2088) million dollars and (5273) million dollars. USD, respectively, with an annual growth rate of -(20.82%) and (-152.45%), affected by political tensions, excessive dependence on the oil sector, and weak attraction of non-oil

investments. As for foreign outward investments, they ranged between (147 and 279) million dollars, with an annual growth rate ranging between (24.23%) and (17.23%).

Figure (1):- (Inflows and Outflows) of Foreign Direct Investment (FDI) to Iraq for the Period (2004-2023).



Source: Prepared by the researcher based on Table (1).
Second: Monetary Policy Indicators in Iraq for the Period (2004–2023).

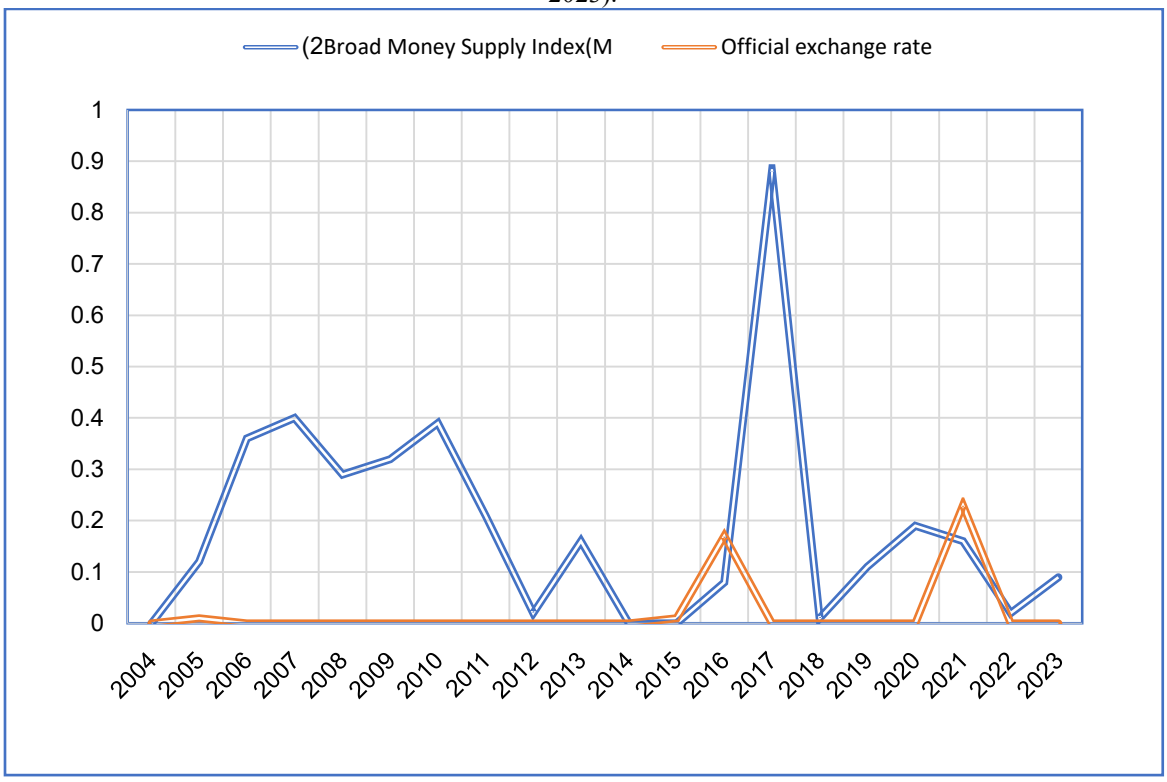
The Development of the Broad Money Supply Indicator and the Exchange Rate in Iraq for the Period (2004–2023).

year	Broad Money Supply Index(M2)(1)	Growth rate(2)	Official exchange rate(3)	Growth rate(4)
2004	10148626	-	1453	-
2005	11399125	0.12	1469	0.01
2006	15460060	0.36	1467	-0.13
2007	21721167	0.40	1255	-0.14
2008	28189934	0.29	1193	-0.05
2009	37300030	0.32	1170	-0.02
2010	51743489	0.39	1170	0
2011	62473929	0.21	1170	0
2012	63735871	0.02	1166	-0.34
2013	73830964	0.16	1166	0
2014	72692448	-0.02	1188	0
2015	65435425	-0.09	1190	0.01
2016	70733027	0.08	1190	0.17
2017	76986584	0.88	1190	0
2018	77828984	0.01	1190	0
2019	86771000	0.11	1190	0
2020	103353556	0.19	1190	0
2021	119944017	0.16	1460	0.23
2022	14648792	0.02	1460	0
2023	160318372	0.09	1300	-0.35

Source: Prepared by the researcher based on the Central Bank of Iraq, Department of Statistics and Research, annual bulletins for different years (2004-2023).

It is noted from Table (2) that the broad money supply (M2) in Iraq witnessed remarkable growth during the period (2004-2023), as it reached 2004 about (11,498,148) million dinars, and increased in 2005 to (14,659,350) million dinars with an annual growth rate of (0.27). This rose gradually as oil revenues rose, the government's fiscal position improved, currency exchange, and the lifting of economic sanctions. In 2014, the broad money supply reached (90,566,930) million dinars, with a slight growth rate of (0.03) despite the decline in oil prices. In (2015), the money supply increased to (92,438,712) million dinars with a negative growth rate of (-0.09) as a result of the security and economic deterioration, and the withdrawal of some banks from service due to terrorism. In (2017 and 2018), the money supply increased to (92,857,047) and (95,390,725) million dinars respectively, with growth rates of (0.06) and (0.03), thanks to the recovery of oil prices and the increase in the tight money supply (M1).In the period (2019-2023), the increase continued with growth rates of (-0.89, 0.016, 0.14, 0.21) as a result of the improvement in oil prices and increased revenues. In addition to the stability of the security situation, and the increase in the Central Bank's foreign currency reserves, which contributed to supporting the stability of the exchange rate, the official Iraqi dinar exchange rate witnessed clear fluctuations during the period (2004-2023). In 2004, the price reached (1453) dinars per dollar, and rose in 2005 to (1469) with a growth rate of (0.01), as a result of the policies of the Central Bank to impose restrictions on the sale of dollars and increase demand for it due to rumors and unstable security conditions. Then the exchange rate began to gradually decline until it reached (1170) dinars in (2009), as a result of the success of monetary policy in restoring the value of the dinar, reducing inflation, and forming a strong monetary reserve, with the adoption of a flexible currency supply policy. During the years (2014-2020), the official rate stabilized at (1190) dinars, despite the great challenges facing the economy, most notably the decline in oil prices, the decline in public revenues, and the deterioration of the security situation, which put pressure on the monetary reserve of the Central Bank.In the period (2021-2023), the official rate ranged between (1300) and (1460) dinars per dollar. A new price of (1450) dinars was adopted within the framework of economic reform after the Corona pandemic and the drop in oil prices. Then the price in the currency sale window was about (1460) dinars, as a result of the increase in oil revenues and the increase in the Central Bank's purchases of the dollar.

Figure (2):- Evolution of the growth rate of the money supply and the exchange rate of Iraq for the period (2004-2023).



Source: Prepared by the researcher based on Table (2).

Evolution of the interest rate and inflation rate in Iraq for the period (2004-2023)

Table (3):- Evolution of the interest rate and inflation rate in Iraq for the period (2004-2023).

Years	Interest Rate %(1)	Growth Rate (2)	Inflation Rate% (3)	Growth Rate (4)
2004	6	-	27	-
2005	7	0.16	37	0.37
2006	16	1.29	53.2	0.43
2007	20	0.25	30.8	-0.42
2008	16.75	-0.16	2.7	-0.91
2009	8.83	-0.47	-2.8	-2.04
2010	6.25	-0.29	2.4	-1.86
2011	6	-0.04	5.6	1.33
2012	6	0	6.1	0.09
2013	6	0	1.9	-0.69
2014	6	0	2.2	0.16
2015	6	0	1.4	1.4
2016	4.33	0.28	0.5	0.5
2017	4	-0.08	0.2	0.2
2018	4	0	0.4	0.4
2019	4	0	-0.2	-0.2
2020	4	0	0.6	0.6
2021	4	0	6	6
2022	4	0	5	5
2023	7.50	0.88	4.5	4.5

Source: Prepared by the researcher based on the Central Bank of Iraq, Department of Statistics and Research, annual bulletins for different years (2004-2023).

It is noted from Table (3) that the interest rate in Iraq witnessed remarkable fluctuations during the period (2004-2023).In (2004) it reached (6%), and gradually rose to reach (20%) in (2007), to absorb liquidity, reducing inflation and controlling lending. Then it began to decline until it reached (6.25%) in (2010) as a result of low inflation rates and improved economic conditions during the period (2011-2015), the interest rate stabilized at (6%) to support bank financing for investment projects. In the period (2016-2022), it was reduced to (4%) in line with the flexible monetary policy, especially with the decline in inflation to (0.5%) in (2016) after the end of military operations. In 2023, it rose again to (7.5%) due to the decline in the inflation rate to (4.5%). As for the inflation rate, it reached (2004) about (27%), and rose to its peak in (2006) recording (53.2%) as a result of the deterioration of security and low productivity. Then gradually decreased to (30.8%) in (2007) and (2.7%) in (2008) thanks to the improvement of the security situation and effective monetary policies. In (2009) recorded a negative growth rate (-2.8%) due to the global financial crisis, reached (2.4%) in 2010, and rose to (6.1%) in (2012) as a result of high oil prices. Then it declined to (1.9%) in (2013) and (1.4%) in (2015), as a result of the increase in oil supply and the decline in global demand, and continued to decline to record (0.5%), (0.2%), and (0.4%) for the years (2016-2018) respectively. The year (2019) recorded a new negative growth rate of (-0.2%), which indicates the stability of prices. Then it increased to (0.6%) in (2020) due to the effects of the coronavirus pandemic, and continued to rise to (6%) in (2021) and (5%) in (2022) as a result of supply chain disruptions and the Russian-Ukrainian war. In 2023, inflation fell to 4.5% as a result of the decline in food prices and the stability of the exchange rate after the revaluation of the currency.

The second topic: measuring the relationship between foreign direct investment and monetary policy for the period (2004-2023).

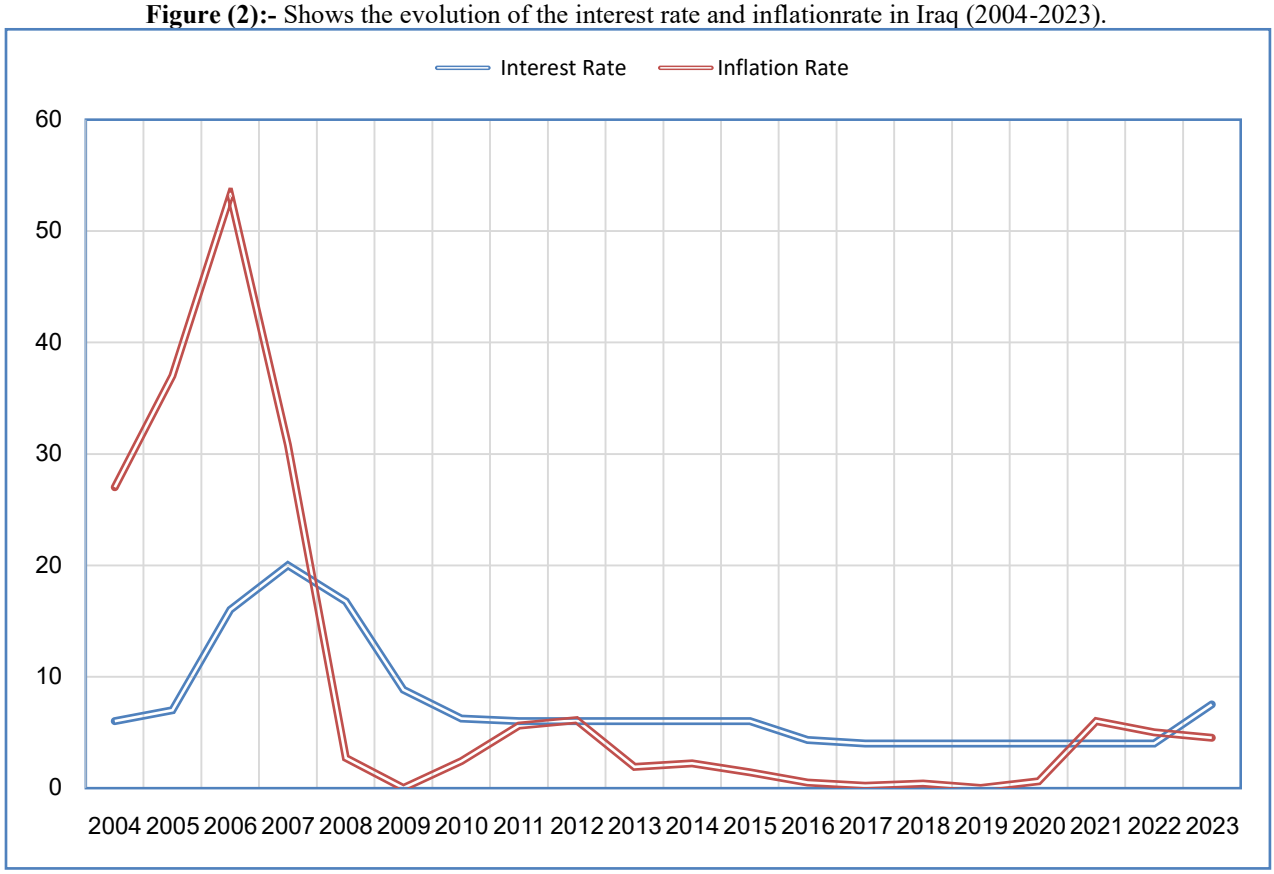
The first requirement: estimating the equation of the net test of rest (stability) of the variables studied.

The Developed Dickey-Fuller Test (ADF) and the Phillips-Perron (PP) test will be relied upon in the analysis to examine the stillness of the time series, where each of these two tests is used to determine whether the time series contains a unit root (non-static) or not, and based on the results of these tests, it is possible to determine the appropriateness of using distributed interval regression models (ARDL) to interpret the relationships between the studied variables, as it will first be confirmed that all model variables are static, by conducting the following stability tests: -

First, the developed Dickey-Fuller test :(Augmented Dickey-Fuller ADF) is a statistical test used to verify the time series stillness of the studied variables. This test aims to test the null hypothesis that states that there is a unit root in

the time series, which means that it is unstable or non-static. In contrast, the alternative hypothesis indicates that the time series is stable (static) and does not contain a unit root, and if the null hypothesis is rejected, this indicates that the time series is stable (static), and therefore can be used in economic or statistical models that depend on the stillness of the series. If the null hypothesis is accepted, it means that the time series is unstable and may contain a unit root, which requires special treatment before being used in models. Table (4) shows the test results of the research variables.

Figure (2):- Shows the evolution of the interest rate and inflationrate in Iraq (2004-2023).



Source: Prepared by the researcher based on Table (3).

Table (4):- Developed Dickey-Fuller Test Test for Search Variables.

	At level	Y1	X1	X2	X3	X4
With Constant	t-Statistic	-1.493	-0.124	-2.353	-6.916	-2.259
	Prob.	0.532	0.943	0.158	0.000	0.188
		no	no	no	***	no
With Constant & Trend	t-Statistic	-1.363	-5.043	-2.263	-5.892	-2.896
	Prob.	0.864	0.001	0.449	0.000	0.169
		no	***	no	***	no
Without Constant & Trend	t-Statistic	-1.418	1.791	-0.635	-2.521	-1.227
	Prob.	0.144	0.982	0.439	0.014	0.200
		no	no	no	**	no
	At First Difference					
		d(Y1)	d(X2)	d(X3)	d(X4)	d(X5)

With Constant	t-Statistic	-2.908	-4.037	-6.067	-0.645	-5.044
	Prob.	0.049	0.002	0.000	0.845	0.000
		**	***	***	no	***
With Constant & Trend	t-Statistic	-3.282	-3.968	-6.173	-3.145	-5.017
	Prob.	0.077	0.014	0.000	0.111	0.001
		*	**	***	no	***
Without Constant & Trend	t-Statistic	-2.886	-3.005	-6.085	-0.597	-5.079
	Prob.	0.004	0.003	0.000	0.450	0.000
		***	***	***	no	***

Source: From the work of the researcher based on the results of the program (Eviews) twelfth editionis clear from the test of Dickey-Fuller, developed for the stillness of time series, shown in Table (4), that some variables are static at the original level and some are non-static at the original level of the data, and all variables become static after taking the first difference to them as in the above table, and based on the time series dormant tests of the variables, it is preferable to use the ARDL methodology to estimate the relationship between monetary policy variables and foreign investment in Iraq**.**

Second: Phillips-Perrone test :(Phillips-Perrone, PP):
Is a statistical test used to determine the stillness of time series, as the test depends on testing the null hypothesis and the alternative hypothesis to determine whether the time series is static or not, as the time series is verified based on the p-value resulting from the test, if the probability value is less than 5% (i.e. less than 0.05), the null hypothesis is rejected, and thus the alternative hypothesis is accepted, indicating that the time series is static, If the probability value is greater than 5%, the null hypothesis is accepted, which means that the time series is unstable (non-static) as Table (5) shows the results of the Phillips-Perron test for the research variables**.**

Table (5):- Philips-Peron test for search variables.

	Level	**Y1**	**X1**	**X2**	**X3**	**X4**
With Constant	**t-Statistic**	**-0.676**	**0.534**	**-1.848**	**-2.855**	**-1.999**
	Prob.	**0.846**	**0.987**	**0.355**	**0.056**	**0.287**
		no	**no**	**no**	*	**no**
With Constant & Trend	**t-Statistic**	**-0.371**	**-1.484**	**-1.739**	**-3.375**	**-2.411**
	Prob.	**0.987**	**0.828**	**0.725**	**0.063**	**0.372**
		no	**no**	**no**	*	**no**
Without Constant & Trend	**t-Statistic**	**-0.878**	**3.924**	**-0.491**	**-2.608**	**-0.992**
	Prob.	**0.333**	**1.000**	**0.501**	**0.010**	**0.286**
		no	**no**	**no**	***	**no**
	At First Difference					
		d(Y1)	**d(X2)**	**d(X3)**	**d(X4)**	**d(X5)**
With Constant	**t-Statistic**	**-3.200**	**-9.053**	**-6.115**	**-11.769**	**-5.023**
	Prob.	**0.024**	**0.000**	**0.000**	**0.000**	**0.000**
		**	***	***	***	***
With Constant & Trend	**t-Statistic**	**-3.518**	**-9.087**	**-6.149**	**-11.650**	**-4.995**
	Prob.	**0.045**	**0.000**	**0.000**	**0.000**	**0.001**
		**	***	***	***	***
Without Constant & Trend	**t-Statistic**	**-3.179**	**-7.208**	**-6.133**	**-11.877**	**-5.058**
	Prob.	**0.002**	**0.000**	**0.000**	**0.000**	**0.000**
		***	***	***	***	***

Source: From the work of the researcher based on the results of the Eviews program, twelfth edition

It is clear from Table (5) according to the stillness test of the model variables that some variables are static at the level while some other variables have become static at the first difference and this result was reached based on the probability values (Prob.), which were less than 5%, which indicates the rejection of the null hypothesis that states the existence of a unit root, and thus accepting the alternative hypothesis that confirms the stillness of the time series, These results confirm that the time series of some variables are static in the plane while others need to take the first difference to become static, and this is an important condition for the application of the Distributed Deceleration Period Autoregression Model (ARDL), where the time series are required to be static in the plane or at the first difference only, which is achieved in this case. Based on these results, the ARDL model can now be applied appropriately, as this model allows the use of static variables in the plane and static variables at the first difference, which enhances the accuracy of modeling and prediction of the variables studied.

The third topic: Analysis of the results of measuring the relationship between foreign investment and monetary policy in Iraq for the period (2004-2023).

First: Foreign Direct Investment (ARDL Initial Model Estimate)

The application of the Distributed Deceleration Autoregression Model (ARDL) does not require that the process be preceded by time series dormancy tests, but the basic condition for the application of this model is that none of the second-order combined variables ((2)I exist, i.e. all variables must be either static at level (I(0)) or static after taking the first difference (1). Based on the results of the Developer Dickey-Fuller (ADF) and Philips-Peron (PP) tests, it was confirmed that this condition was met, and thus proceeded In estimating the model using the ARDL method, the optimal model was selected based on the Akaike Information Standard (AIC), as it is clear from Table (23) the results of the test of the self-regression model for distributed deceleration periods (ARDL), and the results of the model indicate that it is statistically acceptable, as the coefficient of determination (R^2) reached a value of (0.99), which indicates that the model explains 99% of the changes in the dependent variable, which reflects the strength of the model and its high explanatory ability. This result suggests that the independent variables used in the model have a great explanatory ability to influence the variable in question**.**

Table (6):- Results of the ARDL Initial Model for FDI Equivalency.

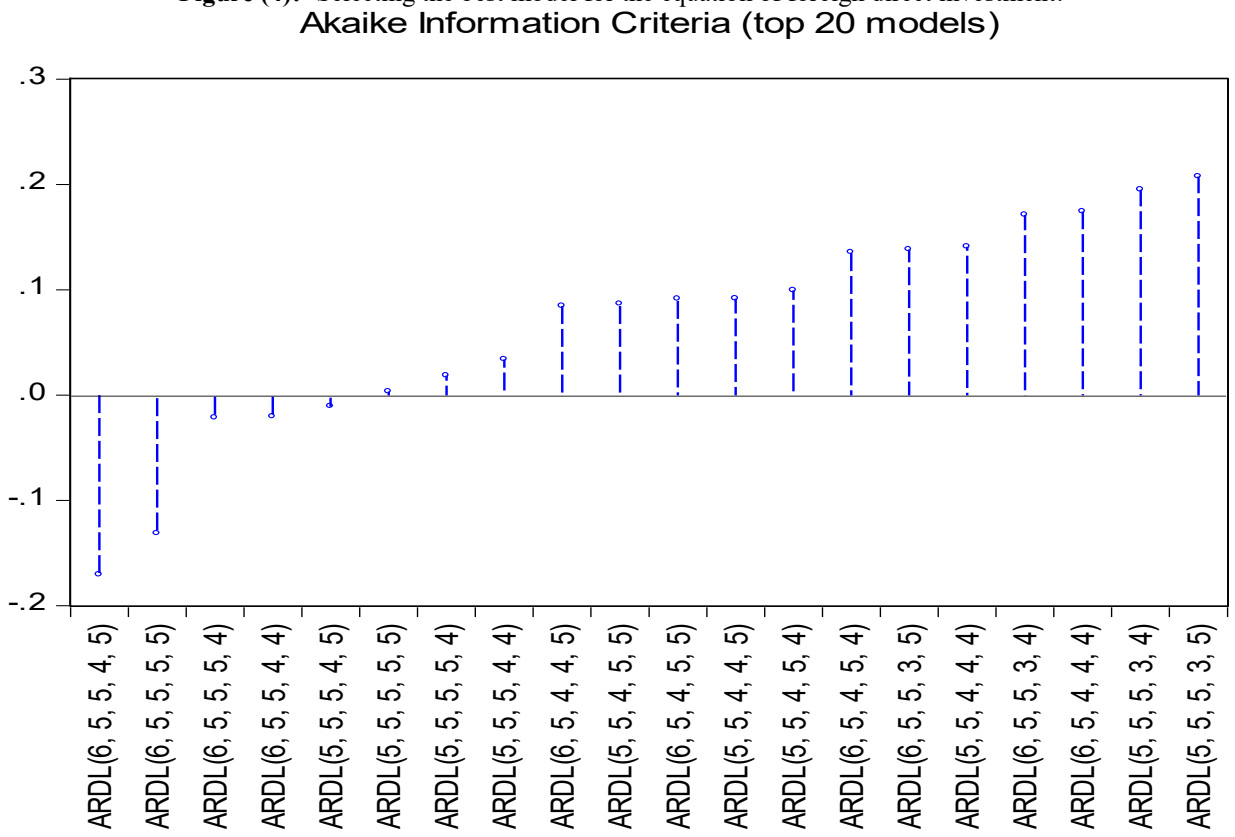
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y1(-1)	0.919448	0.195773	4.696495	0.0003
Y1(-2)	0.150985	0.292793	0.515672	0.6141
Y1(-3)	0.221392	0.281882	0.785405	0.4453
Y1(-4)	-0.717721	0.257371	-2.788660	0.0145
Y1(-5)	0.173216	0.249931	0.693053	0.4996
Y1(-6)	0.121268	0.133648	0.907370	0.3796
X1	0.055008	0.017847	3.082238	0.0081
X1(-1)	-0.013847	0.027688	-0.500110	0.6248
X1(-2)	-0.060501	0.029907	-2.022981	0.0626
X1(-3)	-0.073618	0.038360	-1.919156	0.0756
X1(-4)	-0.027320	0.041509	-0.658166	0.5211
X1(-5)	0.072131	0.026789	2.692513	0.0175
X2	-7.526189	1.854023	-4.059382	0.0012
X2(-1)	10.21917	4.571469	2.235424	0.0422
X2(-2)	1.463861	5.588901	0.261923	0.7972
X2(-3)	6.254034	5.356555	1.167548	0.2625
X2(-4)	-2.088687	5.114854	-0.408357	0.6892
X2(-5)	-4.280135	3.119888	-1.371887	0.1917
X3	-0.006095	0.011926	-0.511111	0.6172
X3(-1)	-0.044733	0.017192	-2.601918	0.0209
X3(-2)	-0.040344	0.019493	-2.069700	0.0575
X3(-3)	-0.042196	0.019094	-2.209902	0.0443
X3(-4)	-0.033578	0.024535	-1.368602	0.1927
X4	0.312109	0.100025	3.120301	0.0075
X4(-1)	-0.180161	0.180782	-0.996565	0.3359
X4(-2)	0.142323	0.162897	0.873701	0.3970
X4(-3)	0.237081	0.155932	1.520406	0.1507

X4(-4)	-0.252282	0.250895	-1.005526	0.3317
X4(-5)	-0.175324	0.260595	-0.672784	0.5120
R-squared	0.998907	Mean dependent var		2.871035
Adjusted R-squared	0.996720	S.D. dependent var		4.130081
S.E. of regression	0.236518	Akaike info criterion		0.181111
Sum squared resid	0.783172	Schwarz criterion		1.368897
Log-likelihood	25.10612	Hannan-Quinn criteria.		0.619130
Durbin-Watson stat	2.158163	-	-	-

Source: From the work of the researcher based on the results of the Eviews program, twelfth edition

Table (6) shows the results of estimating the self-regression model for distributed periods (ARDL), which was automatically selected according to the AIC standard, where the optimal model (6, 5, 5, 4, 5) ARDL was chosen, which means that the dependent variable (Y1) was included with six slowdowns, while five slowdowns were used for each of the variables X1), X2 and (X4), and four slowdowns for the variable (X3), as the statistics of (Durbin-Watson) of (2.158) show that there is no autocorrelation problem between Waste, as the standard (Akaike = 0.181), (Schwarz = 1.368) and Hannan-Quinn = 0.619) indicate that the model has good fit for data.

Figure (4):- Selecting the best model for the equation of foreign direct investment.



Source: The work of the researcher based on the results of the program (Eviews) twelfth edition.

Second: Joint integration testing according to the ARDL methodology.

The Distributed Deceleration Autoregression Model (ARDL) cointegration test is one of the primary tools for verifying a long-term equilibrium relationship between variables, known as the Bound Test. This test is based on the statistical value of Fischer's (F-statistic), which is compared with the lower and upper critical value bounds set by Pesaran et al., which are distributed according to different significant levels (10%, 5%, and 1%).

The results of the boundary test are interpreted as follows:

1. If the value of the (F) statistic is greater than the upper limit (I(1)) at a given significance level, we reject the null hypothesis, indicating a co-integral relationship between the variables
2. .If the value of (F) is less than the minimum (I(0)), we do not reject the null hypothesis, which means that there is no long-term equilibrium relationship.
3. If the value of (F) lies between the two terms, the result is inconclusive.

The results of the limit test for the FDI equation shown in Table (7) show that the calculated statistical value of F was significant at the level of significance (1%), which indicates that this value exceeded the upper limit of critical values set by Pesaran et al. Accordingly, the null hypothesis that there is no long-term equilibrium relationship between the variables is rejected, and the alternative hypothesis that there is co-complementarity is accepted. This means that there is a stable long-term relationship between monetary policy variables and foreign direct investment in Iraq during the study period, which enhances the validity of the ARDL model used to explain this relationship.

Table (7):- Border Test for Foreign Direct Investment Equation.

ARDL Bounds Test		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	**7.402468**	**4**
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	1.9	3.01
5%	2.26	3.48
2.5%	2.62	3.9
1%	3.07	4.44

Source: From the work of the researcher based on the results of the Eviews program, twelfth edition.

Third: Error correction model according to the ARDL methodology

Table (8) presents the results of the error correction model according to the (ARDL) methodology, as it shows the error correction equation and the long- and short-term parameters of the FDI equation as follows:

1. The error correction parameter (CointEq (-1) of (-0.13) is negative and significant at the level of (1%) and means that the correction of the imbalance in the long term is within (0.13%) of time.
2. There is a significant adverse effect of the broad money supply on net foreign direct investment, as increasing the broad money supply by one contributes to reducing net foreign direct investment by (0.36) units.
3. There is a significant direct impact of the exchange rate of the dinar against the dollar, as the rise in the exchange rate (the devaluation of the dinar) contributes to increasing foreign direct investment, as the rise in the exchange rate by one contributes to increasing foreign investment by (30.7) units.
4. There is a significant adverse effect of the inflation rate on net foreign direct investment, as increasing the inflation rate by one contributes to reducing net foreign direct investment by (1.27) units.
5. There is a significant direct impact of interest rates on monetary policy, as the high interest rate contributes to increasing foreign direct investment, as the increase in the interest rate by one contributes to increasing foreign investment by.**(0.63)**

These findings point to the importance of monetary policies, such as adjusting the money supply and interest rates, in influencing the flow of foreign direct investment into Iraq.

Fourth: Estimation of the error correction equation and the long- and short-term parameters of the foreign direct investment equation.

The estimation of the long-term relationship shows the extent to which the independent variables affect the dependent variable, and the following table shows.

Table (8):- Estimation of Error Correction Formula and Long-Term Parameters for FDI.

ARDL Cointegrating And Long Run Form				
Dependent Variable: Y1				
Selected Model: ARDL (6, 5, 5, 4, 5)				
Date: 03/14/25 Time: 18:09				
Sample: 2004Q1 2023Q4				
Included observations: 43				
Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y1(-1))	0.050860	0.183492	0.277181	0.7857
D(Y1(-2))	0.201846	0.153403	1.315788	0.2094
D(Y1(-3))	0.423237	0.174924	2.419545	0.0297
D(Y1(-4))	-0.294484	0.150990	-1.950348	0.0714
D(Y1(-5))	-0.121268	0.133648	-0.907370	0.3796
D(X1)	0.055008	0.017847	3.082238	0.0081
D(X1(-1))	0.060501	0.029907	2.022981	0.0626
D(X1(-2))	0.073618	0.038360	1.919156	0.0756
D(X1(-3))	0.027320	0.041509	0.658166	0.5211
D(X1(-4))	-0.072131	0.026789	-2.692513	0.0175
D(X2)	-7.526189	1.854023	-4.059382	0.0012
D(X2(-1))	-1.463861	5.588901	-0.261923	0.7972
D(X2(-2))	-6.254034	5.356555	-1.167548	0.2625
D(X2(-3))	2.088687	5.114854	0.408357	0.6892
D(X2(-4))	4.280135	3.119888	1.371887	0.1917
D(X3)	-0.006095	0.011926	-0.511111	0.6172
D(X3(-1))	0.040344	0.019493	2.069700	0.0575
D(X3(-2))	0.042196	0.019094	2.209902	0.0443
D(X3(-3))	0.033578	0.024535	1.368602	0.1927
D(X4)	0.312109	0.100025	3.120301	0.0075
D(X4(-1))	-0.142323	0.162897	-0.873701	0.3970
D(X4(-2))	-0.237081	0.155932	-1.520406	0.1507
D(X4(-3))	0.252282	0.250895	1.005526	0.3317
D(X4(-4))	0.175324	0.260595	0.672784	0.5120
CointEq (-1)	-0.131412	0.031044	-4.233149	0.0008
CointEq = Y1 - (-0.3664*X2 + 30.7586*X3 -1.2704*X4 + 0.6373*X5)				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	-0.366390	0.069510	-5.271052	0.0001
X2	30.758618	7.242729	4.246827	0.0008
X3	-1.270409	0.217198	-5.849075	0.0000
X4	0.637281	0.561447	1.135069	0.2754

Source: From the work of the researcher based on the results of the Eviews program, twelfth edition.

Fifth: Integrity tests of the FDI equivalency model

1. Autocorrelation Test (Breusch-Godfrey Serial Correlation LM Test):

The results shown in Table (9) of the Breusch-Godfrey test indicate that the probability value of the test (0.3499 = F-statistic), which is greater than the usual significance level (5%), which means that the null hypothesis (lack of self-correlation) Thus, it can be said that the FDI equation is free from the problem of autocorrelation between errors.

Table (9):- Breusch-Godfrey Serial Correlation LM Test.

F-statistic	1.284534	Prob. F (5,9)	0.3499
Obs*R-squared	17.90604	Prob. Chi-Square (5)	0.0031

Source: From the work of the researcher based on the results of the Eviews program, twelfth edition.

Heteroskedasticity Test: ARCH:

Table (10):- Heteroskedasticity Test: ARCH.

F-statistic	**2.114399**	**Prob. F (4,26)**	**0.1077**
Obs*R-squared	**7.608931**	**Prob. Chi-Square (4)**	**0.1070**

Source: From the work of the researcher based on the results of the Eviews program, twelfth edition.

Ramsey RESET Test:

The results of the Ramsey RESET test shown in Table (11) indicate that the p-value of the test (F-statistic = 0.1012) and (t-statistic = 0.1012) are greater than the significance level (5%), which means that there is no strong evidence of the presence of functional mischaracterization in the model. Therefore, we accept the null hypothesis, suggesting that the model used does not have a functional mischaracterization problem.

Table (11):- Ramsey RESET Test.

Equation: UNTITLED			
Specification: Y1 Y1(-1) Y1(-2) Y1(-3) Y1(-4) Y1(-5) Y1(-6) X2 X2(-1) X2(-2) X2(-3) X2(-4) X2(-5) X3 X3(-1) X3(-2) X3(-3) X3(-4) X3(-5) X4 X4(-1) X4(-2) X4(-3) X4(-4) X5 X5(-1) X5(-2) X5(-3) X5(-4) X5(-5)			
Omitted Variables: Squares of fitted values			
	Value	**df**	**Probability**
t-statistic	**1.764018**	**13**	**0.1012**
F-statistic	**3.111760**	**(1, 13)**	**0.1012**

Source: From the work of the researcher based on the results of the Eviews program, twelfth edition.

It can be concluded from all the previous tests that the FDI equation does not suffer from problems related to autocorrelation, instability of homogeneity of variance, or malfunction mischaracterization. Thus, the estimated model can be relied upon and its results interpreted with greater confidence.

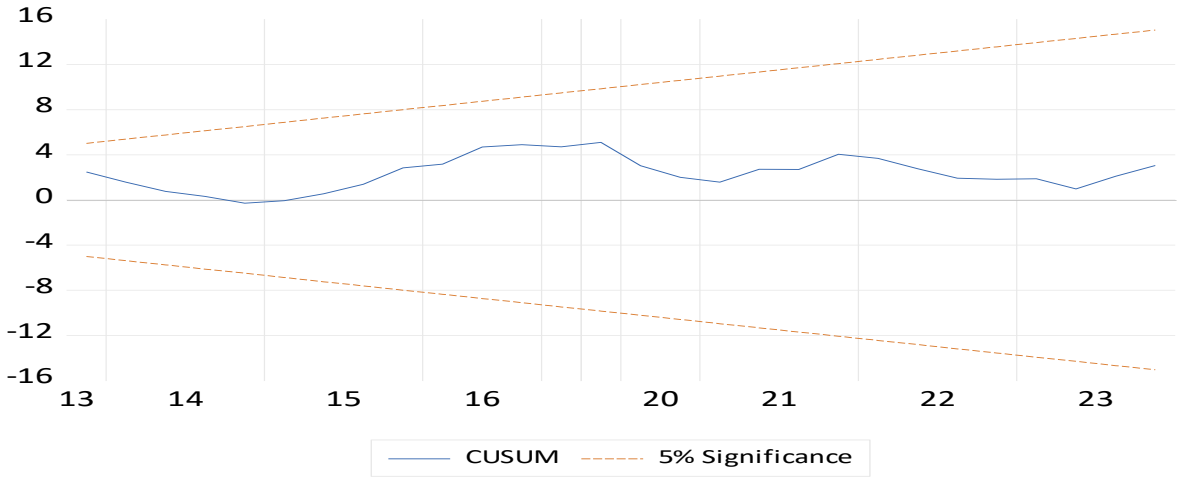
Sixth: Testing the stability of the equation of net foreign direct investment

Figures (6,5) show the CUSUM and CUSUM square of the FDI equation as follows:

CUSUM test:

Shows the accumulated series of residues resulting from the model, where if the blue chain (zigzag) remains within the red boundary (critical limits at a significant level of 5%), this indicates the stability of the model and since the series shown in Figure (9) was within the permissible limits, i.e. within the upper and lower control limits, this indicates that the model is stable and reliable in predicting net FDI.

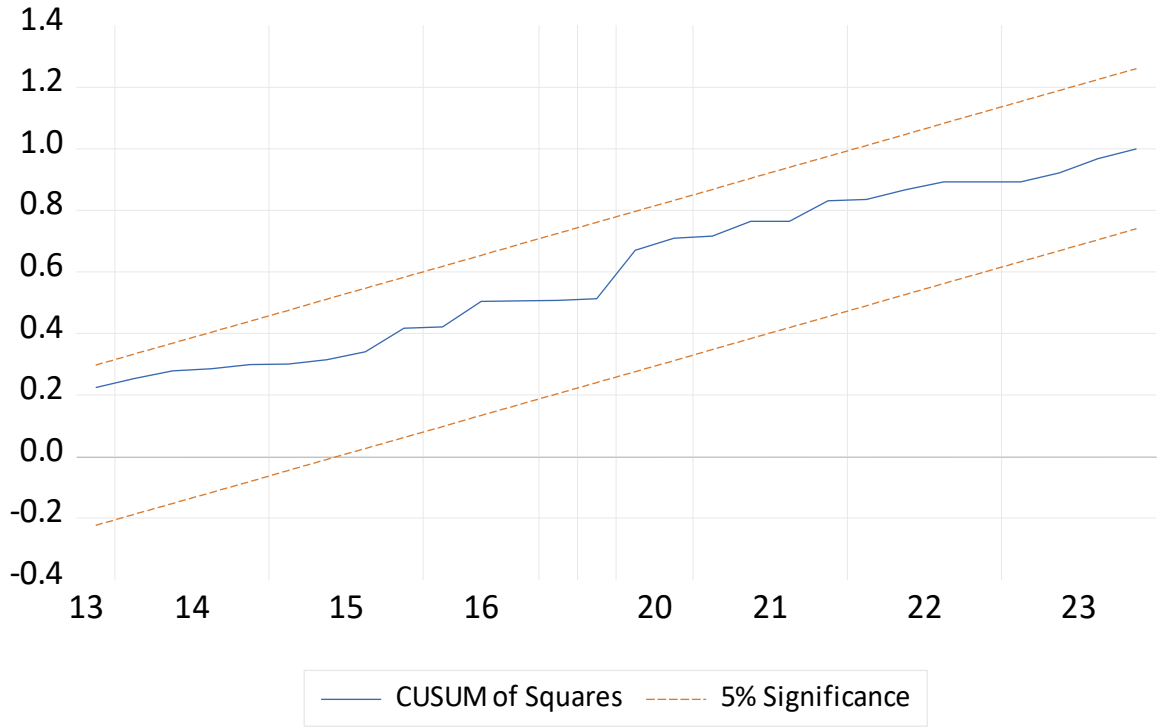
Figure (5):- CUSUM FDI Equation Test.



Source: The work of the researcher based on the results of the program (Eviews) twelfth edition.

Test CUSUM of Square:
Reflects the accumulation of residual squares, that is, when the accumulated values remain within the critical limits, this indicates the stability of the variance around the estimates of the model, as it is clear from Figure (6) that the accumulations of residues were within the permissible limits, that is, within the upper and lower control limits, and this indicates the stability of the variance.

Figure 6:- CUSUM Square Test for FDI Equation.



Source: The work of the researcher based on the results of the program (Eviews) twelfth edition.

The results of both the CUSUM and CUSUM of Square tests show that the behavior of the estimated function remains within the upper and lower control limits, indicating the stability of the model. Thus, this equation can be relied upon for reliable predictions in the future, as the stability of the model enhances the accuracy of the projections derived from the net FDI equation.

Conclusions:-

1. The existence of a long-term relationship between monetary policy and net foreign direct investment in Iraq, as shown by the results of the Bound Test, which showed a value of F-statistic (7.40), which is higher than the critical upper limits at a significant level**.(%1)**
2. The CUSUM and CUSUM of Squares test proved the stability of the estimated model within the 5%, enhancing the credibility and stability of the results over time**.**
3. The historical analysis for the period (2004-2023) showed that foreign direct investment flows witnessed sharp fluctuations due to internal (security, political, financial) and external factors (oil crises, the coronavirus pandemic, and the war on ISIS), which negatively affected macroeconomic stability**.**
4. Standard diagnostic tests (Breusch-Godfrey, ARCH, Ramsey RESET, CUSUM) showed that the estimated model had high statistical efficiency and was free from autocorrelation problems, heterogeneous variation, and mischaracterization**.**
5. Monetary policy in Iraq has been characterized by inconsistency at times, especially in periods of crisis, as its tools have not been activated in a way that balances price stability and stimulates investment**.**

Recommendations:-

1. Adopting a balanced monetary policy that focuses on controlling the money supply in proportion to economic variables, to reduce inflationary effects and improve investment attractiveness**.**
2. Strengthen the statistical and analytical capacity of the Central Bank to periodically assess the impact of monetary variables on foreign investment, facilitating evidence-based decision-making**.**
3. Improving the efficiency of monetary policy coordination between the Central Bank, fiscal policies, and the banking sector, so that interest and inflation instruments are more effective in stimulating growth and attracting investment**.**
4. Improving the institutional and investment environment by reducing political risks and enhancing security stability, which enhances confidence in foreign investors**.**
5. Reducing dependence on the oil sector as the main source of foreign exchange by diversifying the economy and encouraging the agricultural, industrial, and service sectors to attract long-term investments**.**

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