MEASURING AND ANALYZING THE IMPACT OF CENTRAL BANK OF IRAQ'S MONETARY POLICY ON CONSUMER PRICE INDEX DEVELOPMENTS (2004–2024)

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Abstract
This research examines the impacts of M2, OER, and RIR on prices, and seeks to measure and assess the impacts of monetary policy instruments on the Consumer Price Index (CPI) in Iraq from 2004 to 2024. In accordance with a conventional methodology, this paper uses quarterly data along with unit root and co-integration tests and ARDL model estimation techniques to examine the dynamics between these variables in both the short and long run. The findings reveal that monetary policy instruments have some impacts on CPI as the money supply showed a continuous increase, while the real interest rate experienced significant fluctuations, and the official exchange rate remained relatively stable due to central bank interventions. The Consumer Price Index (CPI), which measures the response of prices to monetary policy as well as pressure arising due to economic factors both nationally and internationally, also displayed a sustained increase pattern with periodic changes. Using the ARDL model, it was found that while there were consistency in long-run effects, short-run effects did not follow the economic principles as expected: an increase in real interest rate helped in reducing the pressure on prices, while increase in money supply and exchange rate increased the CPI. The analysis proves that monetary policy in Iraq affects the prices; however, a more balanced approach to managing this policy is needed in order to stabilize the Consumer Price Index and make the tools more effective when dealing with fluctuations. The co-integration test and the speed of convergence to the error proved that the economy has the ability to reach equilibrium in a rather short period of time.

1. Introduction

This study seeks to measure and analyze the impact of the monetary policy of the Central Bank of Iraq on the developments of the Consumer Price Index for the period (2004–2024). The Consumer Price Index is one of the most prominent economic indicators that reflects the level of inflation and the purchasing power of the domestic currency it is an essential tool for the government and decision-makers to monitor the performance of the macro economy and take appropriate measures to control prices and maintain financial stability .

Monetary policy consists of a set of actions taken by the central bank to regulate the money supply and control liquidity in the economy. It mainly includes setting interest rates, managing banks' cash reserves, intervening in money markets, and issuing directives related to lending and credit. Theoretically, these tools are assumed to directly affect (consumer spending, the level of aggregate demand, and inflation), which makes studying the relationship between them and the consumer price index necessary to understand the effectiveness of monetary policy.

The study will adopt a descriptive and analytical approach, based on collecting accurate time data for the Consumer Price Index and monetary policy indicators issued by the Central Bank of Iraq and other official publications. This data will be analyzed using economic statistical methods to identify patterns and changes in consumer prices, and to understand the extent of the Iraqi economy's response to various monetary policy tools. An attempt will also be made to interpret the results in light of the economic and political developments affecting the local and regional economy,

with a focus on the ability of monetary policy to control inflation and achieve economic stability in light of the challenges specific to Iraq.

The study aims to provide a comprehensive view of the effectiveness of monetary policy in Iraq, and to understand the extent of its impact on consumer price behavior over a long period of time, which can be used as a reference for developing future policies and improving macroeconomic management tools.

1.1. Research problem

The research problem lies in the following question: (Did the monetary policy pursued by the Central Bank of Iraq during the period (2004–2024) have a significant impact on the trajectory of the consumer price index?) And what is the extent of the time impact (short-term and long-term) of monetary policy tools (money supply, interest rate, exchange rate) on inflation?

1.2. Research objectives

Measuring the impact of the main monetary policy tools (money supply, interest rate, exchange rate) on the Consumer Price Index (CPI) for the period (2004–2024).

Distinguishing between short-term and long-term effects.

Examining the presence of a long-term cointegration relationship between variables and measuring the pathways of adjustments (VECM/ARDL).

1.3. Importance of the research

An evaluation of the performance of monetary policy based on the ability of monetary tools of the Central Bank of Iraq – money supply, interest rate, and exchange rate – to control consumer prices and inflation between 2004 and 2024.

Supplying scientific results to policy makers that enable them to make sound monetary policy measures in order to achieve monetary and financial stability.

The dynamic behavior of inflation in Iraq will be better understood when the difference in the short-run and long-run effect of monetary policy measures on the consumer price index is taken into consideration.

A scientific basis for assessing any economic changes and communicating such results in order to develop macroeconomic management tools.

Contributing to local economic studies The Iraqi Economic Library, through the analysis of long-term data (2004–2024) and linking it to the actual monetary policies of the Central Bank.

1.4. Research hypotheses

H0: The monetary policy tools of the Central Bank of Iraq have no statistically significant effect on explaining the differences in the Consumer Price Index (CPI) during the period 2004 to 2024.

H1: The monetary policy tools of the Central Bank of Iraq have a statistically significant impact on explaining the variances CPI during the period (2004–2024) in both terms.

1.5. The conceptual aspect of monetary policy tools and the consumer price index.

Monetary policy has a set of tools through which it can guide the course of that policy. Monetary policy also affects the money market, which affects the amount of money circulating in the markets, and this in turn is reflected in the prices of goods and services. It is worth noting that prices are among the most important economic indicators because they are used in internal and external transactions, and they are also used in setting economic policies and distributing resources among the different economic sectors in the national economy (Jiyad , 2022).

Pricing policy is not an end in itself, but rather a means to establish a sound pricing system, which is one of the economic policies that it is required by the processes of economic development. The price index is a statistical tool for measuring the relative change in the values of a phenomenon or a group of phenomena from one time to another, or from one place to another. We will discuss the concept of the Consumer Price Index (CPI) after we discuss the conceptual framework of monetary policy and its role in price stability.

1.5.1. The conceptual framework of monetary policy and its role in price stability

Monetary policy in Iraq has gained increasing importance since 2003 as a result of structural transformations in the national economy and the increased degree of trade openness. It now operates within an institutional and legislative framework, represented by Law No. (56) of 2004 concerning the Central Bank. Monetary policy has key objectives, including achieving price stability. The law obliges the Central Bank of Iraq to confront inflation rates through the use of monetary policy tools (Abdul Jabbar, 2011).

There are various macroeconomic management techniques used to bring about economic stability in general, but particularly economic stability of the price level, and one such tool is monetary policy. Monetary policies are used by the central bank in several ways to influence fundamental monetary elements (such as liquidity, interest rate, and exchange rate) to ensure that a wide range of objectives are achieved through this policy, with the major objectives being to curb inflation, reduce economic fluctuations, and stabilize the value of the local currency (Jiyad, 2022, 22).

1.5.2. Quantitative tools of monetary policy

Quantitative tools refer to a series of tools whose indirect goal is the influencing of the quantity of liquidity in the banks, thus, affecting the overall quantity of money in circulation. There are many tools that come under this category, including real interest rate, exchange rate, and broad money supply. These tools directly affect the general price level. Below is an overview of these tools. (Ali, 2020, 23).

1.6. Real interest rate

The interest rate plays a critical role since it determines the prices of the money market in the short run and is determined by these prices. The real interest rate is derived from the interest rate charged by the banks after taking into account the effects of inflation. As a consequence, the higher the level of inflation, the lower the real interest rate, and this negatively impacts the currency's buying power (Jawad, 2016).

Real interest rate = rate Interest nominal – an average inflation

1.6.1. The concept of the interest rate

The real interest rate is the gap that exists between the nominal interest rate and the rate of inflation. Real interest rate is the true cost of borrowing and the true return on saving, and therefore the real interest rate is the monetary variable that is closely associated with the decision-making process regarding investment and consumption. The equation for real interest rate, nominal interest rate, and the rate of inflation can be expressed as follows (Abdul Jabbar, 2011).

1.6.2. The importance of the real interest rate in monetary policy

The real interest rate is used as a tool to control aggregate demand, since raising the real interest rate limits borrowing, spending and consumption, in addition to reducing inflationary pressures. Lowering the real interest rate stimulates credit and economic activity, but it may push prices upwards (Helio Abdul, 2024).

1.6.3. The Link between the Real Interest Rate and the Consumer Price Index

The interest rate is often the real rate is negative due to high inflation rates, which negatively affects its effectiveness as a therapeutic tool in monetary policy and reinforces the tendency

towards non-bank assets and channels. This leads to continued inflationary pressures even with increases in nominal interest rates. (Saeed, 2018).

1.6.4. Features of the impact of the real interest rate as a monetary policy tool in Iraq during the study period

This impact can be observed through the following (Abdul Jabbar, 2011): 1) The limited role of productive credit and the weakness of the banking sector make the impact of interest rates on consumer prices weak and indirect. 2) Monetary policy tends to depend to a large extent on the exchange rate compared to the interest rate.

1.7. Exchange rate

The exchange rate is one of the variables that affect transactions between two different economies. The exchange rate represents the relationship that exists among the economies and it shows their economic status. The determination of prices in any economy follows the market supply and demand principles, but in the foreign exchange market, the exchange rate is determined through an exchange rate system (Jawad, 2016).

1.7.1. The concept of the exchange rate

Exchange rate can be defined as: the amount of units of the domestic currency required to purchase one unit of foreign currency. This is believed to be the most volatile factor for countries whose economies depend on imports like Iraq. (Abdul Hadi, 2017).

1.7.2. The role of the exchange rate as a monetary policy tool

It is used to achieve price stability through the following (Jamil, 2006) Supporting the value of the local currency, Reduce the cost of imports and Controlling imported inflation.

1.7.3. Features of the impact of the exchange rate as a monetary policy tool in Iraq during the study period

This impact can be observed through the following (Jawad, 2016): 1) The Central Bank of Iraq relies on the (currency sales window) system to control the exchange rate. 2) The immediate impact of any shocks to the dollar, whether internal or external, on inflation rates. 3) Most jumps in the consumer price index are linked to changes in the exchange rate, not the interest rate.

1.8. Broad monetary supply (M2)

Money Supply Definition The concept of the money supply can be described as money that is kept by the public for purposes of being used in expenditure. More specifically, it can be described as the overall money supply balance in a nation. The "public" in this case comprises of individuals, companies, and firms. Funds in the possession of the government, the Ministry of Finance, and the central bank are not part of the money supply since they are obtained from non-commercial activities. Demand deposits in commercial banks are the funds kept in current and savings account at these banks. (Jawad, 2016).

1.8.1. Broad critical presentation (M2)

It is made up of the following (Jiyad, 2022): 1) Circulation of currency outside of banks (M0). 2) Bank current deposits. 4) Savings and time deposits.

(M2) The most comprehensive measure of liquidity in national economies. For Importance of the broad money supply (M2) in monetary policy: Increasing the money supply affects national economies through the following (Jawad, 2016): 1) Increased purchasing power. 2) Stimulating aggregate demand. 3) Stimulating the markets. It is noteworthy that an uncontrolled expansion of the money supply at the appropriate liquidity level leads to higher prices for goods and services, i.e., it leads to inflationary waves.

1.8.2. The relationship between the broad money stock (M2) and the consumer money index

This relationship was established via the "quantity for money" theory, and it is as follows:

MV=P Y

Since, an increase in the money supply (M) translates into a rise in prices (P) when the output (Y) is constant.

Features of the impact of the expanded money supply (M2) on monetary policy in Iraq during the study period, This effect can be observed through the following (Jiyad, 2022): 1) The growth in cash liquidity was linked to fluctuations in oil revenues. 2) Increased liquidity during times of oil abundance led to increased government spending and consequently higher inflation rates in the prices of goods and services. 3) Weakness in the banking system promotes dollarization and reduces the central bank's control over the (M2) mass.

1.9. The Consumer Price Index (CPI)

One of the major indicators and index numbers which are used to indicate inflation is the Consumer Price Index (CPI), since this index number indicates the effect of increase in prices of both consumer and non-consumer items. This index also indicates the change in the general level of prices of a basket of essential commodities and services. This index number is the most common indicator of inflation and in case of Iraq, it directly indicates the effect of changes in the above-mentioned three variables (Jamil, 2006): 1) Corresponds to the changes in the exchange rate. 2) Corresponds partially with the broad offering of criticisms. 3) Has low elasticity with respect to the real interest rate.

2. Method

The research makes use of a descriptive and analytical methodology where time series data is used to analyze the Consumer Price Index (CPI) and monetary policy variables (money supply, interest rate, and exchange rate). Analyzing data using statistical economic methods to identify patterns and changes in consumer prices. Interpreting the results in light of local and regional economic and political developments.

2.1. Measuring and analyzing the impact monetary policy tools on the consumer price index

For the study model included the following model description :

CPI=f(M2,OER,RIR)

Annual data were converted to quarterly data using the Avios program . The variables were taken logarithmically . The dependent variable of the estimated model was the Consumer Price Index (CPI) , The independent variables comprise broad money supply (M2), the official exchange rate (OER), and the real interest rate (RIR).

3. Results and Discussion

3.1. Analysis of monetary policy tools and the consumer price index in Iraq.

3.1.1. The reality of monetary policy tools in Iraq

The Table 1 illustrates the trends of the real interest rate in Iraq within the period (2004-2024). It is interest rate adjusted based on annual inflation rates, which implies that it takes into account the real purchasing power of money after adjustments have been made due to price fluctuations. This means that it equals (the rate Interest Nominal minus rate (inflation)), and we should take into account the fact that it had been low within the period (2004-2011), as the real interest rate in Iraq amounted to (-3.45%) in 2004, and in 2011 it amounted to (-8.47%), which is the lowest rate throughout the whole period of the research. It is mainly due to the significant rise in inflation rates. As far as the reasons for its huge increase in 2009 is concerned, it is caused by the consequences of the global mortgage crisis. As for the period (2012-2014), the real interest rate in Iraq constantly grew, as after it had been (10.91%) in 2012, it constantly grew and reached (15.90%) in 2014. As for the constant increase, it is mainly explained by the constant drop in

inflation rates. Within the period (2015-2024), the real interest rate in Iraq remained almost constant and high, as it amounted to (60.88%) in 2015, having reached its peak throughout the whole period of the research, it constantly dropped and remained almost constant until it amounted to (36.24%) in 2024, and it is due to the significant drop in inflation rates.

Table 1. Developments in monetary policy variables in Iraq for the period (2004-2024)

Money supply in its broadest sense (One million dinars)	Official exchange rate (One dinar per dollar)	Real interest rate (%)	years
14355914	1453	-3.45	2004
14888028	1472	-16.52	2005
19920263	1467	-7.05	2006
27311731	1255	3.79	2007
36929576	1193	-8.42	2008
46791247	1170	44.33	2009
61393052	1170	-1.92	2010
74098034	1170	-8.47	2011
77187497	1166	10.91	2012
89512076	1166	13.59	2013
92988876	1166	15.90	2014
84527272	1167	60.88	2015
90466370	1182	26.40	2016
92857047	1184	34.39	2017
95390725	1183	40.56	2018
103441131	1182	33.78	2019
119906260	1192	36.24	2020
139885978	1450	36.86	2021
168291372	1450	35.63	2022
180975628	1313	36.24	2023
174177198	1300	36.24	2024

Source: World Bank data retrieved from the institution's official statistical website on 11/14/2025

In figure 1 illustrates the general trend line of the real interest rate in Iraq, which indicates that its trajectory tended to increase throughout the study period.

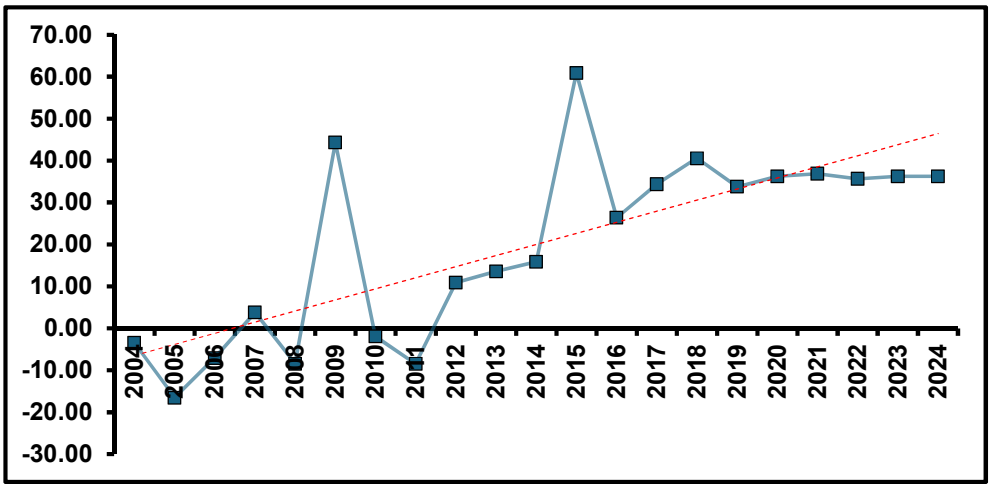


Figure 1. Developments in the real interest rate in Iraq for the period (2004-2024)
Source: The researcher's work is based on the data in Table 1

Table 1 shows the developments in the official exchange rate of the Iraqi dinar against the US dollar for the period (2004-2024). It is evident that the value of the Iraqi dinar decreased during the period (2004-2006), as demonstrated by the continuous increase in its exchange rate against the US dollar. After being at (1453 dinars per US dollar) in 2004, it continued to rise until it reached (1467 dinars per US dollar) in 2006, also due to the significant increase in annual inflation rates. In 2007 and 2008, the official exchange rate decreased continuously to (1255 dinars per US dollar) and (1193 dinars per US dollar) respectively. During the period (2009-2020), the official exchange rate fluctuated continuously but slightly, remaining almost constant. After reaching (1170 dinars per US dollar) in 2009, it continued to fluctuate until it reached (1170 dinars per US dollar). (1192 dinars per US dollar) in 2020, despite the continuous decline in inflation rates. This is due to the

policies of the Central Bank of Iraq in maintaining the stability of the exchange rate of the Iraqi dinar against the US dollar. In 2021 and 2022, the exchange rate rose continuously, after the Central Bank of Iraq issued a decision to raise it in a step to support increasing government expenditures (Central Bank of Iraq Annual Economic Report, 2021).

In 2023 and 2024, The Central Bank of Iraq implemented a reduction in the exchange rate after parliamentary and societal pressures to become (1313 dinars per US dollar) and (1300 dinars per US dollar) respectively . The dashed path in Figure 2 below illustrates the general trend line of the official exchange rate in Iraq, which indicates that its path tended to decrease throughout the study period.

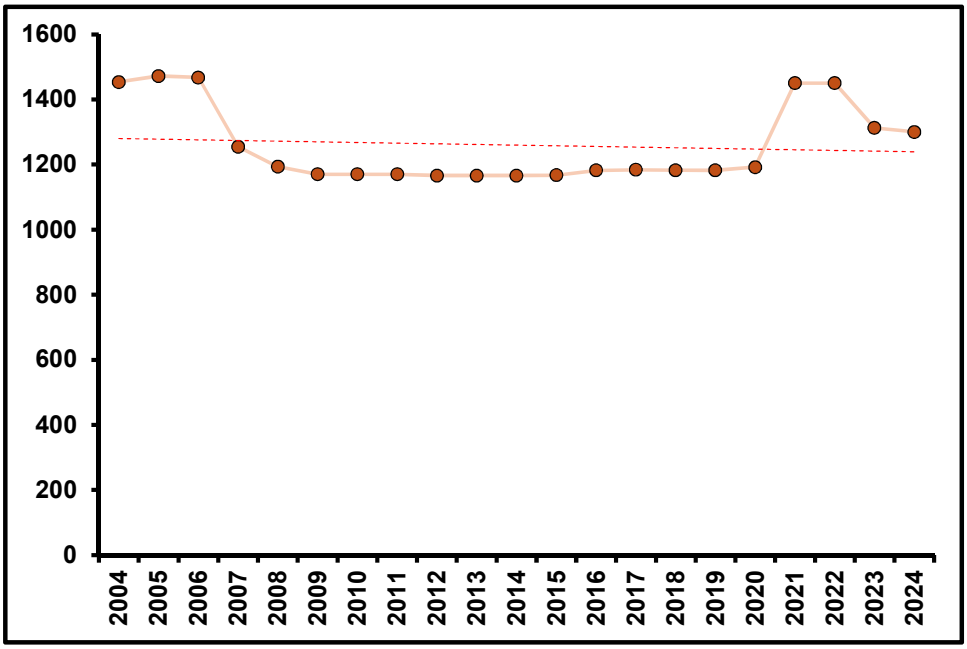


Figure 2. Developments in the official exchange rate in Iraq for the period (2004-2024)
Source: The researcher's work is based on the data in Table 1.

Period (2004-2024). It is observed that it was continuously increasing during the period (2004-2014). After reaching (14,355,914) million Iraqi dinars in 2004, it continued to increase until it attained (92,988,876) million Iraqi dinars in 2014. This ongoing trend is mainly attributable increase in broad money supply is attributed to the expansion of the Iraqi market due to the continuous increase in bank deposits and currency in circulation. However, in 2015, due to the repercussions of the event of June 2014, broad money supply decreased to (84,527,272) million dinars. This was due to the decline in net foreign assets resulting from the decrease in oil revenues, in addition to the expansion of net government and private sector debt. During the period (2016-2023), broad money supply in Iraq recorded a continuous increase, reaching (90,466,370) million dinars in In 2016, it continued to increase until it reached (180,975,628 million dinars) in 2023, which is its highest value during the study period. However, it decreased in 2024 to become (174,177,198 million dinars). The dashed path shows the general trend line of broad money supply shown in Figure 3 below, indicating that its path tended to increase.

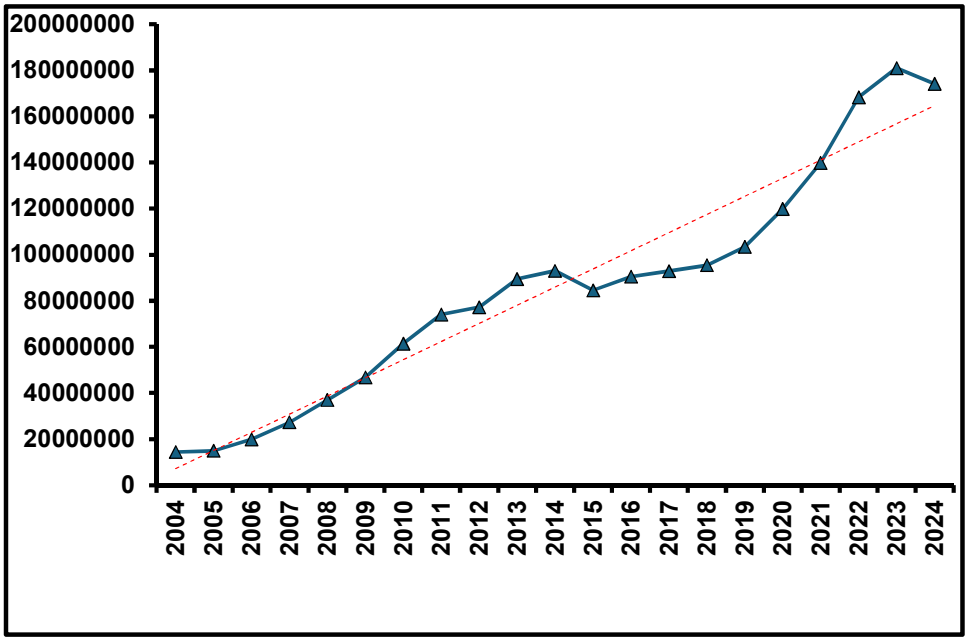


Figure 3. Developments in the broad money supply in Iraq for the period (2004-2024).
Source: The researcher's work is based on the data in Table 1.

3.1.2. The reality of the consumer price index and the inflation rate in Iraq

Table 2 below shows the developments of the Consumer Price Index and the inflation rate in Iraq for the period (2004-2024) . We note that The Consumer Price Index exhibited a continuous upward trend during the period(2004-2006). After it was at (42.77 points) in 2004, with a positive annual inflation rate of (26.96 %), it continued to increase until it reached (89.77 points) in 2006, with a positive annual inflation rate of (53.23%), which is the highest inflation rate during the study period. This upward trend can be primarily attributed to the sustained increase in fuel prices, which contributed to higher overall price levels prices by a decision of the Iraqi government in compliance with the conditions of the World Bank, which caused an increase in transportation, communication and energy prices.

In 2007, the consumer price index in Iraq decreased to [amount missing]. (80.73 dinars) and with a negative annual inflation rate of (-10.07%), after the success of monetary policy in maintaining price stability .

During the period (2008-2018), the consumer price index in Iraq increased continuously. After it reached (97.20 points) in 2008 with a positive annual inflation rate of (12.66%), it continued to increase until it reached (119.87 points) in 2018 with a positive annual inflation rate of (0.3737 %), following the continuous increase in the prices of communications, entertainment, clothing and various services.

In 2019, the Consumer Price Index (CPI) declined very slightly to 119.62 points , registering a negligible annual negative inflation rate of -0.20 % . However, during the period 2020-2024, it increased significantly and steadily. After reaching 120.31 points in 2020 with a positive annual inflation rate of 0.57%, it continued to rise, reaching 145.36 points in 2024, its highest value during the study period, with a positive annual inflation rate of 3.99%. This continuous increase is attributed to the rise in the money supply and global inflation resulting from the events of 2020, as well as global geopolitical instability that led to higher global food prices, such as the war in Ukraine. Additionally, domestic purchasing power weakened following the central bank's decisions to raise exchange rates. The dashed line illustrates the general trend line of the broad money supply, as shown in Figure 4. The following is true: its trajectory tended to increase throughout the study period.

Table 2. Developments in the Consumer Price Index and the inflation rate in Iraq for the period (2004-2024)

Annual growth rate of the consumer price index (Inflation rate) (%)	Consumer Price Index (CPI) (2010=100) (a point)	years
26.96 *	42.77	2004
36.96	58.58	2005
53.23	89.77	2006
-10.07	80.73	2007
12.66	90.95	2008
6.87	97.20	2009
2.88	100.00	2010
5.80	105.80	2011
6.09	112.24	2012
1.88	114.35	2013
2.24	116.91	2014
1.39	118.54	2015
0.56	119.20	2016
0.18	119.42	2017
0.37	119.86	2018
-0.20	119.62	2019
0.57	120.31	2020
6.04	127.57	2021
5.00	133.95	2022
4.36	139.78	2023
3.99	145.36	2024

Source : Data provided by the World Bank and published on its official statistical website on 11/14/2025
***Calculate the average using the formula (Current value – Previous value) / Previous value x 100 Note that the consumer price index for 2003 reached (33.69 points).**

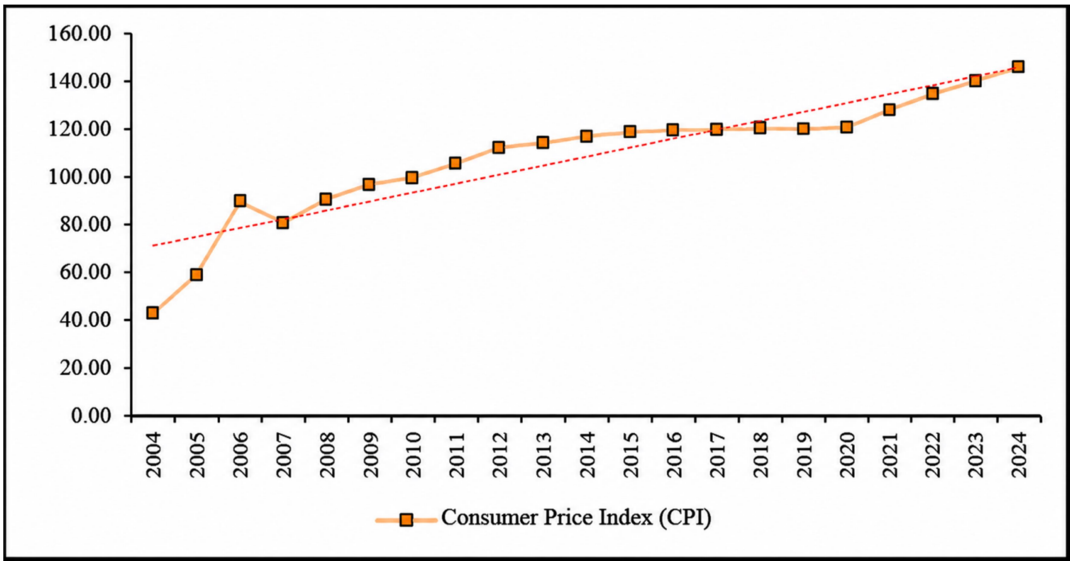


Figure 4. Shows changes in Iraq's inflation rate and consumer price index from 2004 and 2024.
Source: The information in Table 2 is the basis for the researcher's work.

3.2. Empirical Findings of the stillness tests

Table 3 shows us The results of the static tests according to the Phillips-Pyrrhon methodology are as follows:

Table 3. Results of the Phillips-Pyron tests for stillness

Variables		At Level At the level			At First Difference At the first difference			Variables by country	
1	CPI	0.000	0.000	0.990	0.049	0.136	0.006	Consumer Price Index	1
2	M_2	0.179	0.852	0.999	0.470	0.531	0.014	iticismExtensive Cr	2
3	OER	0.280	0.658	0.534	0.042	0.116	0.003	official exchange rate	3
4	RIR	0.301	0.101	0.664	0.001	0.008	0.000	Real interest rate	4

Source: Author's calculations based on the E-Views 12 output software

The Consumer Price Index time series showed stationarity in levels from the result of the stationarity test run on the series at the level. The series showed stationarity both when the regression had a constant and in the case where there was no constant and/or trend, since the values of the statistics were less than the critical values at 5%. But stationarity was not achieved in the absence of the vector and the constant. On the other hand, both the official exchange rates and M2 series were stationary. The analysis shows that in all cases, the OER and RIR time series are not stationary at level, since their test significances are above the permissible level.

Time series are stationary although with different degrees of significance as suggested by the stationarity tests carried out for the second set of variables.

The results demonstrate a certain level of complementarities among the variables used in this research. What is interesting about the variables is that they have been categorized into I(0) and I(1) without I(2) and the lack of quadratics. ARDL approach is thus appropriate for this set-up.

3.3. The results of the standardized tests

Cointegration test: The output is thus significant at 1%, since it exceeds the upper limits. This is to mean that the obtained value of the Fisher statistic (F) in Table 4 (51.109) means that the model under study has long-run cointegration relationship. This therefore affects both short run and long run analysis.

Table 4. F-Bound Test (Underline Test for Cointegration)

Test Statistics	Value	K
F-statistic	51.109	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.01	2.45
5%	2.87	3.10
2.5%	3.42	3.63
1%	4.16	4.84

It should be observed that the error correction parameter (CointEq (-1)) assumes a value of -0.139 and the probability associated with it is 0.00. The aforementioned value is significant at the 1% level. The error correction parameter fulfills all the three requirements: negative sign, statistical significance, and falls within the range of 0 to -1. Since the time period required to attain full equilibrium is less than two years (1.8 years), the speed of error correction is quite high.

3.4. Model quality tests

Table 5. Probability values for standard problem tests

Breusch -Godfrey Serial Correlation LM Test association test-Self	
Prob. F (2,57)	0.165
Prob. Chi-Square (2)	0.101
Heteroskedasticity Test: ARCH heterogeneity test	
Prob. F (2,72)	0.411
Prob. Chi-Square(1)	0.404

Source: Research by Yin based on the output of E-Views12 software

Table 5 shows that the probability the chi-square test statistic. Autocorrelation Test gave a value of 0.101, which is greater than the 0.05 significance level, meaning that autocorrelation does not exist in the model. In addition, the Breusch-Pagan test on heteroskedasticity gives a chi-square value of 0.404, also greater than 0.05 significance level. Therefore, there is no heteroskedasticity in the model.We note that the residuals of the study model were normally distributed because the Jarque-Bera statistical value reached (0.117), which is greater than (0.05) , as shown in Figure 5 below:

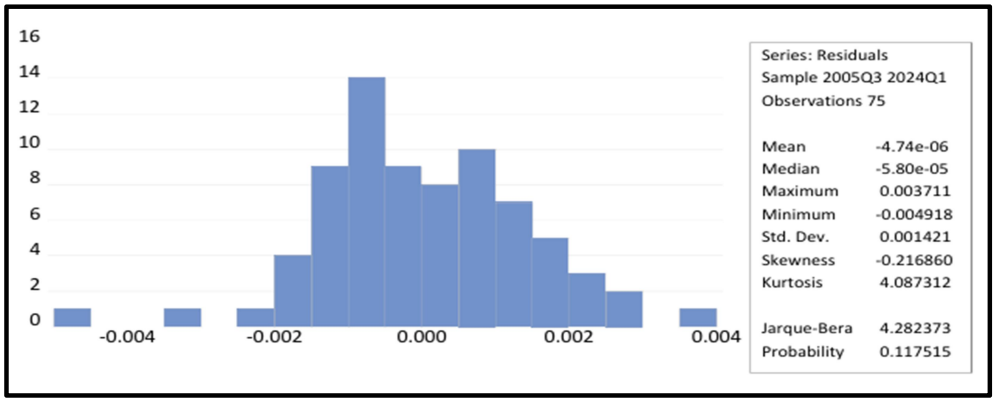


Figure (5): Test for normality of residue distribution
Source: E-Views12 program output

Table 6 shows the quality indicators of the standard model as follows:

Table 6. ARDL Model Quality Indicators

No.	Indicators teacher	Value
1	R-squared (R^2)	0.9999
2	Adjusted R-squared (R^{-2})	0.9999
3	Durbin-Watson stat (DW)	1.9078

Source: Research by Yin based on the results generated by E-Views 12

The findings show that the value of the correction factor (R2) and the adjusted value of the correction factor (R-2) is 0.99, implying that the model explains 99% of the variance in the dependent variable due to the independent variables. Additionally, the value of the Durbin-Watson test is 1.513.

3.5. Evaluation of the Short-Run estimates of the ARDL model and long duration

Table 7. Short-term relationships

No.	Indicators teacher	Value
1	R-squared (R^2)	0.9999
2	Adjusted R-squared (R^{-2})	0.9999
3	Durbin-Watson stat (DW)	1.9078

Source: Research by Yin based on the output of E-Views12 software

Short-run causality is captured by modeling it using the ARDL method as stated in Table 7. The result shows the existence of a negative linkage between the CPI and the broad money supply (M2). That is, there is an indication that for every 1% change in M2, there is 0.579% change in the CPI. This relationship was significant at the level of (1%) and with a p-value of (0.000). This is contrary to well-known economics where the increase in the supply of money causes rise in prices resulting in higher inflation rates. The effect could be a product of unique domestic economic characteristics of the country. There is a positive relationship between the OER series and the CPI series. From the results, there is a very low increase of 0.007% in CPI when OER increases by 1%. The relationship is quite strong, with a value of 0.003 and is statistically significant at 1%. The findings support the theories of economics since the appreciation of the official exchange rate triggers depreciation of the home currency in relation to other currencies. Therefore, this causes the increase in the cost of imported products. As a result, the increase in monetary value is captured by the consumer price index. This means that the official exchange rate affects directly the prices of imported products and services in an economy where there is a lot of importation.

According to the ARDL model, the dependent variable decreases as the Real Interest Rate increases; an increase in the real interest rate (RIR) by 1% leads to a decrease of 0.018% in the dependent variable. This relationship is only significant at 10% significance level (t= 0.091). Therefore, the result may not be very significant for short term forecasting purposes. As far as economics is concerned, this observation shows that an increase in the real interest rate results in a

decline in investment and consumption in the short run, which will have an effect on the level of price or inflation in the short run through reducing it. There are other variables that still keep its influence under control, such as inflation expectations, among others. Therefore, it can be said that interest is of little importance. This factor in the A model does not possess much statistical importance concerning short-term management of prices or inflation compared to other factors like M2 or OER.

Table 8. Long-term relationships

Variable	Coefficient	Flexibility long term Std. Error	t-Statistic	Prob.
M_2	0.245	0.008	29.687	0.000
OER	0.054	0.019	2.823	0.00 6
RIR	- 0.0 24	0.006	- 4.0211	0.000

Source: Researcher's work based on the output of E-Views12 software

The elasticities in the long-run have been provided in Table 8. It has been seen that there is a positive relationship between the series of broad money (M2) and the Consumer Price Index (CPI); in particular, 1% change in M2 results in 0.245% change in CPI, and the relationship is highly significant at 1% levelThis is in line with the traditional economic theory, which asserts that any increase in the supply of money results in higher costs or inflation as a result of the expected relationship between monetary liquidity and economic prices. Additionally, the OER was found to have a positive effect on the consumer price index, whereby a 1% increase led to an increase in the index.The consumer price index was (0.054%) , and the relationship was significant at the level of (1%) and with a value of (0.006). The economic view of the situation shows that a high official exchange rate means that the domestic currency is depreciated against the foreign currencies and thus makes imports costly which in turn increases prices and ultimately causes inflation.

Additionally, it should be noted that the decrease of the consumer price index is equal to 0.024% in case of every increase of the real interest rate by 1%, and this relationship is statistically significant at the 1% level. At a rate of (0.000), this means that raising the real interest rate reduces domestic consumption and investment in the long term, which helps to curb inflation and control prices , and that The high significance of this variable confirms its importance in long-term impact compared to short-term impact, where its effect was weak and not statistically strong .

This shows that in the long run, the results are in agreement with traditional economic theories where real interest rates help reduce the level of inflation, while monetary liquidity and exchange rates lead to an increase in prices. This demonstrates a unique time-specific dynamics of economic variables.

Model stability testing, it was noted that during the period of study, the model was stable as the series in both forms were contained within the critical limits of discontinuity and linearity. This is demonstrated from the application of the CUSUM stability test on the model residuals, as shown in Figure 6.

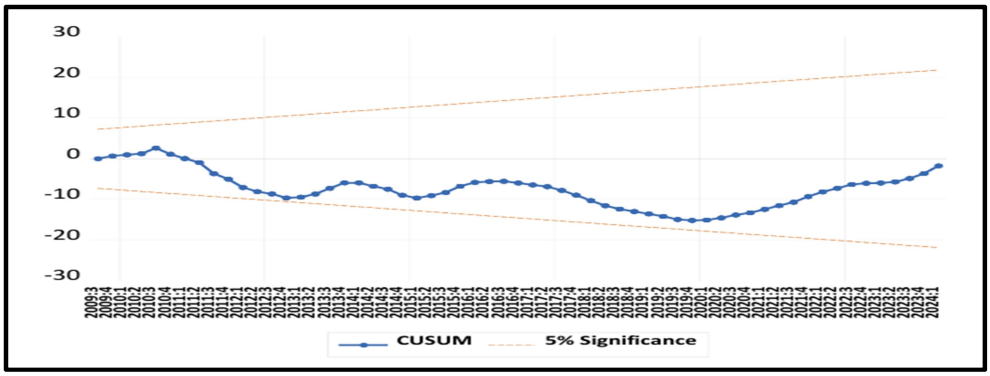


Figure 6. Cumulative sum test for residues
Source: E-Views12 program output

Figure 7 shows the cumulative sum test of the residual squares of the study model , and through it we observe that the model was stable throughout the study period , because the continuous and zigzag blue series did not deviate from the critical red dashed and straight boundaries.

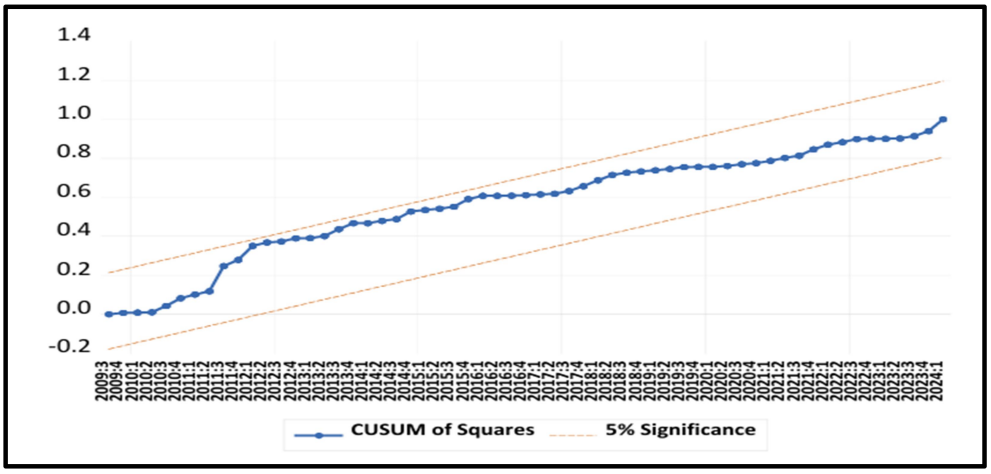


Figure 7. Cumulative sum test of remainder squares
Source: E-Views12 program output

4. Conclusion

Monetary instruments in Iraq have clearly affected the consumer price index during the period (2004–2024), with significant fluctuations in the real interest rate and a continuous increase in the broad money supply. In addition, due to certain political and economic reasons, as well as the intervention of the central bank, the exchange rate has been quite stable with only minor changes. Due to the effects of monetary policies and inflation, the consumer price index has increased on a consistent basis, although there have been some minor changes during short periods of time. Furthermore, analysis of the ARDL model reveals that while the long-term effect of monetary policy instruments corresponds to standard economic theory, short-term effects demonstrate some irregularities related to conventional economics, namely, money supply growth and official exchange rate growth are accompanied by price growth, and real interest rates growth is the cause of reducing inflation. Moreover, the results of cointegration, speed of correction of errors, and stability tests show the ability of the economy to restore equilibrium rather quickly, demonstrating high dynamics of economic indicators. Based on these conclusions, it is recommended to balance money aggregates to ease inflationary pressure on the economy and control the money supply, control the real interest rate to create a balance between the desire to invest and consume locally with the objective of creating price stability, ensure the stability of the official exchange rate and adopt measures that will help resist political and economic pressures, adopt dynamic economic models for future policies and continually monitor pricing and inflation factors, and improve transparency of the central bank and report on a continual basis for sustainable monetary and financial stability.

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